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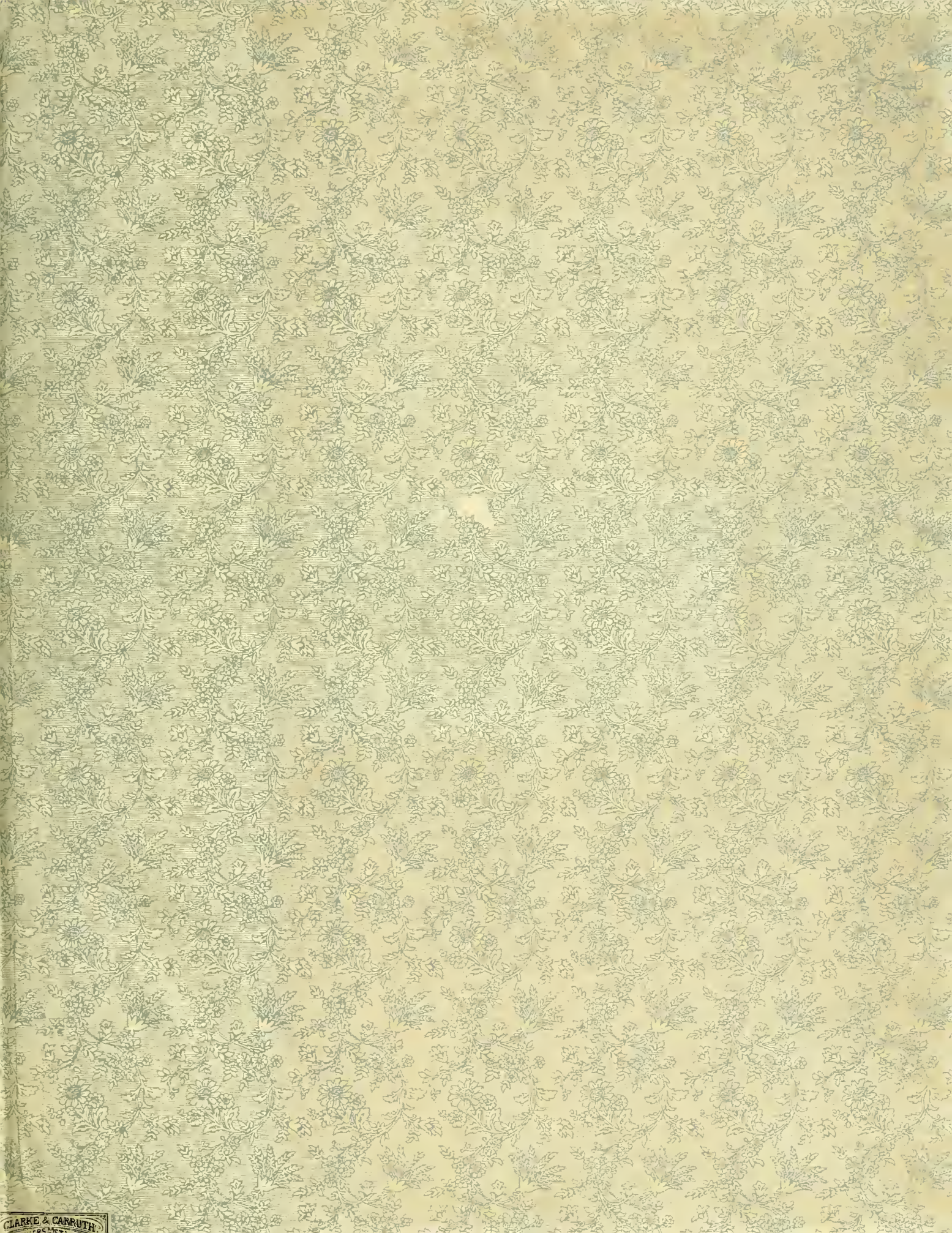
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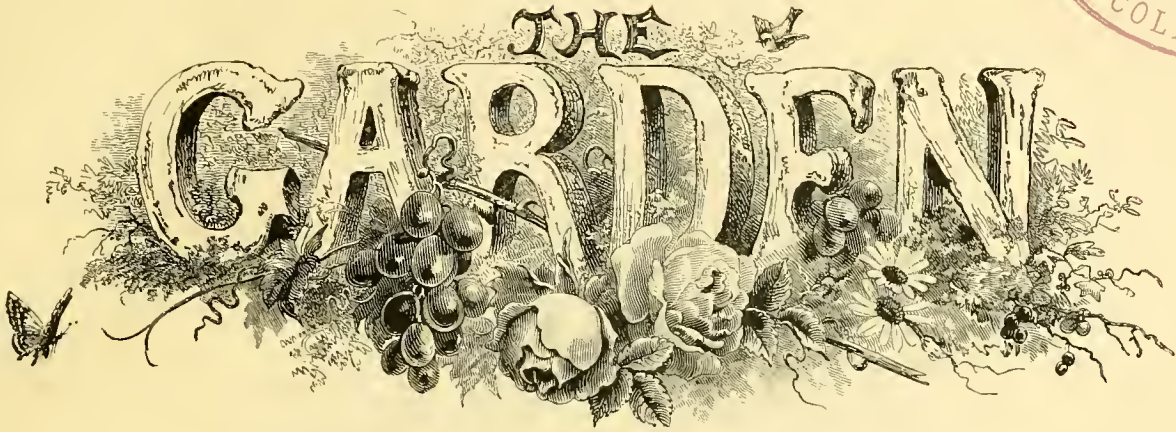
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1885





JOHN E. LANE.



AN

ILLUSTRATED WEEKLY JOURNAL

OF

HORTICULTURE IN ALL ITS BRANCHES.

FOUNDED BY

W. Robinson, Author of "The Wild Garden," "English Flower Garden," &c.

"You see, sweet maid, we marry
A gentle scion to the wildest stock
And make conceive a bark of baser kind
By bud of nobler race: This is an art
Which does mend nature: change it rather,
'The art itself is nature'—*Shakespeare*,

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TO

JOHN E. LANE,

GREAT BERKHAMSTEAD,

THIS TWENTY-SEVENTH VOLUME OF "THE GARDEN"

IS DEDICATED.

W. R., July 1, 1885.

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JOHN E. LANE.

FOR upwards of half a century the name of John Lane, of Berkhamstead, the present head of one of the oldest and best known nursery firms in this country, has been familiar to horticulturists. Born at Great Berkhamstead seventy-seven years ago, his life from quite a youth has been spent in building up a business which now, thanks to his energetic efforts, enjoys a world-wide reputation. Living as he has all his days in what may be termed the centre of English horticulture, no man is better acquainted than Mr. Lane with its history during the past fifty years. He has witnessed the commencement of many fashions in gardening and seen the end of not a few. He has enjoyed the acquaintance of the greatest horticulturists of the present century, among whom may be mentioned Loudon, Lindley, Paxton, Fortune, Rivers, Robert Thompson, and others. These men, his contemporaries, are gone; while he remains, hale and hearty, as capable of managing his business as ever he was.

As an exhibitor Mr. Lane's experience dates back as long ago as 1828, and from that time to the present he has been a familiar figure at all the great shows, especially at those held in London. In the days when the exhibitions at Chiswick were the greatest in the country, Mr. Lane was a constant and most successful exhibitor. But even before that period he contributed to the society's shows. In 1831 he showed the first pot Roses that had ever been seen, and he speaks with enthusiasm of the sensation they created, the popular idea being that Rose culture in pots could not be successfully carried out. These first show pot Roses were but small specimens—a striking contrast to the monstrous plants some 6 feet through which have been shown during recent years, and from the same nursery, too. Roses were always a speciality at Berkhamstead; over forty years ago Loudon said he found more kinds of Roses in Messrs. Lane's nursery than in any other. Since then hardy fruits, trees, and shrubs have received most attention from Mr. Lane, and his nursery at the present time shows how extensive his trade in them is. Although the nurseries are not located on or even near a heathy or peaty soil, Berkhamstead has become famous for its American plants, such as Rhododendrons, Kalmias, Azaleas, and the like; these, though generally thought to require peat, grow luxuriantly without it—in fact, in yellow loam. The Japanese Azalea mollis introduced by Fortune has been for years one of the Messrs. Lane's special objects of culture, and its present popularity is due in a great measure to their never having lost an opportunity to exhibit it in its finest condition.

Mr. Lane's long experience among hardy fruits has made him one of the best authorities on the subject, a fact recognised by the Royal Horticultural Society, by whom he has been made vice-president of their fruit committee. The large permanent orchards at Berkhamstead in connection with the nurseries afford abundant material for study, particularly in the case of Apples, which has been Mr. Lane's hobby, and of which he has acquired a profound knowledge. Among new sorts originated by him is Lane's Prince Albert, one of the finest of its class and now becoming widely popular, although many years have elapsed since it was first put into commerce. Grape culture, too, has engaged Mr. Lane's attention for years, and most successful has he been, especially with Vines in pots, which have won for him a wide reputation as a Grape grower not only in this country, but also abroad, wherever his Grapes have been exhibited.

Mr. Lane and Mr. John Lee (the subject of our last memoir) are now among the oldest representatives of the nursery trade in this country—men widely known and held in the highest respect.

THE GARDEN.

VOL. XXVII.

CHURCH DECORATION.

IT will be generally admitted, I think, that the floral decoration of churches has greatly improved of late, not only as regards the quantity of material used, but also in quality; the arrangements are lighter and more graceful than hitherto. The old heavy masses of commonplace Evergreen have given place to light festoons or delicate tracery. Well-berried Holly of course we must have, and Ivy, with its jet-black clusters of berries and long graceful sprays; other Evergreens that in winter give our gardens such a snug look we must also have, and especially those that bear berries. Amongst flowers, white ones predominate, with just a sprinkling of brilliant colour to give life to the whole. On entering, the first thing that attracts attention in most churches is the font; this is mostly decorated at the base with Ferns, Lycopods, and dwarf foliage plants plunged in fresh green Moss, the other ornamentations being some brilliant berried Solanums, white and red Primulas, white and red Tulips, and that most appropriate and fragrant of bulbs, the early Roman Hyacinth. The windows are generally festooned with very small-leaved Ivy, and on the window-sills a bed of fresh green Moss makes a capital groundwork for cut

flowers. The columns or arches are lightly wreathed with long sprays of Ivy, as are also the candelabra, and various devices in variegated Holly and other handsome foliage surround the texts that are placed on the walls. The pulpit and reading-desk are generally prettily decorated with wreaths made of the very finest-leaved Conifers, Box, or Ivy, associated with dried Cape flowers or Everlastings and designs in brilliant Holly berries. At the base plants of dwarf habit are used with good effect, notably Ferns and other fine-foliated plants intermixed with white and red flowering plants. But it is on the altar and reredos that we find the most lavish display of flower, and although some still adhere to formal gilt stands and flower holders with water tubes for the stalks, many have adopted more natural styles of arrangement, consisting of zinc or tin troughs for holding water, in which flowers and foliage and good-sized branches of hardy shrubs or Fern fronds are inserted, the tins being hidden by flakes of fresh green Moss. Bold and striking arrangements consist of Arum Lilies associated with their own foliage, late-flowering Japanese Chrysanthemums, Poinsettias, and Amaryllises. In large decorations in which plants are employed very effectively Palms are most useful, especially tall graceful kinds, such as *Seaforthia elegans* and *Cocos Weddelliana*. Amongst hardy flowers white Christmas Roses might be employed with advantage. In mild seasons and in sheltered localities they are sometimes produced in profusion, and if protected with a handglass, their blooms

may be had untarnished by the weather. If there is one flower better suited than another for church decoration, it is certainly the Christmas Rose (the *Helleborus niger*) and especially that form of it well named *maximus*, and sometimes called the Scotch variety, and *altifolius*. The flowers are produced in twos and threes on stout, erect stems fully 8 inches long; they measure 4 in. across at least when fully expanded and, rising well above the soil, in addition to the natural protection afforded by the autumnal leaves lying on the surface of the ground, the broad dainty cups of lovely whiteness



remain unsullied by even a speck of the closely adjacent soil, though quite unprotected with cloche or handlight. I ought to mention that the flowers do not all expand at one time, but follow each other in rotation. J. G.

FLOWER GARDEN.

SHOW PANSIES.

IN a volume of the *Florists' Magazine*, published in 1835-6, I have come upon a plate of Pansies, representing three very fine varieties in their day, raised by Mr. Thomson, of Iver. It was said of them—the names were Pomona Superba, Comte de Salis, and Desdemona—that they were the finest the season had produced, and doubtless they were. The flowers in that year had become more rounded, stouter in texture, and the colours more pronounced than the blossoms figured in the earlier numbers of the *Floricultural Cabinet*; and it is quite correct to say that Thomson, Mountjoy, and others did wonders with the Pansy in those days. The yearly improvement was striking and rapid, and by the time 1850 was reached, Hale, Turner, Dickson, and others had produced flowers that were regarded by the florists in those days as little less than perfect.

It is said that the Pansy was never cultivated as a florist's flower until it was taken in hand by Mr. Thomson. He was gardener to Lord Gambier, and it is recorded that in 1813 or 1814 his lordship carried to him a few plants of Heartease gathered in the fields near his mansion at Iver. They were the yellow and white, and his lordship requested him to cultivate them. Having done so, Mr. Thomson soon discovered that a great improvement was effected in the flowers, and this led to as many other sorts being collected as could be discovered in the neighbourhood; and he states, "About five years after this commencement I had raised many seedlings from the originals; and one which took Lord Gambier's fancy was named Lady Gambier, and another George IV.; a third was named Ajax. The first good shaped flower was named Thomson's King." At that time the only mark in the eye of the Pansy (now occupied in the case of the fine varieties of the present day by a huge dense dark blotch) was a few dark lines, and the dark eye, which is now one of the chief requisites of a first-rate flower, had never been seen or even contemplated. Now, the show Pansy has almost ceased to be a florist's flower of any great repute in the south in so far as raising new varieties is concerned. The late Mr. Henry Hooper, of Bath, almost, if not quite, up to the time of his death raised many flowers, but he seemed to have crossed the show and fancy varieties, as not a few of the flowers displayed a dual character. Years ago Mr. Turner had to give up their culture at Slough, though for several years the Royal Nursery there was the leading southern home of the Pansy; but in the north the Scotch florists are active in the culture and production of new varieties, and at the great exhibition at Dundee in September last not only were show and fancy Pansies largely produced, but they were surprisingly fine, the show varieties being particularly attractive. The cool, moist districts of the north are favourable to the culture of the more delicate-constituted show Pansy, and the plants do well there, while they wither away in the drier districts of the south; but it is more than probable that if southern florists would take up the culture of the show Pansy in earnest, a greater measure of success would reward their endeavours.

The show Pansies are divided into three main sections, viz.: selfs, white grounds, and yellow grounds. The section of self-coloured flowers is divided into three divisions, viz.: dark selfs yellow selfs, and white selfs, the former being the most numerous. A selection of the best dark selfs gives the following: Andrew Fox, a fine dark glossy flower, stout, smooth, and of good form; Arthur Ormiston, a rich black self of extra fine form and substance; Beacon, dark maroon, extra fine; Garry, rich, dark, very smooth, and

extra fine; John Ormiston, dark, extra fine; Ormsa, a dark glossy flower of excellent quality; and Sunny Park Rival, a rich dark blue self, the very finest of its class. Of yellow selfs, the following deserve a place in any collection: George McMillan, deep yellow, with fine dark blotch; George Murray, a pure yellow self of the finest quality; Gomer, deep yellow, extra fine form and quality; W. Crockett, clear golden yellow, very fine; and William Johnson, a fine new golden self of excellent properties. There are but a select number of white selfs; they are—Janet Anderson, pure white, with fine dark blotch; Mrs. Dobbie, clear white, very smooth and fine; Mrs. Goodall, clear and stout, a good show flower; and Snowflake, one of the very best. The white ground flowers supply a much larger number to select from; here are a dozen of the best: Annie Stewart, dark purple belting, very fine; Bella, white, purple belting; Janet Lees, dark plum belting, extra fine; Juno, pure white, with rich dark purple belting; Miss Barr, white, deep purple margin, finest form; Miss Ross, maroon-purple belting, very fine; Mr. Cowan, pure ground, rich purple belting, extra fine; Mrs. Henderson, light purple margin, very pleasing; Mrs. Proudfoot, white and light purple; Mrs. Ritchie, white, light purple belting; Princess of Wales, pure white and rich maroon, one of the best; and Undine, with very light purple belting, novel and attractive. Yellow grounds also are always a numerous class, and a large, finely-formed, well-marked flower is one of the most charming of spring blossoms. A selection of fifteen varieties of these is made as follows: Ardeas, deep yellow and purple belting; Captain Cowan, deep golden yellow and bronzy purple; Corsair, bright golden yellow and violet-bronze; Ebor, gold and dark bronze; Ella Murray, yellow and dark maroon; George S. Veitch, rich golden and deep purple; James Black, deep yellow and shaded purple; John Henderson, yellow and deep purplish chocolate, novel and fine; John Stewart, yellow and bronzy purple; Master Ord, yellow and dark bronze; Mrs. Harvey, yellow and bronzy purple; Mrs. Scobie, gold and dark purple; Perfection, golden yellow and dark purple; Pilgrimage, gold and mulberry blotch; and William Dickson, pale yellow with light plum belting, extra fine.

At this season of the year show Pansies are planted out in well-prepared beds or in a bed prepared in a cold frame, or they are wintered in pots. If in an open bed, the soil should be stirred when the surface is dry enough, and a top-dressing from the potting bench placed about each plant will be very useful. Any long shoots should be pegged to the soil securely, as the winds are apt to blow them about and break them off. In the case of the plants in a cold frame, they cannot have too much air, except when the weather is very cold and frosty, and the plants should be gone over occasionally so that any mildewed leaves may be removed. Shanking is a kind of disease the Pansy is subject to—that is, plants that appear to be full of health and vigour in the morning will be down before mid-day almost, as if the roots had been severed with a knife. The best thing to do is to remove the plants before they become much withered, place them in cold water for several hours, and make cuttings of what portions can be used for the purpose. In shanking the plant appears to die off close to the soil, and it appears to be caused by a disease inherent in the Pansy. R. D.

DOUBLE DAFFODILS.

IN THE GARDEN (p. 526) my friend Mr. Brockbank speaks of my theory about the doubling of Daffodils. He refers, no doubt, to my belief, that the wild single Daffodil under certain conditions becomes double in cultivation, and, perhaps, repeating statements of facts, and saying that the evidence seems trustworthy, may be called a theory; at the same time I strongly deprecate discussions on the probability of these facts as useless waste of room, and leading to no result. What I ask is that the facts may be corroborated by careful and patient observation. To repeat

the facts very briefly, more than a dozen persons have told me that single wild Daffodils planted in their garden have in two or more years become double. The conditions of soil or climate required for this transformation seem to be by no means general. They do not seem to exist near London. In my garden, in Cheshire, I have tried for ten years to make a double Daffodil out of a single by varieties of soil and manure, but in vain. However, from several parts of Hampshire, from Warwickshire, Northamptonshire, Lancashire, Northumberland, and Denbighshire I am assured that the change has repeatedly been observed, and in all these counties observations are now in progress, the subjects of them being wild bulbs which I have supplied, and I am willing to continue to supply them to any who will conduct the observations carefully. The most paradoxical circumstance about the case is this: I received last spring from several gardens Daffodil flowers said to be the development of wild single-flowered bulbs. These flowers were not only quite double, but varied severally according to the gardens from which they came. Some were the acknowledged and genuine double form of the wild Daffodil; others were what is generally sold as the double "lobularis," intermediate between the last and the large garden Daffodil; others I could not distinguish from the common large double Daffodil of gardens. I ask no one to be satisfied with this second-hand evidence, but if all who are incredulous would try the experiment in their own garden and ask their friends to do the same, perhaps in two or three years some of them may have surprising results to record.

Llandudno.

C. WOLLEY DOD.

CHRYSANTHEMUMS IN THE OPEN AIR.

THAT Chrysanthemums should be grown more extensively than they are there cannot be doubt, but the offering of prizes for outdoor blooms, as suggested by Mr. W. J. Murphy, for further encouragement of their cultivation would be a mistake, as who could distinguish the indoor or artificially treated flowers from those gathered off plants in the open? Though some exhibitors might and would be honest enough to keep to the wording of the schedule, it is to be feared that all would not do so, and the least scrupulous would stand the best chance of winning the prize. Whether Chrysanthemums can be successfully flowered outdoors or not depends on the autumn and how long sharp frosts keep off. The latter often come so early as to blacken the buds, and it is only by getting the plants housed or protected before this happens that they can be made to expand. This year they have been grand everywhere, but then we had such weather just at the time of their blooming as to be almost like summer, which brought them on and induced them to open in a way seldom seen. Although there is this uncertainty about them, I should be glad to see them in quantity in every garden, and though room cannot be spared for them all in summer, that need not shut them out, as they may be grown by being planted out or plunged in pots, and then lifted when the buds are well formed and placed where they are wanted to open. By managing in this way, borders or beds under sunny walls may be furnished and fine groups formed, which, when the plants are coming into bloom and after, may be protected at night with old lights or have canvas or mats run down over them whenever the weather is bad. If the plants are lifted, they should be cut round some time before, and when they are ready for removal it is necessary to pick up damp, dull weather, and if then taken up with good balls and kept well watered at the roots and syringed overhead, they will soon get fresh hold of the soil and start on again without feeling much check. Years ago I used to grow all mine for the houses in the open ground, where they were planted out in May, and I never had better or healthier specimens, as they always kept their foliage right down to the pots. The way we treated them was to plant in hard land, where we dug out a small hole, and when turning them out of the pots put just a

little rotten manure around them mixed up with the soil, and in the autumn we found that their roots did not run far about. S. D.

Gladiolus Ville de Versailles.—This is one of the most lovely and easily grown of winter flowering plants, and when better known will probably be as generally grown as the *Bouvardias*. It was first brought under my notice by Mr. Hartland. Two years ago flowers of it were pronounced by a competent authority to be "exquisite in form and delicate in colour." I would advise all who have not yet tried this *Gladiolus* to do so, especially those who require choice flowers for bouquets and for other decorative purposes.—W. CRANE, *Ballywalter Park, Down*.

Lost species of Gladiolus.—I note a lament as to the disappearance of the many *Gladiolus* species that have been sent home from the Cape and elsewhere during so many years. I may mention that I find between thirty and forty species in Messrs. Roozen's list, which can be had from their agents, Messrs. Mertens and Co., 3, Cross Lane, St. Mary-at-Hill, London. Many of them are of the utmost value for decorative purposes, hardy borders, &c., and now that the bedding craze has been succeeded by a more sensible and catholic spirit in all floral matters, they will be found occupying a high place. In notes on *Alströmarias* in a late number it is said that *A. violacea* is not in cultivation. This is incorrect, as I observe that variety also in Messrs. Roozen's list.—RUBY.

Coreopsis lanceolata.—I was surprised to find that this *Coreopsis* had failed with Mr. Greenfield (p. 527), since it is generally speaking one of those things which do well in most soils, those that are cold and clayey excepted. Seeing that Mr. Greenfield has had it in rich light loam, it is somewhat puzzling to discover the cause of failure. Still it is an indispensable plant, and worth a great deal of painstaking to discover what it requires. May I suggest that Mr. Greenfield and others who have failed with it hitherto try seeds as well as plants, planting the young plants in various places and positions? It would be best to have the seedlings established singly in pots, so that they might receive no check when permanently planted. It is without doubt one of the loveliest and most floriferous of all perennials.—E. JENKINS.

Lithospermum prostratum.—Some complain that this plant does not succeed with them, but it thrives very well on a rockery, if not too high, where all the moisture runs away from the roots. A dry and well-drained position is what it likes. It is a delicate rooter, as I know to my cost, for I lost many plants of it until I confined it almost to a peaty soil, in which there was a fair proportion of sand. In this it succeeds admirably, but I had to make a position for it, as we have no rockery. So I provided one for it, like that in which we grow our *Gentians*, viz., in lines, 1 foot wide, by the sides of the walks. I took out the natural soil about 8 inches deep, in the form of a trench. About half of the trench was then filled up with some rough peat and broken potsherds. We then selected pieces of red sandstone about 2 inches thick and about the size of a man's hand. These were packed in the trench, so as to come rather above the level of the surrounding surface, leaving a space of about 3 inches between the stones. These spaces were then filled up with the peaty soil, and young thriving plants were planted in it about 8 inches apart. Treated in this way, they grew and flowered in the most satisfactory manner. After they had stood one year, they had covered the surface with good growth, and formed a lovely carpet of blue nearly all the summer. Damp is without doubt a greater enemy to this plant than cold; therefore anything which will promote a dry medium, either above or below the ground, will prove beneficial. Next to growing it between the stones, it did best with the surface covered with small pebbles for the growth to rest on. Time and space could not be expended on a more lovely plant than this is. When once

planted it will take care of itself for several years. Our plants of it had been planted five years before some alterations necessitated their removal, and we found them more vigorous than they had been previously.—J. C. C.

CEMETERY EMBELLISHMENT.

A SUBSTANTIAL and neat fence should surround the whole enclosure, and it should be kept in good repair. The gates should be strong, ample, and conveniently situated. Well made roads, wide, of easy grade, and graceful curves should lead as directly as possible to the several sections of the cemetery. Long, straight roads, serpentine wriggles, meaningless curves, steep grades, and round-about ways should be avoided, and no more roads than are necessary should be made. Gravel roads run wild with weeds are a wretched sight; if the roads cannot be kept in good repair and clean, better far allow the land to stay in Grass. Gravel pathways may lead here and there where avenues would be impracticable or unseemly, but have no more of them than can be taken good care of.

SHELTER is as absolutely necessary in a cemetery as in a garden if we would have happy trees or shrubs, pretty flowers, and pleasing effects. The fence alone cannot afford the needed shelter which, if not given by contiguous higher grounds and trees, must be supplied from within. Places unfitted for burial lots and alongside the avenues and fences should be planted with trees for shade and shelter.

GRASS.—No matter how undulating the land may be, its surface should be smooth and even. A smooth surface is easily cared for; an uneven one is managed with difficulty. Always accustomed to the little mounds that designate where burials have been made, it may appear sacrilegious to remove or level them, but that is what cemetery officials recommend, what many lot-owners do, and without doing so it is barely possible to keep the Grass in good order. During hot summers the Grass upon the mounds burns, and the plants set out on them suffer severely; whereas when the surface of the plot is smooth and level, a good Grass lawn may be maintained as easily as in our gardens. Without good soil we cannot reasonably expect good Grass. If the ground is poor, it is only a small matter to the several lot-owners to remove some of the poor soil and replace it with 6 inches or more deep of good loam. Artificial manures are excellent in their way, starting the Grass in spring or re-invigorating it in summer, but the best results are obtained from top-dressings of farmyard manure, or, better still, from farm manure and good loam in equal parts, and which had been composted for several months before being used.

TREES.—Preserve what natural trees there may be upon the grounds, and which do not interfere with burial lots. Rocky places, steep declivities, ravines, and such other parts as are unfitted for burial lots should be devoted to trees. Such deciduous trees as are known to thrive well in the vicinity, as Oaks, Maple, Tulip tree, Beeches and the like should be used in the wooded places. Elms, Lindens, and others often subject to insect ravages should be well considered before planted. Hickory, Walnut, and Chestnut offer inducements to trespass. Handsome flowering trees, as the Almond, Catalpa, Hawthorn, flowering Dogwood, Silver Bell, Magnolia, and *Kœlreuteria*, and those of graceful form like the Birch, can be introduced in the neighbourhood of lots. Deciduous trees are better adapted than Evergreens for exposed places. But where practicable, Evergreens should be used freely. Norway, white and black Spruces, Scotch, Austrian, red and white Pines are among the best of their kind. And red Cedar planted closely has a telling effect. Do not mix up the trees in planting, but group them—Beeches here, Oaks there, and so on. The most favourable places as regards shelter and soil should be assigned to new, rare, and choice trees. Pendulous trees, as Birch, Beech, and Oaks, are graceful and beautiful, but a multiplicity of such

formal types as the Weeping Kilmarnock Willow, *Sophora*, Elm, Mountain Ash, Japanese Cherry, Ash, and the trailing dwarf Cherry "worked" on tall naked stems, should be avoided. Columnar or fastigate forms, as the Irish Juniper, Irish Yew, fastigate Oak, should also be used only in limited numbers. The weeping forms of the Silver Fir and Norway Spruce, among Evergreens, when "worked" low and trimmed to grow upward, and lap after lap of branches droop over each other, as in the case of the Weeping Beech, are graceful and beautiful.

SHRUBS of all beautiful kinds may be used, but rank-growing sorts like Mock Oranges and Lilacs should not be planted in small lots. In large cemeteries masses of shrubs are planted here and there in clumps and belts for gardenesque effect, used as a support to shelter-belts, or as a fringe to groves and wooded knolls. In rural churchyards, however, shrubs are used mostly by the individual lot-owners in their lots. If they are prepared to give strict attention to their plants, they may use almost anything that is hardy; if not, they had better confine themselves to what will get along fairly well with little attention. In the event of a sheltered lot and good soil, I should advise Evergreens; in the case of an exposed situation, deciduous shrubs only. Among Evergreens the best are *Retinospora obtusa*, Weeping Norway Spruce, Weeping Silver Fir, Golden Yew, Japanese Juniper, *Taxus cuspidata*, the finer *Arbor-vitæ*s, as Golden, Siberian, *Vervæne*'s, broad-leaved Hemlock Spruce kept in bush form, Japanese Hemlock, Lawson Cypress, the glaucous variety of red Cedar (kept low by trimming), dwarf Pines, as the Corsican, Mugho, Masson's, dwarf Scotch, Swiss Stone, and Dawson's dwarf white, *Rhododendron Everestianum*, Japanese *Euonymus*, and *Yucca filamentosa*. Many lovely Evergreens, as Nordmann's, Pin-sapo, and Cephalonian Silver Firs, may with care be kept in handsome form, and no larger than a bush, for twenty-five or thirty years. Among deciduous shrubs for lots avoid all having variegated leaves, as the Kerria, Japanese *Diervilla* and *Althæa*, those with insignificant or inconspicuous flowers, as the Barberry, *Amorpha*, and Sea Buckthorn; berried bushes like the Indian Currant, Tartarian Honey-suckle, and Snowberry, or coarse growing shrubs like the Elder or Buckthorn. Use the most beautiful among *Spiræas*, *Diervillas*, and Snowballs, *Deutzias*, double-flowering Almonds, *Xanthoceras sorbifolia*, Chinese Tamarix, Golden Bell, *Daphne*, and the like. Use *Periwinkle* to form belts or mats; Irish Ivy in somewhat shady places to cling to stone or wood; *Euonymus radicans* (evergreen), 3 feet to 6 feet high, to grow against stones or trees; the climbing *Hydrangea* to attach itself to rough surfaces, as the trunks of trees; the Japanese Ivy (*Ampelopsis tricuspidata*) to clothe stone walls or other surfaces with the densest leafy covering of green in summer and crimson in fall, Clematises, Virginian Creeper, *Wistaria*, and the like festooning trees or draping walls, are known to all of us.

HARDY FLOWERS.—Plant Crocuses, Snowdrops, Siberian Squills, and Daffodils among the Grass; get a clump of the single-flowering, fragrant Violet and Lily of the Valley, and let them both run wild together. Clumps of Florentine Iris, white Lilies, and white Plantain Lilies are appropriate and pretty. In the open sunny places have Stonecrop, perennial Pinks (*Dianthus plumarius*, *cæsius*, and the like), Moss Pink (*Phlox subulata*), Rock Cress (*Arabis albidia*), and others of evergreen mat-forming character. These will take care of themselves. From among our garden plants many may be chosen, but I should dislike to see tall Phloxes, Larkspurs, and Hollyhocks, gaudy Oriental Poppies, or other coarse growing subjects. Select plants that are neat, pretty, hardy, and that last a good while in freshness and beauty.

TENDER PLANTS.—We usually crowd into our grave lots most everything in the way of a greenhouse or window plant we possess. *Pelargoniums* love the light; *Fuchsias* and *Begonias* prefer a little shade, and so on; it is more a question of situation than variety. While

with Drummond Phlox, Mignonette, Sweet Alysium, and Petunias we may make a showy mass, we should guard against confusion and coarseness. Zinnias, French Marigolds, annual Chrysanthemums, and the like, even Petunias, though showy, are very rank and coarse. In some cemeteries a special effort is made in flower-garden display. Some plots are specially reserved for flower gardening alone, and the beds and borders are planted in the most elaborate style. Some people object to these gay gardens in cemeteries, but I do not. The public demands them, and the public shall have them. Spring Grove Cemetery may be possible in every city, but it is not at all probable; were it so, I should favour it. It was my dear lamented friend, the late Adolphe Strausch, who made and kept Spring Grove what it is; but there is not a Strausch in every city. But considering the spacious dimensions, the hill and dale, the wood and water, and the resources in the way of plants, help and the like, of our large cemeteries, I should certainly advise a modification of the present system of garbure. We want charming landscape effects, intelligent grouping of trees, shrubs, and lesser plants, the colonisation of our showiest hardy plants where they shall seem happy and at home, and appear to the best advantage. We want variety, and at the same time harmony—something fresh at every step and without recurrence—a pleasant bit of colour here and there, without that perpetual dotting on every hand, so objectionable to good taste. We want to make the wildest places the most enchanting, and yet not rob them of their wildness. We want the mill hand and the foundry worker to pause in admiration before a Cedar draped with blue Wistaria, and carpeted about with Star-flowers, Trilliums, Spring Beauty, and Poet's Narcissus, or other of a hundred combinations equally beautiful and practical. We have hundreds upon hundreds of lovely plots, native and exotic, that will contribute nobly, sweetly, appropriately to the embellishment of our cemeteries, if the Pelargonium gardener will deign to recognise them.—W. FALCONER, in *Country Gentleman*.

CHRYSANTHEMUMS AND CATALOGUES.

BEFORE the last of the Chrysanthemums are cut down it is interesting to look over the numerous catalogues now issued by enterprising firms or energetic societies in order to compare their notes with our own, correct mistakes where possible, and glean some knowledge for the coming year. When comparison between the catalogues of some years past and those of the present season is made, it will soon be seen that there is much improvement generally in the arrangement of the differing races of Chrysanthemums. One innovation introduced by the National Chrysanthemum Society is specially worthy of mark, inasmuch as the magic letters A B C are prefixed to different varieties as indications of their various excellences—A, meaning a good decorative variety; B, a suitable subject for training; and C, good as a cut flower.

This is just what the amateur needs to guide him when in difficulties as to his choice, for certainly his preferences will incline to one at least of the three classes; it is, however, rather sad to see how quickly in this way the A B C of Chrysanthemum culture is attained, so few varieties being able to hold their own at all points. On looking through the list one observes so many varieties are left unmarked, that the thought occurs, "perhaps the idea suggested by this system of lettering has not been fully carried out," because if a variety is considered good enough to earn a place in such a standard catalogue, surely it must have one really good point. To the amateur whose lot is cast far from the busy haunts of men and the glamour of the exhibition table it is specially interesting to know the most decorative and free-blooming varieties; few, indeed, must they be if judged by this catalogue, save in the old-fashioned incurved and pompon varieties; and yet surely, as a class, the Japanese varieties are of all the most decorative and should be foremost in Class

A? With regard to Class B, not much need be said, as many will agree that a tightly-bound-down globe of green, dotted over evenly with still stiffer globes of flower, is a sight for pity rather than praise.

True it is that many varieties are unable to hold up their flowers as we should wish them to do and are lanky in habit, but is it not just as true that the result is so ugly, that if judges would give the preference to those varieties that make good specimens, full of flower and free from stakes, would not a happier effect be the result? Such heavy-headed or lanky varieties might still show their true beauty either among the cut flowers or as component parts of a decorative group, where tall and dwarf sorts might each find a place.

Class C must be an attraction to all, for who is there that does not like a fine solid bloom that will last for weeks, either cut or on the plant, and that will, if cut, serve as a centre and *point d'appui* to those of a light and feathery growth?

When we collect the few that combine in themselves this A B C of Chrysanthemum culture, it is evident at a glance that the sympathies of exhibitors are so conservative as to give the preponderance to the incurved varieties as against the Japanese, recurved, or pompons. It is cheering, however, to observe that the charming and neat-habited Japanese variety *La Nympe* is admitted into the select circle; but perplexing to an outsider that old favourites, like *Julie Lagravère* or *Felicity*, should have been refused all entrance.

Since the society that has now assumed the grand title of National should by all means strengthen its title to such a name, I would suggest that it should submit its spelling of French names to some competent authority, such as is in London easily attainable. Thus it will become an authority to which many a perplexed gardener will gladly refer, and being in print he will the more readily yield to the authority. I speak the more feelingly, for being myself sensitive on the subject, and remonstrating over some mis-spell that jarred like a wrong note in music, how often have I been told, "Well, sir, it's in print, and so it must be right," a conclusion to which I could not agree.

It is always an invidious thing to single out errors in any list, but there is such unanimity in some mistakes, it can but do someone good to rectify a few or enquire how they have arisen. Who, I wonder, first dubbed that handsome new Japanese variety *Fabiaz de Maderanaz*, when the original *Fabien* (Anglice, *Fabian*) is so much prettier as well as easier? or what prompts the constant perversion of vowels in such names as *Hermoine*, *Melaine*, or *Niege*, that in their native spelling of *Hermione*, *Mélanie*, and *Neige* become at once intelligible and pretty? *Joan of Arc* is too often rendered masculine as "*Jean*" instead of *Jeanne* (why not adopt the English in this instance), and *La Frisure* is generally given a second and superfluous "s" to enhance its frizzlewig. I can only suppose. Charles Huber, well known in the south of France for the many good flowers he has raised, is hardly to be recognised as Charles Hubert, so much difference can one letter make! One new variety appears as "*Poison d'Or*," when it is evident *Toison d'Or* (*Golden Fleece*) is meant. Last and most curious of all, where, in the name of fortune, was the fair *Thais* of classic ill-fame canonised? for she now appears in many a catalogue as *St. Thais*!

But let us return to our flowers, always so much more charming than mere names, and see what new faces greet us, for there is much to delight the Chrysanthemum grower. Hitherto the great want in the gardens of the northern half of the kingdom has been caused by the dearth of flowers in October before the Chrysanthemums are open. It is no exaggeration to say that under glass at least, it is the dulllest and most flowerless time of the year, when it is most difficult to keep a conservatory really gay, and in case of a sudden storm or first autumn frost, how difficult to get a good supply of cut flowers. Here is a blank that has been well filled by the white *Mdme. C. Desgrange*, already a favourite everywhere, and, in addition, now come *Pynaert Van Geert* and *L'Or*

du Rhio, both brave in gold and orange; the latter of the finest and most decorative habit, useful both out of doors and for pot culture. Another novelty with still larger flowers and most free-blooming habit is *Margot*, which deservedly won a first-class certificate this year at South Kensington. Its bright pink petals with lemon reverse are most taking, and being very early as well as extra large and an abundant bloomer, it will soon be found in every garden. Gardeners must often notice how much longer some sorts last than others, and *Margot* lasts almost to the end of the season, while *Pynaert Van Geert* fades as quickly. *Lady Selborne* comes next in order of earliness, and its pure white petals curling tightly over each other are earlier and prettier than those of *James Salter*, from which it sported. These are all great gains, coming in, as they do, before any of the older large-flowered varieties, and even before the yellow *Aigle d'Or* that used to be the harbinger of the Chrysanthemum season. *Simon Délaux* is highly spoken of as a good and early red-brown, a colour much needed, but if the specimens I have seen are true to name, it will not compare with *Mons. Moussillac*, a red and gold variety of great beauty and earliness. Of small-flowered varieties, surely *Sœur Mélanie* and the dwarf little *Petite Marie* are the two most desirable, and, if report be true, in *Lyon* we gain a good purple, thus completing our chord of colour.

There are already so many good mid-season Chrysanthemums of all types, that it would be superfluous to mention any additions, rather suggest that in this instance it is well to wait until we see something that takes the fancy, but for one old favourite I would plead, as in catalogues at least it hardly receives justice, and that is *Virgin Queen*, the purest of all incurved whites, and one that an amateur can grow as easily as *Mrs. Rundle*, of less clear complexion. Where there is a light and airy house that can be spared for late Chrysanthemums, there are now a good many new or modern kinds that should be grown to carry on the season of this flower till well on into the new year, but then of course, late kinds require more attention than the earlier ones that open when there is more sunshine. *Marguerite Marrouch* is an exceedingly fine red and gold late Japanese variety, large in flower and brilliant in colour; indeed, a very striking flower; but the habit of growth is weak, and it requires good feeding. A late white variety named *Mdme. Page* (but which I see in none of the big catalogues) is a good late white Japanese and quite distinct, not like *Ethel*, inclined to show a black eye on the first opportunity. *Meg Merrilies* is well known as a useful late kind, and *Piuccess of Teck* or *Christmas Number* is the most useful of incurved late sorts, dwarf in habit and free in flower. To those who have never grown *Fulton*, a pure gold-coloured Japanese variety that lasts occasionally into February, I would suggest their doing so, for no forced bulb can give so rich a colour at Christmas, and if it has light enough, its flowers will open in the coldest house far better than more tender sorts. *Nuit d'Automne* is a good purple for late work and *Mons. Baeo* is the best dwarfed variety that will stand a very low temperature to keep it back as late as possible. Evidently descended from *Tokio*, which for long graced the front row on the stage, *Mons. Baeo* has the happy gift of flowering to the very pot's edge where light and space allow. Out of the many new French varieties up to this time in nurserymen's hands, let us hope there may be some additions to this section, for many fine kinds if kept out late, and then placed in a cold north house to retard them as much as possible, do not flower at all, or only prove the ghost of what they might be. To have plenty of Chrysanthemums at Christmas would be a boon to all.

EDWARD H. WOODALL.

Vitality of seeds not buried.—I was much interested in reading Mr. Moore's account of the vitality of buried seeds (*Vol. XXVI.*, p. 520), but I have by me four garden Peas, the produce of a Pea found in an Egyptian vase 2850 years old. These four Peas were given me about the

year 1830, when I was artist for the Royal Botanic Garden, Kew. I left Kew in 1839, and became gardener to the Earl of Powis, at Walcot, and the small envelope containing the four Peas was lost sight of until my removal from Walcot last August. The Peas appear to be quite sound, and I hope to sow them in the spring, after having had them in my possession fifty-four years. If they vegetate I will report the fact.—GEORGE BOND, *Lydbury, North Shropshire.*

COMMENTS ON GARDEN TOPICS.

Planting Narcissi.—"J. C. B.'s" note on this subject suggests the reflection that circumstances alter cases. According to the authorities who take care of the Daffodil question in the gardening papers, the ripe bulbs may lie a long while out of the ground and be nothing the worse, but the better of it, and it follows that planting bulbs that have been lifted and stored for a time and others fresh from one plot of ground to another are two different things. In the latter case the best plan is no doubt to plant before fresh roots begin to form, because if planting is delayed beyond that time the roots formed may be injured or destroyed in removal. With bulbs taken up, however, when ripe, and before they have begun to root, and kept dry and cool in the store-room, it is different, because in these root action is arrested, and there can be no injury to the roots by late planting in the way indicated, so that unless some other reason be given, it is not urgent that properly ripened and dried-off bulbs, such as we buy at the shop, be planted so early as August or September, and that there exists no other reason I think may be proved from experience. For example, I, like many other gardeners, get my Dutch bulbs for pot culture as early in the autumn as possible, which is about the beginning of September, and one-half of them are potted at once for early work, and the other half are not potted till December, to which date they can be kept sound and plump without rooting in the bags among the chaff in which they come. Now the only difference in the flowers of the two batches is that those of the late potted batch are always the best by a good bit, but that I attribute to the more advanced season of the year being in their favour as much as anything else. The stock consists of Hyacinths, Tulips, Daffodils, &c. Whether such subjects as Daffodils would do better if they were never out of the ground seems to be still an open question; but the theory of injury to the roots by late planting cannot apply in cases where no roots exist to suffer, nor do I see how the bulb can deteriorate much, if any, by the compulsory rest of a few weeks.

Horizontally trained Vines.—An article appeared in THE GARDEN lately condemning the horizontal training of Vines "because there is considerable danger of breaking off the young lateral growths when getting them down into their places," the writer of this passage being in the practice, it appears, of training the shoots downwards under the rods as well as above them, a thing rarely done and never at any time necessary, and hence a frivolous objection to a system of training that has many advantages. I have always advocated horizontal training as being as applicable to Vines as to other fruit trees, and of the benefits of the plan in the case of Pears and Apples there is no question. In our vineries as at present constructed horizontal training is not, however, convenient. The readiest plan is to run the rods straight up under the roof, but rods that are trained the contrary way—that is, across the rafters horizontally—always break most regularly whether young or old, and are always more equally vigorous along their whole lengths. In a house here where the tops of the Vines have been many years horizontally trained, both wood and fruit are always best ripened compared with that on the same Vines where the rods are perpendicular, and the difference is so striking, that everyone notices it. If I remember correctly, the old Vine at Hampton Court is trained in its main limbs horizontally, the bearing shoots being led off at right angles

to these, and it appeared to me to be a Vine of remarkably even vigour. There is no reason at all to train laterals downwards from horizontal limbs; all should be trained candelabra fashion, and if the main limbs are laid in at proper distances, not an inch of space need be lost. By the horizontal method the Vine growers about Thomery cover the fronts of all their cottages and buildings; it is the only plan by which they could do so, as it enables them to fill up spaces above doors and between and over windows and the like in the most methodical manner. In vineries, however, it is the even degree of vigour and fertility which the method insures that are its main advantages.

Double-rooted Vines.—"J. C. C." condemns these as being no better than single-rooted Vines, and I quite agree with him; but in justice to those who first made the experiment, I think they have never said they were or advocated double roots on that plea. The double rooting experiment is interesting physiologically, and is useful as showing us what an accommodating subject the Vine is and as proving what physiologists have long since told us that it matters little which end of a cutting you put into the soil, or end of a tree either for that part of it, provided you get roots to it before parting with those it already possesses.

Garden plans.—One of your contemporaries appears to be an industrious collector of examples of the topiary art in garden design, judging by its illustrations, with what object is a puzzle to many of its readers, who fail to make out whether the said illustrations are intended as examples of what to avoid or imitate. Some late examples furnished we do not suppose any landscape gardener could now be found who would dare to suggest them, but they are reproduced with great fidelity and at no little expense by your contemporary. If the object was to bring such designs into ridicule, one could understand it, but if that be the object, the satire is too deep and subtle for ordinary comprehension, and readers are driven to the conclusion that the paper in question means going in for the "revival business" in that line in the future.

Horticultural teaching.—One of the youngest penny gardening papers, rather addicted to the serious vein, furnished its readers lately with some remarkable information regarding the earth and its productions and conditions. Among other things, the earth at the present time is described as suffering from a "vacuum of moisture," which, it should be noted, is the first vacuum of that nature ever recorded, and will probably be noted by the British Association at its next meeting. When one reads in the same leaderette that "a hard Christmas time, a low temperature, intense frost, and bitter cold would create ice," the suspicion is irresistible that there may, however, be vacuum somewhere. We have good hope of some of the penny weeklies which are crammed with useful matter, but we have rarely read anything so "thin" as the editorial pages of one of them lately.

Hardy Lettuces.—The name of our garden Lettuces is legion, and new ones are being constantly added to the list, but no raiser gives us a Lettuce as hardy as the old Green Hammersmith with a better heart, and that is what we want. The Hammersmith is one of the oldest varieties in cultivation, and it may be described as perfectly hardy, because in the young state it stands our severest winters if sown at the right time. When fully hearted it does not endure alternate frosts and thaws so well, which cause the heart to rot, but there is no other sort which can approach it for hardiness at any stage except the Brown Cos, and it is only half hardy. The fault of the Hammersmith is that it is small and soon runs to seed, but it might be improved in that respect, and the wonder is that raisers make so little use of it in the production of new sorts. Tennis Ball is a nice little compact-hearted Lettuce, superior in that respect to the Hammersmith, which it resembles very much, but it goes to pulp with the first frosts.

There are plenty of good Lettuces, far more than any gardener wants or grows, but a good hardy sort would be a boon.

Exhibition Potatoes.—It is perfectly true that those who give and receive prizes for Potatoes, and who institute "Potato tournaments" and all that sort of thing, have hardly any practical connection with Potato culture or the Potato trade. Ostensibly their object is to improve the Potato; practically they do nothing of the kind, but exist for their own selfish ends and hobbies. Potato "fanciers" have no more connection with the great body of Potato growers than the old florist of the rigid type had with the grower of garden flowers generally, who did not know anything about "points" and other foibles. The Potato shows are amongst the biggest farces in existence. Lately a few of the useful varieties have been introduced into exhibition collections for the sake of appearance, but that is all. They cannot be depended on to pass muster before a "competent Potato judge" unless backed up strongly by "exhibition sorts," a term in itself which denotes the purpose of their culture. Potato exhibitors buy and sell among themselves just like the Auricula and other exhibitors. They do not even eat their own prize varieties, but feed their pigs with them; it is asserted, and we believe with truth. Nor do they grow them to sell for general consumption for the good of the people, because many of the most beautiful exhibition sorts are unfit to put on the dinner table. They have an abstract value only, and if they were destroyed to-morrow, dealers and cooks would never miss them. Nor will it do to argue that growers do not appreciate the best sorts; they do; and a real good new Potato is hardly out before they possess themselves of it, but the market lists in any week show that there the exhibition Potato is unknown. What good, therefore, Potato exhibitions are doing or have done to improve our stock of Potatoes for the table has got to be shown. To grow year after year simply to exhibit varieties of Potatoes that serve no other end is the very prostitution of garden practice in its worst form.

Apples and geology.—I see the Apple report has tempted some of our friends to exhaust their store of "text-book" geology on the pretence of somehow connecting the science of geology with "British Apples," but apparently without much result. That Apple trees have a connection with geology, in so far as they grow in the ground, goes without saying, but if the Apple Congress and shows at London and Manchester made one fact clearer than another, it was that, provided the trees were properly cultivated and had a fair climate, the underlying "local beds and formations" were not of the least consequence one way or the other; hence the uselessness of attempting to make so much of that aspect of the subject and complicating it more than need be. Our learned geologist appears to have looked quite over those facts that lie nearest to his observation. It has been ascertained, beyond all doubt, that the Apple will thrive on almost every "formation" in England, provided the surface soil is made suitable, the culture right, and the kinds well chosen. Anyone doubting this has but to keep his eyes open as he goes about, but he will find the proof of it in the Apple Report itself if he will compare the descriptions of quality, &c., there given from many different soils and formations. Good, bad, and indifferent samples appear to have come from all sorts of soils and formations with little to choose between any of them, except between such as were poor and rich, or dry and wet, conditions depending entirely on culture and other circumstances within man's control. J. S. W.

M. Corrsvon's book on alpine flowers.—Thanks for the notice of my book on alpine flowers, and permit me to reply in a few words to some of the questions raised in regard to it. Do not forget that the book has been written for Switzerland, where we live in climatic conditions very different from yours, where the air is very dry that for us the Alpes Maritimes are often Alpes

Occidentales (this is with respect to *Saxifraga lantoscana*), &c. As for the localities of the Eastern Alps, which you correct, allow me to say that I have never travelled over them, and referred, as I have related at the commencement of the chapter, to the "Atlas of Alpine Flora," which is published in those countries. It is from the book of Dalla Torre that I have gathered my information. I think that *Saxifraga Hosti* (Tausch.) and *S. rhætica* (Kern.) are the same thing, but I cannot admit that *S. elatior* is not different. In culture it is different. *S. Hosti* (*rhætica*) occurs in Eastern Switzerland (canton Grisons). It is possible that in England your climatic conditions permit you to change the chemical nature of the soil, and enable you to use other kinds of soils, but that is here more difficult (this refers to *Androsaces*). This I know from experience. *Polygala Chamæbuxus* succeeds very rarely with us. How is it, then, that you mention it as a species whose culture is easy? That is absolutely not the case in Switzerland.—H. CORREVOY.

RECENT PLANT PORTRAITS.

CEREUS ENGELMANNI and **SOLANUM LYCOPERSICUM** VAR. **RE UMBERTO** (Regel's "Gartenflora," plate 1174).—The first named of the above is an extremely handsome and most fiercely thorny Cactus, with large and very showy flowers of a deep vinous red, somewhat resembling those of a semi-double *Dahlia*, as it has several rows of petals, which is unusual in flowers of this family. Of the second named plant, only the handsome fruit is given, which most resembles a deep orange-coloured hen-egg of the largest size.

OSTEOCARPUS RASTRATUS and **TULIPA BORSCZOWI** (Regel's "Gartenflora," plate 1175).—The first named of the above is a small and slender-habited member of the family of *Solanaceæ*, which is a native of Chili, and produces bright blue *Convolvulus*-like flowers with apparent freedom all up its stem. The second named is a small *Tulip* introduced by Dr. Regel, and producing medium-sized flowers, which are of a deep orange-red colour, with a most distinctly marked, oviform black spot on the inside of the base of each petal.

ALOCASIA GUTTATA VAR. **IMPERIALIS** (*Illustration Horticole*, plate 541).—A fine double plate of this handsome foliaged plant, which is a native of Borneo, whence it was introduced by Messrs. Linden, of Ghent. Its leaves are of the deepest shade of olive-green above and of a rich vinous shade of red underneath.

THRINAX GRAMINIFOLIA (*Illustration Horticole*, plate 542).—An exceedingly beautiful and most graceful Palm of slender habit of growth, requiring the temperature of a moist stove for its successful cultivation in this country.

SAGITTARIA MONTEVIDENSIS (*Illustration Horticole*, plate 543).—A beautiful portrait of this most lovely stove aquatic, which was fully described in THE GARDEN when figured in the *Botanical Magazine*, and which has since been almost continuously in flower planted out in the old Victoria Regia house at Kew. W. E. G.

Poinsettias in the open air.—I am glad to see attention directed to this way of growing *Poinsettias*, as I have seen it practised with the best results, the plants being in every way superior to those kept under glass, where, unless well managed, we generally see them drawn and leggy, and often leafless below; but in the open they are always the reverse of this, as they remain firm in the stem and are dwarfer and stocky, with foliage down to the pots. Some years ago I was shown hundreds of them in 4½-inch pots at Bushey Grove, in Herts, where they were standing on a hard bottom in front of some pits, and none of them I should think were more than 12 inches high, but their strength showed what the heads might be expected to be. Cultivators for market produce them in the same dwarf style, and no doubt their system of management is similar; anyhow they are always well grown. Planting them out may be all very well to save labour in watering, but the lifting of them in the

autumn must cause a check, and it is a question if they are as satisfactory as those established, which, from not being disturbed, ought to produce finer bracts. Instead of planting out, would it not be better to plunge the pots in Cocoa-nut fibre, half rotten leaves, or other non-conductive material to shelter them from the sun? as then they would have all the advantages without being subjected to risk at the lifting, which Mr. Carlton says must be done with care, and shading has to be attended to, or the plants lose their leaves.—S. D.

KITCHEN GARDEN.

RUNNER BEANS IN TRENCHES.

THE merits of these are so well known, that I have no need to insist upon them; they are held in universal esteem, but I am inclined to think that they often fail to get all the cultural care they need. There are several points connected with their culture which, if attended to, will largely increase their productiveness. In the first place, I would direct the attention of those of your readers who have light, porous soils to deal with to the advantages derivable from growing runners in trenches. After they have escaped the perils of frost in late spring runners have but one great enemy to contend with, viz., drought, and in light soils, unless some means are taken to ensure moisture at the roots when they come into bearing, the crop in dry seasons is likely to be a light one. Thoroughly breaking the ground and mulching constitute one way of avoiding the evil consequences of a parching summer; but there is no way so good as taking out trenches 15 inches deep and putting in a good layer of manure at the bottom and filling up with the soil to within a couple of inches or so of the surface. Everyone who has had anything to do with light soils knows how difficult it is to make them thoroughly moist when once they have become quite dry to the depth of some inches; the watering of soils which approach sand in character when in such a condition is like pouring water on a duck's back—scarcely any goes where it ought to; but pouring it into a shallow trench, to which by reason of the presence of an enticing amount of nourishment the roots almost entirely confine themselves, is quite another affair. Enough being given to moisten the amount of soil therein, that soil is perforce wetted through, the roots get it all, time, labour, and material are economised, and the plants pass triumphantly through trying ordeals which must otherwise seriously impair their fertility. Manure is, of course, the best thing to use, but when scarce any organic partially decomposed matter will do. Straw, lawn sweepings, weeds, and such miscellaneous matter as forms the rubbish heap in gardens will answer well, and if as much can be used as will leave only some 4 inches of soil for sowing in so much the better. In this way the welfare of the crop will be better assured and the soil will be permanently enriched and broken. The time of sowing is naturally in a measure regulated by the nature of the soil, but in any case I see but little good in putting the seeds in before the middle of May, for if the plants appear before the end of the first week in June they are very liable to get frosted, and then you are later than if sowing had been deferred until this danger was no longer to be feared.

PROTECTION.—This of course may be resorted to for an early sowing, but gardeners in a general way have enough to do at that time of year without protecting Runner Beans from frost. All know how important is the successional sowing of Peas, and it therefore seems strange that so many should consider one sowing of Runner Beans enough, but as a fact there are more gardens where only one lot of seed is set than where a second sowing is made. The advantage of sowing again the latter end of June is that the secondary crop just escapes the most trying weather before coming into full bearing, and therefore experiences the greatest straits when the plants get the help of cooler nights and occasional refreshing rains. Sometimes the first crop is a partial or may be an almost complete

failure; then how gladly does the grower see another lot bursting into bloom. Moreover, how tender and juicy are these autumnal Beans, in a general way another vegetable than those perfected under the cloudless sky and moistureless nights of July and August. In a kind autumn and mild early winter we get plenty of good Beans from these late sowings until the days are approaching their shortest, and I have even known the time when in Surrey Runner Beans freshly gathered formed one of the vegetables on Christmas Day. But such winters are like the rosarian's perfect spring—only one or two of them are seen in a lifetime; and if we get Runners from August to the latter end of October, we may be thankful, and rest under the pleasing consciousness of having made the most of a wholesome and delicious vegetable. Because Runners naturally make many feet of bine in one season it has been the general practice to allow them to develop as much as practicable, thus seemingly, by following Nature, encouraging a maximum productiveness. Bean sticks 10 feet high with the Beans at the top and none at the bottom is the rule with many. But why climb up a ladder to gather Beans when we can do so with our feet on solid ground? and if we top the plants 5 feet from the soil we make Bean gathering easy work. It is all very well to say you do not get a profitable crop this way; but how about the market growers, about whose cultural method I shall have more to say further on, and who convert Runners into bush Beans by reason of persistently refusing to allow them to run from the time they first show the will so to do?

STAKING.—Runners require firm support, and a good way to give them this is to put in the sticks when the seeds are sown. Rake the ground level, stretch the line, mark it down on the soil, and then cut on it with the spade, taking out a spit at a time and inserting the stakes as you go on, pressing them against the firm side of the trench. This way of staking materially increases the stability of the Beans, as there is no need to point the sticks, and they consequently are more firmly fixed in the soil. Then sow the seeds and the job is complete, and the Beans when they come up find the supports in readiness for them, and, what is perhaps of some little importance, they get a slight shelter from the time they come through the soil; indeed, if sown earlier than here advised some branches of Evergreens stuck in on the north or east side would do much to keep them from harm, and would certainly favour their development.

ANOTHER DETAIL connected with the desire to secure an average yield is the sowing of the red, white, and Painted Lady varieties indiscriminately and in about equal proportions, as it is found that seasons more or less favour or otherwise the development of the three kinds in a disproportionate manner, and to the extent at times that one of them scarcely grows, whilst the others thrive fairly well. Very attractive indeed with a kind of cheerful picturesque beauty are these Bean fields when in full bloom, the pure white and scarlet flowers thrown out into bold relief by the rich green of the foliage. A large Bean field showing perfection of development, when the first gatherings, as is often the case, realise 16s. per bushel, is a sight to gladden the heart of the grower for market. A moist summer, by increasing the amount of all kinds of green crops, reduces the value of Runners, and a parching July sends up the prices to a height which renders them a prohibited luxury to the poor in towns. A large grower here gathered in one week last August over 160 bushels, and not one was sold for less than 10s. This was a good hit, and would bring up the average to a good figure. By September, when Runner Beans are no longer favoured by the rich, they drop to 3s. per bushel, a price which puts them within reach of all. The market growers here sow about 3 feet apart, which allows of running the horse-hoe between them. As soon as they begin to grow they are frequently gone over and topped, so that they never become more than 2 feet high. J. C.

THE MOST PROFITABLE PEAS.

It is surprising to note how soon the rage for large-podded Peas has subsided. For exhibition purposes a few such sorts are still in the ascendant, but even exhibitors are beginning to find that judges do not now invariably decide in favour of large-podded sorts, and for my part I wish they would still further discourage the production of coarse vegetables. Not that the large-podded sorts do not, as a rule, fill well; on the contrary, such popular varieties as Telegraph, Telephone, Stratagem, and Culverwell's Giant Marrow rarely fail in this respect; but I hold they are less profitable than other sorts I shall name. When Stratagem and Pride of the Market were first sent out, I, in common with a few other writers, hastily expressed an opinion that they would inevitably become most popular with market growers, but a friend, who is both a grower and a market salesman, soon convinced me that I was wrong. He said buyers in the markets "wanted Peas, not pods," and the pods of all the above-mentioned sorts were much too thick to please him. Neither do these thick-podded sorts please the cooks at the town house. The thinner the pods and the closer they are filled the greater will be the quantity of Peas produced by a given number of pods. Thick-podded sorts, then, are neither good for the market nor for hamper carriage. I admit that Telegraph, Telephone, Stratagem, and Pride of the Market are all good second early sorts, but to grow them, except, as I have said, for exhibition purposes, would be a mistake. Those who prefer tall and sweet Peas should grow Telephone, Telegraph differing only in being greener and less sweet. Stratagem is a sturdy branching form of Telephone, and Pride of the Market is a dwarf Telegraph. Of these, again, only one is wanted by those who either prefer dwarf sorts or are unable to procure tall stakes. All are good for the second early sowings only; at any rate they cannot be depended upon in hot weather. Culverwell's Giant Marrow is a tall growing mid-season variety, branches well, is a good cropper, and the extra fine pods seldom fail to fill well. It is, however, very thick podded, is much liable to mildew, and on the whole not so valuable as we were at one time inclined to think it; at any rate I have done with it. The Baron was to have caused a sensation, but unfortunately the pods refused to fill, being veritable "wind bags," and the variety will soon be forgotten. Evolution, by the same raiser, is of a very different stamp and is a very promising sort, especially for exhibition purposes. It is a main crop variety, of medium height, very branching, and prolific, and the long handsome pods are generally well filled with Green Peas, though these are not so sweet as I should like them. I can also speak favourably of the large-podded Reading Giant. With us it attains a height of from 5 feet to 6 feet, is branching and sturdy, and produces a fairly heavy crop of broad, green, well-filled pods. It evidently owes some part of its parentage to Ne Plus Ultra, and, like that good old favourite, is good for main and late crops and does not mildew badly. There are several

LONG NARROW-PODDED SORTS that I am inclined to strongly recommend, and none more so than Wordsley Wonder. This was grown here for the first time during the past season, and proved one of the best novelties of the year. It is second early, grows to about 30 inches in height, and yields a remarkably heavy crop of long, narrow pods, closely packed with very sweet white Marrow Peas. Owners of small gardens especially should endeavour to procure this useful variety. Gladiator, another comparatively new sort, is good for main crops. With us it grew from 3 feet to 4 feet in height, branched moderately well, and produced a very heavy crop of long, curved, and well-filled pods, but the Peas are scarcely sweet enough to please me. Magnet apparently possesses a weakly constitution and refuses to do well here. Sturdy, again, proved most profitable, and is one of the few sorts that really answers to the description given of them by the vendors. It is rightly named Sturdy, and is one of the best main

and late crop sorts in cultivation. It attains a height of 3 feet, is very branching and prolific, and the moderate-sized pods are closely packed with large green and sweet Peas. This, again, is another good sort for small gardens. Marvel is now well known, and where it does well is a great favourite, but on our heavy soil it fails, and Dr. McLean also only does indifferently well. Both are suitable for light and medium soils, the preference being given to Marvel, the long, narrow pods of which yield surprisingly well, and the Peas are very sweet. Dr. McLean is one of the best sorts for field culture, and rarely fails to sell readily. John Bull is a complete failure, no variety that I am acquainted with possessing such a weakly constitution. Latest of All is undoubtedly a useful addition to our list of varieties, and is strongly recommended by me for main and late crops. With us it attains a height of about 4 feet, is fairly branching, very prolific, and the pods are well filled with green, sweet Peas. It proves fairly mildew-resisting. To make these remarks complete I may perhaps be allowed to briefly sum up the merits of a few

OTHER SORTS OF PEAS. For sowing in frames under walls and on warm borders the dwarf American Wonder is invaluable. Unfortunately, it spoils the palate for the round-seeded sorts, which have still to be grown for the principal early crops. Of these Veitch's Extra Early is one of the best, though Earliest of All is quite as early, only not so robust. William I. follows them closely, and will not easily be supplanted by any novelty. The earliest wrinkled Marrow of real service is Day's Sunrise, and this maintains the supply till one of the Telegraph family is fit for use. Both Huntingdonian and Criterion form admirable successions to the last mentioned, and both are worthy of culture where tall sorts are favoured. The former is an early form of the old Champion of England, while Criterion, which seldom attains a height of 6 feet, may be correctly described as an early form of Ne Plus Ultra, and no stronger recommendation is needed. G. F. Wilson is in the way of Veitch's Perfection, but is earlier and the Peas are larger, the quality being very good. Walker's Perpetual Bearer also resembles Veitch's Perfection, but is more branching, and is in every respect a most desirable late sort. Ne Plus Ultra is an invaluable tall late sort, and the good old British Queen, also very tall growing, is still worthy of a place where tall stakes are procurable. Emperor of the Marrows was to supersede the latter, but I fail to see where it proves superior to it. W. I. M.

FORCING RHUBARB.

RHUBARB is easily forced; it only needs a temperature ranging from 55° to 60°, and nothing can be more acceptable for making tarts and for similar purposes. The stools when dug up may be placed underneath the stage of a stove or that of a warm greenhouse, and covered with ordinary garden soil, keeping them well watered to make the young leaves crisp and tender. If found to be more convenient, the stools may be placed in pots or boxes, when they can be moved from one place to another as may be desirable. When filled the pots or boxes may be set in a vinery or Peach house, and when forcing commences the Rhubarb plants will soon show signs of growth; they will then need frequent watering in order to keep the soil moist, for if watering is neglected the stalks will be tough and stringy instead of solid and crisp. If space can be spared in a Mushroom house for Rhubarb, that will be found to be one of the best structures in which to grow it. If it should be desirable to get the crop quickly after being placed in the house, put a few barrow-loads of hot stable manure and leaves under the roots, so as to form a hotbed about 2 feet in depth. On this place a layer of soil 6 inches in thickness, and pack the roots of Rhubarb closely together upon that, covering them with fine soil and finishing off nearly level with the crowns of the plants. For succession crops the roots may be laid upon the floor of the house, covering them over in the

usual way. In order to keep up a constant supply from December till the out-door crops come in a few stools should be put in the house to force about every third or fourth week, i.e., if a large supply is requisite. Those who have not the advantage of a Mushroom house or hothouses may be able to get a few dishes earlier than they would be able to do out-of-doors by placing a few stools in a dark cellar, watering them with tepid water as often as may be required. Even if a few stools in pots or boxes are placed in an empty stall in a stable the crop will be ready for use a long time before it comes in out-of-doors, especially if there are numbers of horses standing in the stable. Rhubarb may also be forced in the open ground by covering it with earthenware pots, which are sold for the purpose, or wooden boxes furnished with lids will answer the same purpose; sometimes, too, the stools are covered with old baskets and old barrels sawn asunder in the middle, employing pieces of board to cover the top with. When covered embed them in hot stable manure and leaves, more of which will be required early in the season than later, when less warmth in this way will be required. Care must, however, be taken to see that the heat does not get too fierce, or the crowns of the plants and the young leaves will become scorched. Old stools which have been lifted and forced are not as a rule retained for planting again; on the contrary a new plantation should be made annually. WM. CHRISTISON.

Midsummer-sown Carrots.—The main crop of Carrots in this locality was a failure this season, owing to the intense drought; consequently many sowed extra breadths in July to meet the demand, and they are now sending to market beautiful clean roots tied in bunches that sell readily. The sorts that appear to find most favour are James's Scarlet, or Scarlet Intermediate, kinds that have well long superseded Long Surrey and Altringham, being of better quality and altogether more desirable for table use. They are excellent in colour, more tender, and better flavoured than the larger kinds, and in the light sandy soil of this locality late sown crops are perfectly safe left in the ground and pulled as required for use. Their green tops, too, insure for them a readier sale than if denuded of top growth in the ordinary way. This plan of sowing in July will be found to produce young Carrots superior to fully grown roots. The routine of culture is simple; a well pulverised soil or seed bed is the main point. Draw drills a foot apart, and sow moderately thick in the row, as they can be drawn out for use as soon as large enough, and by a little attention to succession sowing, young tender Carrots may be had in abundance during the greater part of the year.—JAMES GROOM, Gosport.

SHORT NOTES.—KITCHEN.

Celery caterpillars (*Anon.*).—Your Celery is attacked by the caterpillar of a moth, but the latter was too far decomposed to name. I can suggest no other remedy than digging up any roots which appear to flag and destroying the caterpillars. This may prevent a similar attack next year.—G. S. S.

Animal manures in gardens.—In reply to your correspondents who have written on this subject, I may say that it is the principle I contend for that deep trenching and manuring with leaves, soot, burnt ash, and lime produce sweeter, more healthy, and better vegetables than when foul animal manures are used.—X. Y.

Celery fly.—Allow me to inform "J. C. C." that Celery fly may be caught by smearing twine with bird-lime and stretching it over the Celery plants. Elaters on the leaves should be crushed, as they contain larvae. When full grown the small green grubs descend into the earth, where they remain in the chrysalis state until the following spring.—CHARLES E. MAOILL, *Dalglish, Monkstown, Dublin.*

The failure of Carrots appears to be quite general this season. Our main crop was a total failure, but having some seed left and a vacant piece of ground at command, we sowed again on July 1 Short Horn, Altringham, and Long Surrey, and a good crop is the result. We are still pulling some really fine Carrots. The drills were well soaked with water previous to sowing. It appears to me that we sow our main crop of Carrots much too early.—GEORGE CARPENTER, *Rydens, Walton-on-Thames.*

SEAKALE.

THE time for Seakale forcing having arrived, a few words on the different methods of forcing and also growing it may not be out of place. The method of forcing it year after year on the ground where it is grown in the old way, by covering with pots under a bed of leaves or other fermenting matter, like some other antiquated practices, is still followed by more people than might have been supposed would have clung to a way that has so many disadvantages as compared with that of growing a fresh lot of crowns each year and taking up and forcing them, as can be done with a fractional amount of labour compared with the old roundabout manner of doing the work, with its indifferent results; the disadvantage of the covering-up method not only means so much additional labour, but the produce of old plants is much inferior to that of good one-year-old crowns that have been well managed. Good land, well prepared with plenty of manure and kept clean from weeds, will grow Seakale from seed in one season, so as to produce a considerable number of good-sized crowns, but under the best conditions of soil and management there will always be a large percentage of small ones too weak for forcing; whereas, when the plants are grown from selected pieces of the roots, with ordinary attention a crop of single-crowned plants may be depended on, few of which will be deficient in size. That this is correct is so well known, that it seems strange any one should stick to the old practice of forcing Seakale in the ground where it is grown often year after year, especially when it is taken into account the quantity of small inferior stuff produced by this method and the drawn condition that much of even the best is reduced to. At this season, when the crop of roots is dug up, the work should be carried out in a systematic way, similarly to that followed by the large growers for sale, who, as the taking up proceeds, have the bits of thong-like roots collected and heeled in for planting in spring. Few people who have had anything to do with growing this vegetable can fail to have noticed that there are distinct forms of the plant—some that are of a more or less purple colour in the leaf-stalks as well as in the crowns, others that are devoid of this colour, being quite green in both the leaf-stalks and the crowns. Most people prefer the last-named variety, as in addition to the light coloured crowns forcing quicker, the produce is somewhat milder in flavour. A packet of seed as usually obtainable will yield both the purple-shaded and the white forms, but it is a very easy matter to keep the two separate when the plants are grown from root cuttings by simply taking the trouble to mark them before taking up; this is best done previous to the leaves coming off. T. B.

Veitch's Autumn-protecting Broccoli.

—I have grown this variety from the time it was first sent out, but never has it been so good as during this season. It forms an admirable succession to the late planted Autumn Giant Cauliflower, and keeps up the supply till Snow's Winter White is plentiful, that is, if not cut down by frost. It more nearly approaches a Cauliflower with regard to quality, and, I am sorry to add, in tenderness, than any other Broccoli with which I am acquainted, as only a moderately severe frost destroys it. We plant on firm undug ground as much as possible, and generally in the highest part of the garden, and this in a measure prevents grossness, and is therefore to some extent a safeguard against frosts.—I.

Rockeries.—How often do we see plants recommended for these that will grow well and hide the stones; but what can be the use of a rockery if the stones forming it are to be hidden? The value of a rockery lies in its boldness and distinctness, but allow it to become overgrown, and its effect is lost. Instead of a wilderness of foliage, trailing plants like the Cotoneaster should be chosen, and for certain positions the Pampas Grass and others of similar character that stand out have a striking appearance, and all such

plants should be brought to the front or projecting parts, so that the eye may catch them at once. Bamboos are suitable for such purposes, and *Chamærops Fortunei* in a sheltered spot has a noble look, as have also *Castor-oils*, *Solanums*, and others of kindred type that may be planted and grown on out-of-doors during the summer.—S. D.

GARDEN FLORA.

PLATE 473.

THE SAGITTARIAS.

(WITH A COLOURED PLATE OF *S. MONTEVIDENSIS*.)THE *Sagittarias* (Arrowheads) are marsh or aquatic herbs with perennial rootstocks and leaves of only

might have been written before the introduction of the Montevidian Arrowhead represented in the accompanying plate. The conditions under which *Sagittarias* are found growing wild and their wide distribution are such as would not fail to cause much variation in the size and habit of the several species. That such is the case has been well shown by the plants of *S. montevidensis* which have been grown both last year and this at Kew. In 1883 seeds of this plant were forwarded to Kew by Mr. J. Ball, F.R.S., who collected them in Buenos Ayres when on a botanising tour through Brazil. In June of the same year the plants thus obtained flowered at Kew, and from one of these



Sagittaria montevidensis, showing habit of growth. Sketched at Kew in November.

annual duration. The species, of which about a dozen are described, are widely distributed over the tropical and temperate regions, more especially in the latter. They are closely related to the Water Plantains, with which and about half-a-dozen other genera they form the order Alismaceae. If we except our own common Arrowhead, which is a frequent ornament to the margins of rivers, pools, and ditches throughout England and Ireland, and is sometimes admitted into gardens, none of the plants belonging to this order are possessed of any ornamental characters such as would render them desirable as garden plants—at least, so much

our plate, as well as that in the *Botanical Magazine*, were prepared. This plant was supposed to be unusually large as compared with descriptions and specimens of it in the herbarium. This year, however, plants of much larger dimensions have been grown at Kew—so large, indeed, as to cause some botanists to doubt their identity with the plants of the year previous. Three extreme forms were thus represented at Kew, the first with small lance-shaped leaves and slender flower-stalks, and measuring less than a foot high; the second form, with leaves and flower-stalks 2 feet high, and with a hastate leaf-blade; the third had the leaf-stalks 6 feet high, as thick as a man's arm at the base, and a



blade which measured 2 feet in length, each basal lobe being quite a foot long. The flower-stalk was 5 feet high, very stout, branching, and bore numerous whorls of flowers almost as large again as those represented in our plate. These wide differences in size were owing to cultural differences, but there was nothing in the health or appearance of either specimen that suggested improper treatment; it was only by a comparison of the one with the other that this could be seen. Judged by the first or small form, *S. montevidensis* would be voted as little better than our native Arrowhead; by the second form it would have found a welcome; but when seen in the third and largest condition it was universally admired as a grand plant. The moral of this is easily seen. New introductions should be well tested before being condemned. It would be easy to mention several instances of serious mistakes resulting from too hasty conclusions in matters of this kind. The following is worth recording: Whilst looking through a well-known botanical garden the writer's attention was drawn by the curator to a poor weakly specimen of *S. montevidensis* flowering freely, but weedy-looking enough. "There is the much-lauded new tropical Arrowhead, a worthless weed; I have ordered my foreman to throw it away." The reply was such as anyone, to whom the Kew specimen was known, would have made. Sir Joseph Hooker, writing of *S. montevidensis* says: "One of the most beautiful water plants other than Water Lilies that have been introduced into the tropical aquarium at Kew since its establishment, and a very free grower and flowerer. Nothing can exceed the snowy whiteness of the flowers, which are produced in succession, relieved, as they are, by the rich maroon blotches, bordered with pale gold at the base of each petal." In general appearance *S. montevidensis* is like *S. sagittifolia*, surpassing it in size and strength when favourably situated. The rootstock is stout and tuberous, and from its lower portion develops stoloniferous tubers, much in the same way as Potatoes are developed. The leaves are very herbaceous, and are produced in quick succession; from their axils spring the flower-stalks, which are stout and grow rapidly. The upper half of each stalk is clothed with whorls of flowers, the lower whorls being female, the upper ones male. They begin to expand before the flower-stalk has reached its full height, continuing to open several whorls together till the summit of the stalk is reached, by which time the female flowers will have become fertilised and full of ripe seeds. These seeds germinate freely if sown in pots of mud and kept warm. The seedling leaves are long and strap-shaped, and unless the plants are grown on and treated liberally the foliage never assumes a hastate character, but remains either strap-shaped or lanceolate. When well managed a large-flowering plant is obtainable in about three months from the time of sowing. A strong loamy soil with a small portion of cow manure added is a suitable mixture for this plant. All the sunlight possible is preferred by it. The seeds should be sown in February. As soon as the plants are large enough to be handled they should be potted singly in small pots, which may be stood in pans of water, or, if available, in a warm-water tank, the pots to be about half submerged. Where a collection of *Nymphaeas* is grown a suitable position for this *Sagittaria* may be provided by building up in the tank a rough mound by means of stones and soil, so that the top of the mound is above the water. In this the

Sagittaria may be planted. Where pots must be used they should be large, half filled with drainage, and the soil placed in loosely, not pressed down firmly. The most satisfactory results are obtained with this plant only when it is treated as a distinctly tropical plant. The large plant at Kew, described above, was grown in a mud bed, similar to what is used for the *Nelumbiums*.

As is stated above, none of the *Sagittarias*, other than *S. montevidensis* and our native species, are of known horticultural merit. For *S. sagittifolia* we may have a word of commendation, because of its usefulness as a plant for the margins of lakes, rivers, and the ornamental water in our gardens out-of-doors. It is one of the best-natured of our native aquatics, but, owing to its frequent occurrence in a wild state, it is not considered select enough to have a place in many gardens; and yet there are many stiff, ugly banks and water edges which would be immensely improved by a few clumps of this noble Arrowhead and its relative, the Water Plantain. A double-flowered variety of *S. sagittifolia* is known under the name of *flore-plena*. W. W.

SEASONABLE WORK.

FLORAL DECORATIONS.

ABOUT this season a somewhat heavy strain will be put upon the cut-flower supply, especially in gardens where the conveniences for bringing plants into flower are not nearly equal to the demand. It is, therefore, essential to economise to the utmost in such cases, and those who have the arrangement of the decorations can greatly aid in this direction in more ways than one. In the first place, a judicious use must be made of the material at command (both flowers and foliage), bearing in mind that an artistic effect is not produced by excessive crowding, nor by indiscriminate mixing of various varieties of flowers or colours. We have seen arrangements which would have looked much better when finished if half, and in some cases two-thirds, of the flowers had been removed and a trifle more foliage used instead. In the second place, it frequently happens that large parties are held in quick succession, and where only a day or two intervenes, some at least of the flowers used can be kept over from one to the other by removing them to a cooler place, and where possible immersing the stems deeper in water. This should be seen to as quickly as possible after the festivities are brought to a close, for if left for a few hours longer than is necessary in a heated room some will be past recovery, especially if they have been arranged without either water, wet Moss, or sand. The fashion prevailing in some places of laying or grouping them on the table-cloths for dinner parties is, to say the least, most wasteful and unnatural. Foliage of fair persistency may be kept in a good condition for future use, and where a large quantity is in request we would recommend the dwarf and compact-growing *Davallias* to be cultivated in quantity as one would the Maiden-hair Fern. In the third place, if any considerable space intervenes between the time when the flowers are cut and when arranged, caused either by having to be packed for transit or other unforeseen occurrences, they should all have the ends of the stems cut afresh. This is frequently overlooked, but is of more importance than many imagine. Lastly, but certainly not least, is the fact that those who have charge of decorations should also have a knowledge of the natural growth of the flowers which they are called upon to arrange. Work of this kind is often performed by persons who have no knowledge of or taste for arrangement. Gardeners have to produce the material, but we know that when this has been done in many cases to the utmost possible extent, an utter disregard has been paid to the quantity

used and the decorations have been carried out without taste or skill. The producer, in short, often gets blamed when he least deserves to be. Where gardeners are allowed to perform such work themselves, they are able to do it with much less waste of material than when it is entrusted to others.

FLOWER GARDEN.

This being a slack time of year in the flower garden, a good opportunity is afforded for looking thoroughly through shrubberies to see what requires thinning, for although Evergreens should not be moved now, it generally happens that the commoner kinds encroach on others, and if not looked to and cut away, soon damage them in such a manner as to permanently injure them and quite spoil their beauty. To show off as they ought, each plant should stand clear of the other, and if there is any bare ground between, the space may easily be furnished and beautified by planting any of the hardy kinds of bulbs, such as Snowdrops, Daffodils, &c., and the more open parts near walks with Crocuses, Hyacinths, Primroses, Aubrietias, Wallflowers, or anything of that kind that will stand and take care of themselves. The mistake that is generally made in the formation of shrubberies is in following the higgledy-piggledy system of planting instead of making a proper selection of suitable subjects, and arranging them according to their habit and character, giving them plenty of room to grow to their natural size without encroaching on each other, a plan that should always be adopted, as then the filling in between may be done with any common material, such as Laurels, which can be gradually cut away as the others extend. By pursuing this course, much after trouble in regulating and re-arranging is saved, as the plants being put in suitable positions at first there is no occasion to interfere with or molest them again. The pruning requisite for deciduous trees and shrubs consists mainly in thinning out of the branches where they are crowded by crossing and intersecting each other, and beyond this and the removal of dead and decaying wood, the less of the knife the better. Whatever cuts are made should always be close to a bud or shoot, as then there is no dying back and the wound quickly heals over. Although it is not desirable to prune established plants, a shortening in the reduction of the head is often a great help to large trees freshly transplanted, especially if they are not well rooted, as it strikes a more equal balance as it were between the two, and gives the tops a chance of receiving what sap they require to keep the bark fresh and plump. What interferes with newly-moved trees and shrubs more than anything else and prevents their taking fresh hold is the want of proper support, without which they are ever on the move and the sport of every wind that blows, which sways them to and fro, and chafes off the tender fibres as they form by the straining and friction of the roots as they are pulled and pushed backwards and forwards in the ground. This being so, it will be seen how important it is that they be securely staked and tied to hold them fast in their places, which, if the plants are large, can easiest be done by using three poles tripod fashion and bringing the upper ends so as to catch the stem of the tree at about two-thirds its height. To prevent any chafing of the bark the stem should be well protected by a good packing of hay under the supports, or by the use of old pieces of carpet, which are perhaps the better of the two. For trees on lawns where neatness is a consideration, stout galvanised wire may be used instead of stakes, and if the lower ends are made fast to stubbs driven into the earth, such supports answer the purpose well, and, besides being neat, they have another advantage, inasmuch as they last a long time and never require renewal.

INDOOR PLANTS.

IPOMÆAS. — The distinct-flowered *I. Horsfallii* is a plant that deserves a place in every warm stove. The limited amount of growth which it makes in many cases renders it preferable to

many stronger growing climbers. It is seen to the best advantage where allowed to twine round strings or wires placed longitudinally over a path. Its season of blooming varies considerably with the amount of heat kept up. Where a high temperature is maintained and the flowering is now over a portion of the strongest shoots should be well cut back towards the collar of the plant. If the strongest are not treated in this way annually the plant is liable to get naked at the bottom and it is much better to effect this shortening in as soon as the flowering is over than to defer it until some growth is made. *I. Leari* is suitable for a large house where there is much roof to furnish. Under a high temperature this kind begins to grow early, and to keep it in bounds it should be well cut in or headed back completely each winter. Where there is enough heat to start it early into growth and it is thus headed in at once, it will bloom considerably sooner in the season than if the shortening back was deferred until later.

PASSIFLORAS AND TACSONIAS.—The strong growing kinds of these, such as *P. quadrangularis* and others of the like warm section, should have their heads well reduced each season, otherwise there is no proportion between the amount of shoot growth they make and the quantity of flowers produced. With a view to keep the old plants from their base upwards continually furnished with healthy leaves, it is well to sever the shoots at different points; the strongest may be reduced to as near the base of the plant as it will permit, cutting in the others at various lengths, which is far better than shortening all back to one point, as it keeps the entire plant annually renewed. As a matter of course the shoot reduction now necessary with almost all the family depends upon their season of blooming, still further regulated by the heat they are subjected to, as on this their late or early flowering much depends. All the late summer or autumn blooming kinds should at once receive all the cutting in they require, as if allowed to make growths before their heads are so reduced it is manifestly a double loss both in wasting time and the energies of the plants. In houses where there is plenty of room *T. manicata*, *T. mollissima*, *T. pubescens*, and *T. sanguinea* are all worthy of a place.

HEXACENTRIS.—Although *H. mysorensis* and *H. lutea* (the former the handsomer) are sometimes grown in a hot stove, still, like a good many other climbers that come under the head of warm stove plants, they do better in an intermediate temperature, as when so treated the flowers they produce are greater in proportion to the shoot growth. The time of these plants blooming is in a great measure regulated by the treatment they receive; when not kept very warm they flower much later and freer. At this season they should be kept much drier at the roots than many things; no more water should be given than will just keep the foliage from drooping.

THUNBERGIAS.—Autumn bloomers, such as *T. Harrisii* and *T. laurifolia*, which are strong, vigorous growers, should have a great portion of their tops removed as soon as the flowering is over. If these are not cut in closer than plants that make less annual growth, they get into a wild, straggling, bare-stemmed condition, unsightly in appearance, with a disposition to encroach upon and overgrow other things, and do not in themselves give a corresponding return of flowers for the head-room they occupy.

LACHENALIAS.—Where a good stock of these exists they may be had in bloom for a considerable time. If some of the strongest are put in an intermediate temperature, their flowering will be accelerated, but it is not advisable to subject them to heat until their foliage is all but fully grown and there are signs of the flower-stems making their appearance. If hurried too early, the amount of bloom forthcoming will be reduced. These along with some other species of plants are influenced considerably in their time of flowering by the way in which they have been treated in previous years. Those that have been forced before will naturally come on with less heat

than examples that have bloomed with only the aid of a greenhouse or cold pit.

HYACINTHS, NARCISSUS, TULIPS.—It is not good practice to begin forcing the large varieties of *Hyacinthus* too soon, for though when well furnished with roots they will bear a fair amount of heat, yet when started and pushed on so as at all to hurry them, they usually bloom indifferently. Along with the last batch of Roman varieties some of the large-flowered kinds should be put in heat, as they take considerably longer to bring into flower than the Roman, and if a supply is to be kept up, no time must be lost. Later sorts of Tulips should be put in heat to succeed the varieties of Van Thol, and the Paper-white *Narcissus* must be regularly started. It is much better to put in heat only as many of the different kinds of these bulbs as will meet the demand than to bring them on in larger numbers, which generally results in more flowers than are wanted at a time, with a corresponding deficiency at other times. Simple as the treatment of these plants is to induce them to flower satisfactorily with stout, short bloom-stems and healthy foliage, yet if at all hurried or stood too far from the glass the flowers will be so deficient in substance as not to last their full length of time.

CYCLAMENS.—Plants of these raised from seed sown late in summer, if not already pricked off into pots or pans, must be so treated before they get matted together, or they will receive a check. Keep them in a temperature of about 50° in the night, examining them from time to time to see that they are free from aphides, insects which are much more injurious to *Cyclamens* than to most other plants; concealing themselves on the underside of the leaves, they often do much harm before discovered. Larger plants that are in a condition to flower should have a few degrees more warmth than is required for ordinary greenhouse plants, but on no account must they be kept warm in an insufficiently light house or pit, or their flower-stems become drawn and weak, which spoils the effects of the plants, and makes the flowers of little use for cutting.

ACACIAS AND CALLAS.—Most of the *Acacias* bear a moderate amount of forcing, such as the temperature of an intermediate house; *A. armata* and *A. Drummondii*, naturally coming into bloom early, are amongst the best for forcing. There is the additional advantage attached to free-growing plants of this description, that if required, they will bear the whole crop of flowers being cut, the shortening back of the shoots being beneficial to the plants rather than otherwise. More *Callas* should be placed in heat, still selecting strong, well-established examples. These *Callas* or *Richardias* are all but water plants, and should have the soil kept wetter than most things; with them also it is an advantage if they can be placed with their leaves almost touching the glass, by which means they will be kept as dwarf as they are generally seen when flowering in summer.

BRUGMANSIAS.—Where these are planted out in conservatories that are kept somewhat warm, they are liable to get thin of branches and unsightly unless the plants are yearly subjected to a free use of the knife; if required they will bear the shoots shortening moderately close in. If in houses where some heat is kept up through the winter, they should at once be pruned. Where a considerable space has to be covered with their branches, such as a back wall in a large house, the roots ought to have plenty of room. They do best where access is to be had to an outside border, similar to Vines; so situated, they will occupy a greater space than most things, and will flower to an extent not possible where the roots are cramped.

ORCHIDS.

EAST INDIA HOUSE.—Those who have to grow collections of Orchids must understand something of the old saying, "Taking time by the forelock." There are, of course, some gardens where collections of Orchids are grown the owners of which know it to be their interest to provide a liberal

staff of men to do the work; plants are cleaned, attended to, and potted when they require it in season or out of season. In most gardens this is not so, and those in charge have to do their best to make one class of work dovetail into another. This month's work is not usually so pressing as it is next, and if it is yet too soon to begin to report or surface-dress Orchids, it is not too early to prepare for it. Besides getting the potting material ready, viz., clean potsherds, charcoal, Sphagnum, peat, clean pots and pans with teak baskets, the plants may also be looked over. If any of them require to be dipped to free them from insect pests, that must be effectually done before repotting them, because it is not possible to dip any of the plants after they have been repotted—not until the fresh potting material has become firmer on the surface. The nodules of charcoal and crocks fall off into the water when the pot or pan is inverted, but in every case it is best to have the plants clean before starting to pot them, and every opportunity should be seized between now and February to get the plants and the house thoroughly cleaned. The small white thrips are most insidious in their attacks, and the mischief done by them is often discernible before they are. In writing last week of the great value of the deciduous winter flowering *Calanthes* at this season, we said nothing of the arrangement of the plants. As they lose their leaves before the flowers open, it is necessary to place the plants amongst small *Ferns* or foliage plants. Mr. Swan, of Fallowfield, stated some time ago that by far the best plant for this purpose is *Gesnera zebrina exoniensis*. The spikes of the *Calanthes* have a fine effect rising above the leafage of these foliage plants; just in such a way would the spikes hang droopingly over the wild herbage of their native wilds. It is best to let the spikes grow and drop over the plants without any support; tying them closely up to sticks is not gardening.

CATTLEYA HOUSE.—The same remarks as to making preparations for potting apply here as also for the cool house. Mr. Ward, when head gardener to the late Mr. F. G. Wilkins, of Leyton, a well-known and able cultivator, told us that he usually began to pot his East India Orchids soon after the new year; when that house was done, he went on with those in the *Cattleya* or Mexican house, finishing off with the cool house section. Of course, not anything like the whole are potted, but all are potted or surface-dressed. Besides the Orchids mentioned some time ago as being in flower in this house, there are numerous others easily grown and to be obtained at a cheap rate, and not the least valuable are the *Dendrobiums*. If, as is sometimes desirable, they have been pushed forward in a warmer house, they had better be placed here just as the flowers begin to open. *D. nobile* should be in flower if it had been sufficiently rested. Do not omit to keep up a succession of flowers of this species by placing plants in heat at intervals. Those at rest may be kept in the greenhouse quite dry up to the shrivelling point. *D. Ainsworthii* is even yet too expensive to be much grown, except by those who may be termed Orchid fanciers and have plenty of money; but as it grows freely it may yet become common. It can also be raised from seeds by crossing *D. nobile* and *D. heterocarpum*. This last named species is also in flower at this season; it is a very desirable plant to grow, not so much for its beauty as for its sweet perfume. *D. moniliforme* may also be found in flower at the present time. Yet another *Dendrobe*, and a charming hybrid it is, should be in every collection for flowering now—*D. endocharis*; it has been raised by Mr. Seden in the Exotic Nursery, Chelsea, by crossing *D. japonicum* with *D. heterocarpum*. It has many of the characteristics of the seed parent with the perfume of *D. heterocarpum*. The evergreen *Dendrobies*, such as *D. Farmeri*, *D. thyrsiflorum*, *D. Dalhousianum*, *D. densiflorum*, and others of this type have been with us very late in completing their growth; indeed, it was quite the middle of November before they had done so. Now they should be kept in a much lower

temperature, and be comparatively dry at the roots; and there need not be much moisture in the atmosphere. Some of the small-growing *Cattleyas* of the marginata type form pretty objects at this season grown in small pans suspended near the glass. The treatment, as we are now approaching the depth of winter, must be kept at the lowest minimum point. We do not care to have the temperature above 55° at night, and if it falls to 50° on very cold nights, that would be a very good minimum. Higher than that unduly excites the plants. If the pipes require to be only slightly heated to keep up the temperature, then the plants are not likely to be injured by an arid atmosphere, but either way it is better not to have any water in the trough; rather trust to sprinkling the paths and stages.

COOL HOUSE.—We have noticed in many even well managed houses that green or yellow aphids is by far too common, especially on *Masdevallias*. It is very desirable indeed to free the plants from it, and as it is dangerous to fumigate, washing or dipping must be resorted to. This pest increases fast during severe weather, when much artificial heat has to be employed. A good plan where the collection is comparatively clean is to have a vessel at hand containing Tobacco or soapy water with a brush, and as soon as any fly is seen, remove it with the brush dipped in the mixture. A week or two ago we potted some cool house Orchids that had been received from a nursery and they are rooting away most vigorously in the fresh compost. In a week or two we will commence repotting all the plants that require it. We would again urge the importance of getting the compost ready, and the pots washed quite clean with warm water. The principal requisites for cool house Orchid culture are clean pots and potsherds, charcoal, good fibrous peat, dried and fresh Sphagnum. The pots should be well drained in all cases, because the larger proportion of cool Orchids require so much water, and if there is a large body of potting material, the organic matter decays and becomes sour, with the result that the roots of Orchids will either not grow into it, or will die if they did. Those who have been accustomed to repot Orchids will have noticed that they never do really well unless the roots have taken firm hold of the sides of the pots, and that all the most active and useful rootlets are there. How very necessary it is, then, to have the pots washed perfectly clean, or if they are new pots they should be well soaked in clean water for a few hours before using them. When the plants have to be turned out of the pots in which they have been growing, it is often better to take a hammer and carefully break the pots in pieces rather than risk the injury to the plants by tearing off the roots when they have been turned out in the usual way. In all collections, even the best managed, there are some plants which have not grown well, owing to the roots and compost decaying. In that case, have some rain water rather warm in which to wash every particle of compost from the roots before re-potting in smaller pots and good sweet fibrous material.

PROPAGATING.

GARDENIAS.—These plants are readily increased by means of cuttings taken when the young growth is in a half-ripened state. No more leaves should be removed than is actually necessary for the purposes of insertion, and after putting them in, place them in a close case with bottom-heat, at first setting them on the surface, and in about a fortnight, when slightly callused, plunging them. The extra heat thus given will hasten the formation of roots. When rooted, they must be inured to the air by degrees.

HABROTHAMNUSES.—There is no difficulty in striking these at any time, but if put in early in the year, they will make good plants by winter, and many of them will flower the first season. Cuttings may be taken and treated the same as one would *Fuchsias* and similar subjects, *i.e.*, they should be placed in a close case in a warm house; but as *Habrothamnuses* are when in heat

very liable to the attacks of thrips and red spider, they must when rooted be soon removed to cooler quarters. Their near ally, the beautiful *Cestrum aurantiacum*, is also increased in the same way.

HYDRANGEAS.—Those little plants with enormous heads of flower so freely sent into Covent Garden Market during the season are all raised from cuttings, many of which consist of young shoots taken from the flowering specimens before sending them away. They are put singly into small pots, kept close till rooted, and when that takes place, exposed as much as possible, the object being to ensure plump, sturdy growth. Another method is to grow large plants in an open spot for the purpose of furnishing cuttings, which should be taken about the early part of August, at which time the embryo flowers will be already formed.

LUCULIA GRATISSIMA.—Many complaints are made of the difficulty experienced in striking cuttings of this fine sweet-scented shrub, but for our own part we have always found it to root freely. Our method is to take the cuttings in the spring, consisting of the tops of the young growth, and insert them singly in small, well-drained pots in a soil composed of a mixture of peat, loam, and sand in equal parts. They should be put in as soon as possible after being severed from the parent plant, as if allowed in any way to flag, it will seriously militate against their chances of success. The after treatment consists simply in watering if necessary, in drying the lights every morning, and in removing decaying leaves.

LASIANDRAS.—These are propagated in the following manner: When they have finished flowering cut them back a little; then start them in heat, when they will break freely. For cuttings select the young growths as soon as they commence to harden, and take them off at a length of about 4 inches. The pots should be well drained; half fill them with broken crocks, and over these place some fibrous peat; then fill up with soil consisting of two-thirds peat and one of loam, with a liberal admixture of sand, and after pressing it down moderately firm, place a layer of sand on the top. The cuttings may then be inserted not too thickly, and when watered thoroughly placed in a close case kept at a stove temperature. The lights should be kept off for a little time to dry the foliage, otherwise moisture collects on the hairs thereon and speedily induces decay. When necessary to water them at any time, the same rule must be observed of allowing the foliage to dry somewhat before closing the case entirely.

FRUIT.

PINES.—Directions contained in the last paper will still apply to plants in this department, but if any alteration is found necessary it will be on the side of lower temperatures in the succession pits when the weather is dark or unusually severe. Late starters now swelling off fruit, which will be found invaluable in the spring, will require a steady bottom heat of 85° to 90°, and a top-heat ranging from 68° at night to 78° by day, with a rise of a few degrees from sun-heat when bright, clear days succeed frosty nights. If the plants are plunged in near proximity to the hot-water pipes, see that the moisture is not abstracted from the roots by the material becoming too dry, but instead of giving copious supplies of water to the soil partially draw the tan away from the pots and give the bed an occasional watering with diluted liquid at a temperature of 90°. Keep the atmosphere in a moist, growing state by damping all available surfaces when the day temperature begins to rise, and again when the chink of air which it is possible to give is taken off about 1 p.m.; also keep the stem roots moistened with the syringe as often as they show signs of becoming dry. If not already done, get the pit intended for spring fruiters cleared out, scalded, and cleansed ready for use. Meantime prepare the tan or leaves by fermentation and frequent turning to prevent burning; then place it in the pit, and allow the heat to decline to 90° before the plants are introduced. Look well to succession plants and autumn-potted

suckers, and give enough water to the roots and plunging material, if over hot-water pipes, to prevent a check from drought followed by premature starting in the spring. Give strong successions which were shifted late the benefit of a light span-roofed pit if at command. Plunge them with their heads well up to the glass, let the minimum temperature range about 60°, and give sufficient atmospheric moisture to keep them steadily progressing throughout the winter.

PEACHES.—EARLY HOUSE.—When the buds begin to show colour a slight rise by day may be indulged in on bright, fine days; but a gradual fall back to 45° or thereabouts at night will be advisable until the flowers are perfected and begin to unfold, when more air and gentle fire heat will be necessary. Look well to the fermenting leaves on the internal border, as the humid warmth from these is so much better than that obtained from the hot-water pipes, and, further, the necessity for constant syringing is greatly reduced, no small advantage in the dark, dull month of December, when complete saturation of the buds is not always desirable. If the roots have the run of an external border, this must be well covered with Fern or litter to keep out the frost, and tarpaulin may be used for throwing off snow and rain; but in these high feeding days an outside border attached to an early house is looked upon as a superfluity, the main points in the management of the roots of Peaches being good drainage, sound calcareous loam, frequently changed, and plenty of water at all times. If Strawberry plants, the forerunners of confusion in forcing houses, must be introduced, let them be well dipped in sulphur water to cleanse them from spider before they are taken in, then clear off the surface soil, ram well, and top-dress with stiff loam and old cow manure. When the most forward trees approach the flowering stage, fumigate the house once or twice with Tobacco paper. At this stage it is just possible that no enemy may have appeared in sight; but so destructive is green fly when smoking is omitted, that an operation so simple and inexpensive should never be neglected.

SUCCESSION HOUSE.—Prune, cleanse, and tie in the trees as opportunity offers, and keep the house well ventilated until the time arrives for starting. The first week in January is a good time to close the second house, as the earliest varieties form a close succession to the latest in the early house, and as Peaches cannot be kept for any length of time after they are ripe, a careful selection of kinds that will follow each other in their order of ripening should be made for every house. Assuming that the second house has been stripped and the lights properly repaired and painted, there will be no fear of the buds dropping for want of water; but where the roof is a fixture, copious waterings will be necessary, and immediately after the fall of the leaf will be the best time for internal painting. Keep the latest houses as cool and airy as possible to prevent the buds from getting forward in mild weather, and avoid using them for tender plants which cannot stand a few degrees of frost. When all planting is finished, re-arrange the reserve wall, without which a set of forcing houses cannot be kept going, and fill up all available spaces with young trees from the nursery.

VINES.—Examine inside borders in the early house as soon as the buds are fairly on the move, and, if necessary, give old Vines which cannot be over-stimulated a good soaking with warm diluted liquid; also mulch the roots with rotten manure, renovate the fermenting material, and let the temperature range from 50° to 56° at night, and 65° to 70° by day. As old Vines generally break well, direct syringing may be moderated on dull days, but young ones which have not been forced early will require more careful management, as it not unfrequently happens that the most prominent buds take the lead, and unless timely attention is devoted to bending down and sometimes rubbing out the terminal buds, unsightly blanks will be sure to mar the appearance of the house. When this stage of growth has been reached, strip the outside borders

of Fern and shutters, and cover to the depth of 18 inches with fermenting Oak leaves. Make them very firm to keep in the heat, and replace the shutters above, but at the same time clear of the leaves.

LATE HOUSES.—Look over hanging Grapes two or three times a week, as this intensely damp weather is very bad for Alicantes, Gros Colmar, and Muscats, and one neglected berry soon mars the beauty of a bunch. Get rid of the foliage little by little, as it parts freely from the Vine, but do not take off any more laterals, at least where the Grapes are to be bottled, otherwise the wounds will give off moisture and colour when the bunches are taken to the dry atmosphere of the Grape room. Ventilate freely with gentle warmth on fine mornings. Keep the house quite close in foggy weather, and let the temperature range from 55° by day to 45° at night. Make a good selection of eyes from early prunings, and if young planting canes are wanted early in spring, insert them in sods or small 3-inch pots before February. Keep them in a cold frame for three weeks; then place them in or over bottom-heat. Cut back to the required length or quite down to the pots yearling Vines intended for planting. Dress the cuts with styptic and keep them in a cold house until the time arrives for encouraging growth. If any lifting or border making in late houses is being put off until the Grapes are cut, take advantage of fine days for firing the Grape room and cut as soon as the leaves fall from the Vines; meantime get the compost properly mixed, ready for use, and protect from the weather. Prune mid-season houses, cleanse, paint, and put everything in working order; then throw open the ventilators at all times when the weather is not unusually severe.

STRAWBERRIES IN POTS.—Where a proper Strawberry house does not exist, and the forcing of this fruit is obliged to be carried on in early Peach houses and vineries, January is a good time to get in the first batch of plants. Those, of course, will be selected from the most forward plants in the smallest pots, as the crowns are sure to be ripe, and the pots being quite full of roots, their throwing up flower-scapes will be reduced to a certainty. When the plants have been dipped and top-dressed, place them on shelves close to the glass, syringe regularly, and give them sufficient water to keep the roots constantly moist, as anything approaching drought, independently of its fostering spider, will produce a check which may prove fatal to the crop. It is a common practice to fill the shelves in these houses when they are closed for forcing, and although the temperature of the vinery may be somewhat high, that of the Peach house suits them admirably. To keep up a succession it is a good plan to fit up an ordinary Cucumber or Melon pit with shelves some 12 inches or 15 inches from the glass for the reception of the remainder of the early batch, and to place some fermenting material beneath, but not touching them. In mild weather the humid heat will be found quite sufficient, but when very cold, gentle fire-heat may be needed to prevent the temperature from falling below 40° at night, and air must be given when it is likely to rise above 50° by day. Where the general stock is wintered in cold pits, throw the lights off by night, and by day when the weather is fine and settled. Close and tilt them to protect from heavy rain or snow. If well plunged over the rims, sharp, dry frost will do them no harm.

KITCHEN GARDEN.

We have a suitable place in which to force Asparagus—an old Pine stove, so that by not covering the roots above an inch deep in soil the light greens, the tops with little trouble. We lift the roots from old beds, and plant young beds yearly containing about the quantity we lift for forcing; therefore, we have always a stock for that purpose. As to Rhubarb, we force Hawk's Champagne—the best variety to our knowledge—in the same pit; but we cover the crowns a foot deep with dry Oak leaves, and the Rhubarb comes up a fine crimson

colour. Where Apples are short, Rhubarb will be wanted in large quantities. Seakale we force in the beds in which it grows in the old-fashioned way, covering the crowns with boxes with lids to them. We use leaves only for this crop, with the exception of a bit of long manure over the leaves to keep them in their places. Sharp frost here last night rather caught us napping. To-day we are busily engaged protecting Lettuces and Broccoli of the earlier varieties. We have a large quarter of Broccoli laid on their sides on the principle that small heads are better than none; still, we like covering up with Bracken better, as in that way the size is not diminished, and unless the thermometer falls below zero we are generally safe. We also cover our Spinach with Bracken. It keeps the leaves green. Sharp frosts and sharp nor-easters brown all before them. Outside Mushroom beds are doing well. Keep the beds well covered, and if a mat be placed over all it will be found to be a great assistance. During cold weather we only open them once a fortnight, and gather all non-broilers—cups and buttons. Having a large Mushroom house, the daily supply is well maintained; but these indoor-grown Mushrooms, parasols in miniature, are in no way equal to those grown outside. Keep a good supply of all small salads for use during the winter.

WORK DONE IN WEEK ENDING DEC. 30, 1884.

DECEMBER 24.

FINISHED staking newly-planted shrubs, also standard Roses. Recommended trenching Pear and Rose borders, the Roses being lifted and beeled in as the work proceeds, and the roots of Pears shortened back, and such as have a tendency to go deep are raised as near the surface as may be without injuring the prospects of next season's fruit crop by shaking the soil too freely from the roots. The manure given to Roses is well decayed stable manure, and to Pears the refuse soil of Vine and Peach borders, wood ashes, and a small percentage of crushed bones. Swept all walks and roads. Indoor work has been church decoration and a little extra brush up for Christmas. Plants being trimmed up and rearranged to look their best. In previous years we have not had the convenience for flowering plants that we now possess, and though it is still somewhat limited, it is ample to show the great variety and gaiety in the way of flowers and foliage that is possible at Christmas time. Our Strawberry house is filled with zonal Pelargoniums (double and single) in grand flower, Primulas, Begonia Knowsleyana, and Bouvardias; but unfortunately this arrangement cannot long continue, as Strawberries are more highly prized than flowering plants, and the house must be wholly devoted to their culture a fortnight hence. Meanwhile Strawberry plants are started in frames and on shelves in vineries and Melon houses. In a new plant stove we have arranged Poinsettias in small groups of three each, and dotted here and there Calanthe Veitchi and vestita, Plumbago rosea, Eucharis amazonica, and Euphorbia jacquiniæflora, the whole, as it were, resting on a groundwork of Ferns in pots. Other Christmas flowers in vineries at rest are Camellias, Tree Carnations, hardy Primroses, Christmas Roses, and Chrysanthemum Meg Merrilies and grandiflorum.

DECEMBER 26.

To-day has been about as dull and cold as any day could possibly be, apart from fog or keen frost, hence the work was suited to the weather—straightforward trenching in kitchen garden and excavating and wheeling, necessitated by the making of a new walk; and here it may be observed that in all walk making or repairing we economise the use of gravel very much by making the foundation of ashes and clinkers, than which, all things considered, no better foundation is possible, for, not to mention the convenience of getting rid of the ash heap, the walks more quickly dry up than when all gravel is used, and it is very rare indeed (only under the shade of trees) that they ever get green or Moss-grown. The roots grubbed out of the line of

walk and wood that was useless as fuel are being burnt for the manufacture of potash, an ingredient that in our light sandy and gravelly soil is a most excellent manure for either hardy fruits or vegetables. Looked over roots and tubers that were lifted and packed closely together in a cool shed. Cannas had their decayed leaves cut off to prevent decay descending to the crowns. Marvel of Peru, Salvia patens, and Dahlias had a sprinkle of water, as the leaf-soil and Cocoa fibre in which they are packed had got too dry. Tuberous Begonias being extra closely packed in boxes were in good order. Fuchsias are starting to grow and need a check, which they will get when potted, as they will be shortly, and afterwards be stood in the coldest place we can find clear of frost. Potted a few tuberous Begonias for early flowering in pots and placed them in the Peach house. A few more Hyacinths and Tulips have been taken from the plunging pit and placed for flowering on early vinery shelves, and another batch of Roses, Spireas, and Rhododendrons has been placed for forcing on the floor of the same house. The syringing once a day which the Vines still have is of great benefit to forcing plants generally, as too is the moisture arising from the bed of leaves and litter on the floor of the house.

DECEMBER 27.

Being warmer and very dry, extra and heavy work was deferred in favour of proceeding with trenching up Rose and fruit tree borders, though little of this has been done, for clearing up always takes up the greater portion of Saturday, and to-day has not been an exception. As it was so dry, and therefore easy to sweep, a great part of the lawn was done, and, as a matter of course, walks too, the looser parts of gravel being rolled. When time can be spared kitchen garden and frame ground also share in the weekly round of tidying up, and to-day both had their turn. Decayed vegetable refuse, the trimmings of Celery, Turnips, Leeks, prunings from Currant and Gooseberry bushes, and the like all were taken to the rubbish heap, and the walks swept and rolled. Work in the houses, besides the usual Saturday cleaning, has been the looking over Grapes to cut out bad berries—those still hanging on the Vines as well as those in Grape room. Watered Pines; a few that have been kept extra dry are now showing fruit, and these had sufficient to moisten the soil throughout. Early Peach border (inside) was also given a surface watering; not more was needed, as only the top dressing of fresh soil—which as yet has not got well consolidated—was dry. The trees are syringed at 2 p.m., but this will be discontinued a week hence, as by then the buds will be bursting, and my experience is not favourable to a continuance of syringing when in flower.

DECEMBER 29.

Another fine day; made good progress with trenching Rose and fruit tree borders and the pruning of Currants, Gooseberries, and Apples. Cut turf for forming the verges of new walk and carted ashes and gravel for the same. Being mild and very dry, the lights of cold pits containing bedding plants, Violets, and Cauliflowers were drawn entirely off, and the opportunity taken to weed, clear the surface soil of Moss, and pick off decaying foliage, and water such as needed it. Strawberry plants on beds of leaves in pits were gone over, and the bottom of the pots rubbed with the hand to remove any roots that might be protruding to prevent them rooting into the leaves, which, if allowed, the check from removal of the plants to the Strawberry house shelves would be considerable, and probably end in a bad "set" of fruit. A few of the forwardest were—till the Strawberry house is available—put on the shelves in the Pine stove and their places filled with others from outside. The plants in flower are gone over daily with a camel's-hair pencil to distribute the pollen. As the sun gets more power and the atmosphere drier, artificial fertilisation is best let alone; at present it is a necessary part of cultivation. Made a second sowing of Melons. To prevent a lanky growth

the plants from the first sowing are kept as near to the glass as is practicable with affording them bottom heat at the same time. Also made a sowing of Tomatoes and Cucumbers; the winter plants of the latter are about done for, and therefore this new sowing must be pushed on rapidly.

DECEMBER 30.

Pruning Currants and Gooseberries, a few of the cleanest shoots being saved for cuttings, and for the present they have been heeled in at the foot of a north wall. Trenching in kitchen garden, laying turf verges for new walk in pleasure grounds, carting ashes and gravel for the same, dug up and potted more Seakale and put others in heat to force. Washed lights of fruiting Pine pit; being movable, a mat can be tacked over as each light is taken off; they can thus have a more thorough washing than if done on the house. The syringe being plied with full force whilst the light rests sideways, every particle of dirt can be got out of the laps. Washing plants, Gardenias and Stephanotis, has been our principal indoor work to-day. HANTS.

INDOOR GARDEN.

WINTER WORK FOR FLORISTS.

THOSE who have glasshouses will be sure to find plenty to do in winter, but there are others who have only glass frames in which they shelter the more tender of their flowers. Auriculas are sufficiently hardy to resist frosts, but the changeableness of our climate does them harm. Sleet, snow, rain, and frost often succeed each other in the course of a week, and the delicate organisms of the plants are thereby sorely tried. What we require to ensure the health of the plants in winter and the perfect development of their tissues in spring is light and dryness. These are amply provided for in a cold frame. Auriculas should now be arranged on a stage near the glass, and the plants should be perfectly free from insect pests. Green fly must be removed by fumigating. The woolly aphid, which is to be found attached to the roots, can only be destroyed by turning the plants out of their pots, and washing it off the roots with soft soapy water. It is not desirable to do this in winter, but I fancy if the plants are left out in the frames to be frozen through and through, it is possible that the aphid will not be able to resist the influence of the frost. Surely such insects cannot live after being frozen. They evidently do not like frost, as they retire underground on its first appearance. Carnations and Picotees are also wintered in cold frames; they do not sustain injury from the most intense frosts, but it is necessary to have the plants well established and in a healthy condition. They were potted, say, in the first week of October. Placed in cold frames at that time, they soon became established under close treatment. Except to attend to watering them as they require it, no other attention will be needed until December; then look over the plants, remove dead and decaying leaves, stir up the soil, and if they receive the ordinary attention of removing the lights in fine weather and watering only when water is required, they may remain quiet until potting time, which is about the end of February or the beginning of March. In bad weather the plants can be carried into the potting shed or any spare room where the work may be performed leisurely. It does not answer to be in a hurry, as valuable specimens may snap over with rough handling.

THE FRAMES containing Auriculas and Carnations may also include the stock of laced Polyanthus. These old-fashioned favourites seem to baffle the skill of the most careful cultivators. Except at Manchester, I have never seen them so well grown anywhere as near Newcastle-on-Tyne. Mr. Henry Sanderson, of Whalton, used to be passionately fond of them, and I have never seen such wonderful examples of culture as he exhibited at one of the Newcastle exhibitions; George IV. (Buck) was of surpassing excellence. His plan was to grow two sets of plants, one in pots and

another in the open ground; he considered that pot culture, even for part of the year, was injurious. The late Mr. Tom Mellor, a Manchester grower, used to grow them well planted out in a frame. The lights could be removed night and day if necessary, but they could also be placed over the plants at a moment's notice. This system of culture is also practised by Mr. Brockbank at Didsbury, and he seems to have improved on Mellor's culture. The plants are grown in ordinary frames, planted out in rich soil, and are possessed of extraordinary vigour. If it is intended to exhibit any of the plants, they are taken up and carefully potted when in bloom. Seedlings grow with greater vigour than named varieties, and it is always interesting to have a small quantity of them. They will flower out-of-doors, and can be selected from the beds on which they were planted the previous summer.

CHRYSANTHEMUMS may also be included in the class of hardy florists' flowers. I do not intend to say much about their culture out-of-doors, but it is certain that, with good cultivation and careful training and disbudding at the right time, the results will be very satisfactory. This year I noticed in the middle of November a good show of Chrysanthemum blooms out-of-doors, and the sight was all the more remarkable because a small collection of Dahlias was flowering in conjunction with them. They are too easily grown; therefore they are allowed to take their chance in borders, remaining in the same position year after year; under such conditions the flowers are very poor indeed. The plants exhaust the ground the first season, owing to the large masses of roots which are formed by them, and require renewal by means of cuttings annually, and here we arrive at winter work in frames. The cuttings should be put in some time during December, root suckers being the best. Each cutting should be inserted in a small pot, and they ought all to be plunged in a frame until the end of January; any of them not rooted by that time should be plunged in a hotbed, where they will soon form roots. It is often difficult to obtain cuttings of some varieties owing to their shyness in forming root suckers. Those that do not start into growth should be placed in a hotbed, which will accelerate the production of cuttings. It is necessary to keep the frames rather close where the cutting pots are placed, and this favours the production of mould and decay of portions of the leaves; these decaying spots should be removed before they quite destroy the young plant or cutting.

J. DOUGLAS.

SHORT NOTES.—INDOOR.

Linum trioryzum, grown in a cold pit all the summer and brought on in an intermediate temperature during November, is now flowering freely. Its golden flowers are very acceptable at this time of year. Its greatest fault is that the flowers do not hang long on the plants.—J. C. C.

Double flower on Lapageria.—Planted out in the corridor here is a large plant of *Lapageria rosea* which has been flowering in abundance, throwing out several triplet blooms, also one large double flower. Will someone kindly tell me if the latter is an uncommon occurrence, or if the plant is likely to do the same next year?—S. S., *Waltham Hall, Grimsby*.

Fippeastrum (Amaryllis) auticum.—Mr. Douglas (p. 472) says this is the wrong time of the year for Amaryllises to flower. Surely he does not include *H. auticum*, which with us only flowers at this season. We have three bulbs in a 6-inch pot that have three spikes in flower. Possibly "Enquirer's" Amaryllises have never been properly ripened, hence their imperfection.—CONSTANT READER.

5293 Zinc pots.—In reply to "Inquirer" (p. 512), I should wash out the zinc pots with strong hot soda water, as zinc when new often has a greasy surface. We have here a *Cissus discolor* growing in a zinc pot: a little plant potted about eighteen months since and now it runs up a pillar 15 feet high and extends 15 feet more each way. It would have gone much further but for the ends of the house. It was very pretty all last summer.—ROBERT FRISBY, *Worden Hall, Freston*.

Potting Lilies.—Like others, I have found that food for the stem roots might as well be given at first as subsequently, but then I pot Lilies twice, so to speak. When the stems are about 3 inches high, I drop the pots into one of two or three sizes larger. I fill in between the pots with a compost of loam, peat, and bones, letting it get well up the stems. This new compost becomes filled with roots which give increased vigour to the plants.—CHARLES E. MAGILL, *Dalguise, Monkstown, Dublin*.

Gesnera macrantha.—This is now conspicuous even among the showy class to which it belongs, owing to the brightness of its blossoms. It forms a large fleshy tuber, which, if rested after flowering, starts into growth about November and pushes up stout succulent stems, the latter furnished with pale green foliage and terminated by a cluster of bright velvety, vermilion-coloured flowers. The whole plant is densely covered with hairs. It is easily grown, and from the fact of its flowering at this time of the year is especially valuable.—T.

5295.—Violets.—In reply to "V. M." (Vol. XXVI., p. 512), allow me to say that I admit air freely whenever possible during the day, but keep the frames closed at night. I have both Marie Louise and Neapolitan flowering profusely at the present time, and my plants are very healthy and free from mildew. I keep these plants quite close to the glass, and feel convinced they do better thus than at a distance from it. The great difficulty which I experience in growing Violets is caused by slugs eating the blossoms, and if any reader of THE GARDEN would kindly give me any information as to the best way to prevent this, I should feel greatly obliged.—WALTER P.

In answer to "V. M.'s" inquiry, permit me to say that Marie Louise Violets should have all the air possible by drawing off the lights whenever the outdoor thermometer indicates 40° or upwards, except during heavy rains, when the lights should be tilted at the back. They should always be arranged close to the glass, and in severe weather they must be securely protected from frost. If in a sunny position mildew will not affect them, and they will continue to bloom freely from autumn to spring.—W. C. T.

Centropogon Lucyanus.—As a persistent winter-flowering stove plant but few equal this; some specimens here that commenced to open their showy carmine-coloured blossoms in October have flowered continuously ever since and appear likely to last good for another couple of months. Besides its value as a flowering specimen, it is also useful for cutting from, as its clusters of blossoms can be readily secured with a good length of stem, which for the decoration of vases and such purposes is greatly in its favour. As this *Centropogon* is of easy culture, it should certainly be grown wherever winter flowers are in demand.—H. P.

White Laurustinus under glass.—This is a variety of *Laurustinus* in which the flowers, when grown under glass, are entirely devoid of that reddish tinge which is common in the ordinary form. It is a very desirable plant for greenhouse decoration in winter; the only thing needed is protection from frost to have it in bloom for several months, and when no longer required it can be placed outside, care being taken during the summer to keep it supplied with water. Though but little seen in this country, this white variety of *Laurustinus* is grown on the Continent for flowering under glass, and imported from there to a limited extent generally in the shape of small standards, which, though pretty when in full flower, have a somewhat formal appearance. They, however, look well when judiciously intermixed with other plants.—ALPHA.

Rubus roseifolius coronarius.—Though several times mentioned in THE GARDEN as a desirable winter-flowering plant, this Bramble nevertheless seems to be grown in but limited numbers. Its cultivation would, however, be greatly extended were it better known, as in the shape of small bushes studded with miniature double Rose-like pure white blossoms, it is at once singled out as a plant of especial merit. This Bramble differs from the generality of Brambles, inasmuch as it forms a small upright bush or rather clump, owing to the profusion in which suckers are produced. The stems are thickly studded with spines, and clothed with pale green Rose-like foliage, while the flowers are borne in great profusion. It is nearly if not quite hardy in this country, but as it blooms at this season, it is, of course, seen to greatest advantage when

grown under glass; indeed, a temperature above that of an ordinary greenhouse is most conducive to its full development. During summer it can be grown out-of-doors (either planted out or confined to pots), the principal thing to guard against then being red spider, to which it is liable. It is readily increased either by means of rooted suckers, or, where required in quantity, by cuttings made of the roots.—T.

Justicia speciosa.—"H. P." (p. 471) praises this Justicia for its decorative value, and no doubt it is a useful plant, but in no way equal to *Cyrtanthera magnifica*, which is very like it, but of a better habit and foliage, besides which it may be had in bloom at any time of the year. The treatment necessary to flower it during the winter is to strike cuttings late in summer or autumn, and grow them on in heat, and if bigger plants are required, the old cut-back ones should be saved, and, after having a short rest, shaken out and re-potted again. If "H. P." has not made the acquaintance of this *Cyrtanthera*, I would advise him to get it, and I think, if he does, he will be quite willing to discard the *Justicia*.—S. D.

Spirea palmata for forcing.—"W." (p. 499) associates this with *S. japonica*, and states that they are two of the most useful plants for forcing, but that, though the one is well adapted for bringing on early, to attempt to force *S. palmata* much would spoil it, as it is very impatient of heat. This "W." seems aware of, for after making the above assertion he goes on to remark that if *S. japonica* is placed in a warm house, leaves and flowers are soon produced in abundance, but if *S. palmata* be subjected to the same treatment, it is almost certain to prove unsatisfactory. The only way I have ever found this lovely plant to do really well is by taking it up early and potting without disturbing the ball or roots any more than could be helped, and after that, standing it in a cold frame with a covering of half-rotten leaves over the crowns. Under this treatment they come on slowly and almost naturally, as all the warmth they get is that from keeping the lights close till the young leaves begin to show through, after which the plants will gradually bear a little more heat till they come into bloom.—S.

Double Violets.—Everyone possessing a garden of any ordinary size should certainly make a point of growing one or more of the following kinds, viz.: King of Violets, Queen of Violets (double white), Venice, Marie Louise, and Neapolitan. Their culture is simple and inexpensive, and nothing surpasses them for a button-hole bouquet resting on a leaf of the scented *Crow's-foot* Geranium. Good strong plants can be obtained in 5-inch pots at any large nursery. All last year's plants should be replanted and divided in May in deeply dug manured soil, choosing a north border, or, failing that, any damp shady position will do. Never allow them to want for water, or they will soon be infested with red spider, their worst enemy. Plant them about a foot apart each way, and allow them to remain undisturbed till October. By that time Cucumber and Melon frames and pits will be at liberty, and from these remove the old soil and substitute a fibrous yellow loam, laying the rough pieces or turves in first as drainage. The plants should then be lifted from the border with as much soil adhering to them as possible, and planted 9 inches or a foot apart in these pits or frames, bearing in mind that the nearer the glass they are planted the better. Therefore the frames must be filled with soil to within 4 inches from the top. If the weather is bright they must be kept close and shaded till they get established, which they will be in two or three days provided they are well watered when planted and syringed early each morning. When once established the lights had better remain off during mild weather in the daytime, as they require all the air they can get, but on no account must they be allowed to suffer from frost, and the way to prevent this is to keep the sides of the frames lined with manure, leaves, or other litter. The glass must be kept covered with

mats, and on these should be put a coat of litter. As soon as a thaw sets in these mats must be removed and a little air given to the plants. Runners may be allowed to remain, as they flower a little later on, as well as the parent plants. Watering must be attended to carefully to keep them in a growing condition, and they should not be allowed to become dust dry.—E. LINCOLN.

FRUIT GARDEN.

PRUNING OUT-DOOR VINES.

OUT-DOOR VINES, as a rule, are sadly neglected, especially in regard to pruning; well managed there can be no doubt as to the possibility of ripening good crops of the hardiest kinds of Grapes on south walls every year, and during such summers as the last they are ripened in perfection, but it would be unreasonable to expect out-door Vines to produce anything more than leaves and unripened fruit if sun heat never gets to the wall on account of a crowd of useless foliage. Winter pruning, instead of being simply removing the summer growth, ought to be a thorough pruning out of all exhausted wood and the retention of the best ripened canes of the current year for replacing those cut out. This is a good time to get such work done. If mild weather prevails with the lengthening days, the sap gets excited and bleeding follows, thus weakening the Vines considerably. The best course to adopt is to always prune as soon after the fall of the leaf as possible. The best mode of training out-door Vines is to lead a main shoot right and left about 1 foot from the ground, and from this to train up young shoots about 2 feet apart for bearing; this will allow space for the fruiting shoots to lie close to the wall, which will, moreover, not be so densely covered with foliage as to exclude the sun's rays from warming the bricks. On this depends much of the success attending the undertaking, as it is the latent heat absorbed by the bricks during sunshine and given off again at night that helps the crop to ripen. Disbudding should also receive attention. This should be done directly the buds swell sufficiently to see which are the most promising; it is sheer waste of force to allow more shoots to grow, even for a short time, than are really needed: one shoot to a spur is plenty, and one bunch to a shoot ought to be the rule. Remove the others directly they are visible, then stop the growing point of all the bearing shoots at one joint beyond the bunch, except the leading shoots that may be allowed to extend to the top of the wall. Fasten the shoots by tying if the wall is wired, or by nails and shreds if not. As soon as the fruit is set and swelling thin out the berries according to the variety. Small-berried Sweetwaters do not need so much thinning as Black Hamburghs and similar kinds, but it is wrong to leave them so thick as they usually are. Keep all lateral shoots pinched in close; it is the large leaves on the fruit-bearing shoots that are the ones to take care of. Keep them clean by washing them well with the garden engine or syringe after hot days, and give the roots plenty of liquid manure when the berries are swelling. If these simple rules are adhered to, fine bunches of at least 1 lb. each may be thoroughly ripened in our average summers of the following sorts—viz., White Sweetwater, Royal Muscadine, Black Hamburgh, Foster's Seedling, Miller's Burgundy, Black Cluster, and Esperione. I have seen good crops of out-door Grapes year after year in old-fashioned gardens. Success is simply a question of attention to trifling details in the way of culture. J. G.

Hants.

Good Pears for late districts.—We have a very unfavourable locality for Pears and Apples here in Yorkshire, very few of the later kinds of Pears ripening annually on bush or standard trees; but when we have a crop, the variety named *Beurré d'Amanlis* is the best. This season it has been grand on low bushes, the fruit being much finer than any other sort and well

ripened. It is in season here in October, and is then without doubt one of the most delicious Pears one can eat. I can strongly recommend it for culture in late districts as being a dependable sort. Our examples are above the average size, being quite as large as some of the finest examples of Jersey Pears, notwithstanding that the tree was root-pruned in February last. *Beurré d'Amanlis*, Napoleon, Louise Bonne, Marie Louise, and *Beurré Diel* are the only kinds that have borne well here this season. The Marie Louise is, indeed, almost a fail-me-never kind on old trees on walls facing the south. The number of useless varieties of Pears as well as Apples that are planted in mostly all gardens, and which rarely or never produce fruits which are fit to eat, is great. Many of the so-called hardy varieties are not hardy, and are useless for planting. Hence, no one should plant without first looking round the best fruit gardens near where they live, and making a note of those kinds which can be depended upon. A Pear congress should be our next consideration.—W.

APPLE NOTES FROM ELVASTON.

ONE of the richest soils adapted for the growth of fruit trees is that of the shallow vale of the Derwent, and the best known name in the district as a fruit grower is that of Mr. Goodacre, of The Gardens, Elvaston Castle. His Grapes, which are always hard to beat, are grown with little or no manure compared with the copious feeding of other successful growers. But the greatest proof of the nutritious power of the soil that I saw was a Marie Louise Pear tree planted against a lofty wall, one of the four supporting a tank or reservoir of water. The height of this tree is out of all proportion to its breadth, being fully 50 feet high. Since it has only been planted five years, and was at the time of planting 5 feet high, the annual growth has averaged 9 feet per annum. The side branches are horizontally trained at a distance of a foot apart. And this year, although at its present altitude it has to bear all the cutting power and bitterness of the winds, six shoots on either side suitable for nailing have been produced. Mr. Goodacre was not an exhibitor at the Chiswick Apple Conference, albeit he has under his charge a collection of 200 varieties, and the majority of his trees are well established and at their best. The pyramidal growth of the standard Pear trees is symmetrical in the extreme; however, there is no lack of young and vigorous wood, which shows that there is no need of a constant hacking into shape. Indeed, it is somewhat remarkable to notice how the young shoots in many cases take their places voluntarily as if they knew what was expected of them. This cursory mention of pruning recalls to my memory the method adopted with the Apricots. Some of the trees at Elvaston are cankered and others are as healthy as possible. The healthy trees are never winter pruned, but only have the growth checked by summer pinching. From this experiment it seems conclusive that in a rich soil with a cold climate Apricots should never be touched with a knife in the winter. If a dying shoot be bisected, the heart is always the most decayed and looks as if an icy chill had penetrated like a stab. That the climate is cold is proved by the tardy ripening of the Apples. Newtown Pippins on a south wall bear well, but the colour of the fruit is very different from that of American grown specimens. Good late dessert fruits are Baron Ward, Wheeler's Russet, Irish Crofton, and Cornish Aromatic. The last mentioned variety was better in quality from this soil than I have ever tasted it, and was one of the best flavoured Apples grown. Mr. Goodacre stated that it was a heavy and sure bearer, and kept well until the month of June. For this district it ought to be largely planted, as it is also a handsome and saleable Apple. Blenheims, on the other hand, although large and well coloured, are not so good in quality as in other districts. The Irish Crofton, although small, is another most desirable and very late dessert kind. Other sorts that are sure bearers in this district, and therefore, perhaps, hardy varieties suitable for orchard

culture, are Queen Caroline (Spencer's Favourite), Caudwell, and Winter Pearmain. Lord Lennox is another fertile and late keeping dessert Apple of a very taking appearance. Although fair in quality, it is inferior to the Cornish Aromatic.

C. A. M. C.

American Mother Apple.—Several growers with whom I am acquainted speak highly of this remarkably handsome dessert Apple. Some of the best examples of it I have seen were grown by Mr. J. Davey, gardener to Mr. Carver, Bridgewater, and it has figured conspicuously in several prize-winning collections of Apples this season. The fruits are of good medium size, conical in shape, very highly coloured, this season especially, and possess a peculiarly distinct and pleasing flavour. Altogether it may be said to be one of the best flavoured and handsomest Apples in season during October and November. I have seen it particularly good on pyramid trees, and it succeeds well on a heavy soil.—W. I. M.

Walburton Admirable Peach.—A good late Peach is as much a desideratum with lovers of Peaches as a good early one. The fault of most late Peaches is that they are dry, mealy, and flavourless. The old Walburton Admirable has none of these faults, and under glass it ripens with us at the end of September, and is in use in October; outdoors it is of course considerably later. The fruit is large, pale coloured, juicy and rich. It is in fact one of the best Peaches to eat that I know of. The tree is also a good grower and a wonderfully free bearer, considering the large size of the fruit. All late Peaches should be well exposed to the sun to promote colour and flavour, as late in the year the sun's power is on the wane, and unless the leaves are pushed back from the fruit, the flavour will not be good.—S.

Victoria Nectarine.—This Nectarine has been referred to more than once in these pages for its general excellence. Its best point is that, whether forced early or grown in the late house, it is probably the most prolific of all Nectarines. A comparatively young tree here, about seven years from the graft, and not allowed to extend as much as it would have done had it had room, bore close upon twenty dozen fruit this autumn. An older tree of the same variety in the early house has borne during the past three years, in May and June, just about one hundred dozen, and good crops previous to that every season. The fruit is large and of first-rate quality. It is not a variety I recommend for very late cropping, as the fruit does not then ripen so well. For a crop any time between May and September, it is, however, to be depended on.—J. S.

SHORT NOTES.—FRUIT.

Fig Dauphine d'Argenteuil.—I was so much struck by the size and excellence of this Fig, as I saw it shown and grown at Paris, that I secured plants of it, which I have now grown for several years, and my opinion is that it is one of the best varieties for either early or late work. It is of large size, a most prolific bearer, and of excellent flavour.—J. S.

Wrongly-named fruit trees.—It is a fact that nurserymen do not pay sufficient attention to keeping their trees correctly named. I have had Blenheim Orange from two different nurseries, but neither is the right sort. I ordered three trees of the Worcester Pearmain, and they have all turned out to be wrong. Four years ago I ordered a tree of Doyenné d'Été Pear; this season it fruited and proved to be Doyenné du Comice. Under such circumstances what are we to do?—J. C. C.

Gros Colman Grape.—When referred to lately in THE GARDEN, this is called Gros Colmar. In the "Fruit Manual" and in catalogues it is Colman. On what authority is the change made?—R. P. WILLIAMS, Clontarf, Dublin.

*** According to Barron's "Vines and Vine Culture," Gros Colman is the correct spelling of the name of this variety, Gros Colmar and Gros Colman being synonyms. Gros Colman is the name given in Leroy's catalogue in 1860; Gros Colmar in that of Jacquemet-Bonnefont, of Annonay, in 1853; while in that of De Bavy for 1852 it is called Gros Colman. In Germany it has been known for many years as Gros Kölner, and it is of this name that the French Gros Colmar or Colman and Gros Colmar are corruptions.—Ed.

Fertility of young Vines.—Amateurs and others now know that Vines one year old will produce a good crop of fruit, but the idea still commonly prevails that in the case of permanent Vines, several years, perhaps from four to six, must elapse before they can be brought into a full bearing state. This is a delusion. It is not uncommon now to meet with vineries that have been filled with Vine rods the first year, cropped the next, and constantly in succeeding years. This is accomplished by growing good canes the first season, ripening them well, leaving them the full length of the rafter at pruning time, and cropping them judiciously their whole length from the first, never cutting them back. We have a number of Vines that have been bearing for years in this way, one in particular having a bearing length of cane of about 45 feet, the produce of two years, and now bearing equally as fine a crop as it did the first year. The Vine is six years old, and has produced five full crops of fruit. Another Vine we have produced a cane of the length of 13 feet last year, and has this season borne close upon 20 lbs. of finely finished Grapes. Had the whole vinery, 50 feet long, been filled in the same way, a crop of some 400 lbs. would have been the result from Vines that were not in existence at the beginning of 1883. Of late a good many examples of this kind have been brought forward. They serve to show those desirous of growing Grapes that, provided they start fair and in time the first year, they need not wait long for good crops of fruit.—S. J.

Old Vines and young wood.—The question of how long a Vine will continue to yield good crops, or rather when it may be termed worn out, is not very easily settled; we find many Vines healthy and prolific at fifty years of age, while others are grubbed up as useless at a much earlier date. The Vine, if it only gets rational treatment, is unquestionably long lived, and I feel sure that if two Vines were planted for experiment—one in an artificially prepared border and under glass, the other in the poorest soil out of doors—the one under glass kept closely pruned on the orthodox spur system and the outdoor one allowed to extend, that the latter would be hale and vigorous long after the other had been grubbed up as useless; yet the one under glass has had the advantage of more thoroughly perfected wood, but the close pruning without extension acts injuriously on the roots, and new wood promotes root action to such an extent that I have no hesitation in saying that many a set of Vines cut out as useless would fill the house in half the time that young ones would do if care were taken to replace the old rods with young ones. I have lately been trying the plan of getting an entirely new set of rods on old Vines without any loss of crop. I simply cut off all spurs at the lowest part of the old rods to make way for the young rods, so that while the old rods furnish the top of the house and bear fruit the young rods occupy the base, and in about three seasons the old rods may be entirely removed. My own impression is that the best system of pruning is to remove a certain number of rods every year and start an equal number of young ones to replace them.—J. G. H.

Pruning Peaches.—The Peach being accommodating in habit has led to its being trained and pruned in a variety of ways. The tree bears on the wood of the previous year, and mainly along the sides of the young shoots, which run from 2 feet to 4 feet in length on healthy trees. Spurs are produced on the older wood, which are also fruitful, but the last year's shoots produce the main crop. The fertility of the Peach may be judged from the fact that a young tree, two or three years old, if it has been allowed to grow, will produce as many as ten or twenty thousand fruit buds, and leaf buds besides. It can easily be seen in the autumn previous whether fruit buds are present or not, and the prospects of a crop may be certainly ascertained then, provided the conditions are favourable when the flowers expand. In fairly vigorous trees, which are not gross nor yet weak, the fruit buds are produced in pairs, one on each

side of every fruit bud, and sometimes in over-fertile trees the leaf buds are also converted into fruit buds. Some varieties are more addicted to the production of fruit buds than others, often not showing any leaf buds except at the bases and points of the shoots. Such shoots will not bear cutting back, because, unless the shoot is cut at a leaf bud, it will die back to where there is one. The same thing happens also when leaf buds have dropped prematurely from any cause, which often happens. Seeing, therefore, that the shoots of the current year are the shoots that bear the crop the year following, the cultivator should take care always to lay in a supply of these all over the tree, but no more than can be well matured by full exposure to light and air, and in pruning in winter the best of them should be left. In fact, the Peach and Nectarine are like the Morello Cherry in habit, and, when grown as a standard, need the same treatment, except that the shoots should be thinned out by disbudding at an early stage.—W.

Grapes colouring best in shade.—The interesting account of Grape culture given by Mr. Allan (p. 491) would appear conclusive as to the best coloured Grapes being those grown in the deepest shade, for in the system of training adopted by Mr. Church it would be impossible for any direct sunlight to reach the lower portion of the Vines, on which the blackest Grapes were produced; the most imperfectly coloured bunches in the house were, Mr. Allan says, those on the tie rods that received most sunlight. The practice, therefore, of thinning out the foliage to admit light and air to assist colouring must be a doubtful experiment. It may do for Muscats and other yellow Grapes, but for black fruit I think it will be generally admitted that a good covering of foliage is the best to ensure high colour. Last season I took a long rod of a Black Hamburg through a partition into a house with a north aspect. This was glazed with Hartley's rolled plate glass, and therefore the sun's rays were much broken before they reached the foliage, yet the Grapes coloured so well, that I should have no hesitation in planting Vines in north-aspect houses, except for the loss of the heating power of the sun. The instance given by Mr. Allan of the possibility of growing heavy crops of Grapes on what may be termed the vineyard system may, I should think, be turned to good account by growers for market.—J. G., Hants.

Crittenden Cluster Damson.—Although this useful fruit is largely grown in Kentish orchards, it is by no means so well known as its merits would lead one to expect, and as the planting season has now arrived, this kind should be planted largely. It is not only one of the best of market kinds, but also invaluable for private gardens, as Damsons come into use at a time when the majority of fruits are over, and it is not of such a perishable character as the larger kinds of Plums. By careful management it may be made to extend the season for fresh fruits very considerably, for if the Damsons are gathered when they will no longer hang on the trees and spread out thinly in a dry, cool shed, they will keep plump and fresh for at least three weeks or a month. There is little trouble involved in growing this excellent fruit, for the trees will thrive in any fairly good soil, but they should be carefully pruned. In Kent, where heavy crops of this kind are grown, the young trees are gone over every winter; the long shoots of the current year's growth are shortened to at least half their length, and this induces the formation of dense clusters of fruitful spurs, that in due time produce such clusters of fruit that the branches look like solid lumps of Damsons, so tightly are they pressed together. Although I am no advocate for unnecessary pruning, I must say that pruned Damsons are far more fruitful, take one year with another, than those allowed to grow unrestricted. I therefore feel confident that anyone growing this kind and shortening the young growths as described will not have to wait long before they are convinced that Crittenden Damsons on the restrictive system are a decided acquisition.—J. GROOM, Gosport.

NOTES OF THE WEEK.

Rose show fixtures for 1885.—Canterbury, July 27; Crystal Palace, July 4; National Rose Society's show at South Kensington, July 7; Sutton, July 8; National Rose Society, Manchester, July 11.

Rosewood trees are found in South America and in the East Indies and neighbouring islands. There are, says the *Anglo-American Times*, half a-dozen kinds. The name is not taken from the colour of the wood, as is generally supposed, but by reason of a Rose-like fragrance which it possesses when first cut. Some of the trees grow so large, that planks 4 feet broad and 10 feet in length can be cut from them. The broad planks are principally used to make tops for pianofortes. The Rose-wood tree is remarkable for its beauty. Such is its value in manufactures as an ornamental wood, that some of the forests where it once grew abundantly have now scarcely a single specimen. New plantations have been set out, so that the supply will not become exhausted.

The exhibitions of the National Auricula Society and National Carnation and Picotee Society (southern section) will be held by arrangement with the council of the Royal Horticultural Society, in the gardens of the Society at St. Kensington—the Auricula on April 21, and the Carnation and Picotee on July 28. April 21 is not a committee day of the Royal Horticultural Society, and an effort was made to fix the exhibition for April 28, but failed owing to that date having been previously appropriated by the council of the Royal Botanic Society of Manchester. A meeting of the committee of both societies will be held by permission in the Conservatory, at South Kensington, on Tuesday, January 13. Immediately after the various committees have completed their work, the principal business will be to pass the rules for exhibitors, and to arrange and sanction the printing of schedules for 1885.

Bananas.—Much money, says the *Anglo-American Times*, is being invested by Americans in fruit culture outside the United States. One New York firm planted a large area in Jamaica with Bananas; another, an estate in Boca del Toro; a third, the Honduras Tropic Fruit Planting Co., at Tela, at a cost of £14,000. Three hundred acres of Bananas are under cultivation, and this year there will be 700 acres more, which will yield 15,000 bunches a month, enough to keep a fair-sized steamer employed in transporting the fruit. Three other companies are planting by the Bluefields River, in Nicaragua, and two companies have been formed in New Orleans to begin next February. All the land along the Bluefields is taken up, for Banana culture has been found very profitable.

Royal Horticultural Society.—Below are the dates of the promenade, plant, and flower shows to be held in the conservatory during the present year: Tuesday, March 10, 24, and April 14, promenade show; April 21, National Auricula Society's show; April 28 and May 12, promenade show; May 26, show of pot Roses, Azaleas, &c.; June 9, show of Orchids, &c.; June 23, show of Petargoniums, &c.; July 7, National Rose Society's show—Roses; July 14, show of plants and flowers; July 28, National Carnation and Picotee Society's show and show of Begonias, &c.; August 11 and Wednesday, August 12, show of plants and flowers; Tuesday, September 8, and Wednesday, September 9, show of Dahlias, Grapes, &c.; Tuesday, October 13, Wednesday, October 14, and Thursday, October 15, show of fruit and vegetables. Fruit and floral meetings will be held on Tuesdays, at 11 a.m.—January 13, February 10, March 10 and 24, April 14 and 28, May 12 and 26, June 9 and 23, July 14 and 28, August 11 and 25; September 8, October 13 and 27, November 10, December 8.

Water saucers and double flower-pots.—I can strongly recommend the water saucer recently patented by Mr. Knight and figured and described in *THE GARDEN* (Vol. XXVI, p. 518).

As a complete protection from slugs it is thoroughly effective. The saucers were made for me in the spring by Mr. W. Allen, of the Benthall Potteries, near here, from a design made by my eldest son, and are identical with the design patented by Mr. Knight. I have also had in use for some years a double flower-pot. The space between the inner and outer pot being filled with water keeps the contents of the inner pot uniformly moist, whilst drainage from the bottom is secured in the usual way. I believe that Messrs. Backhouse and Son, of York, were the first to use this form of flower-pot. For the culture of delicate alpine, which are liable to injury by hot sun and drought, I find the double water-cased pot very successful.—GEORGE MAW, *Benthall Hall, near Broseley.*

PLANTS IN FLOWER.

Cattleya dolosa.—A twin-flowered spike of this beautiful and rare Cattleya has been sent to us by Sir Alexander Ramsey, of Cheltenham. The flowers much resemble those of the better known and common *C. bulbosa*, or *Walkeriana* as it is also called, but they are larger, more sweetly scented, and the colour, a rose-purple, is deeper and richer. Sir Alexander has had his plant three years, and consists of twenty-one bulbs. It is indeed a most beautiful Orchid, and particularly desirable, inasmuch as it habitually flowers in winter and is dwarf and neat in growth.

Lælia alba bella.—Of this lovely Orchid a glorious spike, the finest we have seen, has been sent to us by Captain Hopegood of Ferniebank, Bridge of Allan. The plant from which the spike was cut bore three others, the whole carrying no fewer than 39 blossoms, which on the plant must have been a beautiful sight. This fine specimen is similar to those which we frequently receive from Captain Hopegood's neighbour, Dr. Paterson, who sent just before Christmas a beautiful gathering of choice Orchids, consisting of the following: *Maxillaria lepidota*, *Cattleya maxima*, Backhouse's variety; *Vanda cœrulea*, Sir Trevor Lawrence's variety; *Masdevallia tovarensis*, *Masdevallia ignea* (Dr. Paterson's variety), *Masdevallia amabilis*, *Lælia anceps Barkeri*, *Lælia anceps Hilliana*, *Cœlogyne barbatula*, *Odontoglossum Uro-Skinneri*, a very fine dark variety; a *Zygopetalum Mackayi*, Dr. Paterson's variety, with large highly-coloured flowers; *Oncidium pretextum*.

Scillas at Christmas.—It does not seem to be generally known that the beautiful little *Scilla sibirica* can be had in full bloom by Christmas as readily as the *Duc Van Thol* Tulip, and under much the same treatment. Here it is greatly valued for early forcing, as it supplies a colour but little represented, the brilliant blue of its blossoms associating well with the scarlet flowers of the Tulip and the pure white bells of the Lily of the Valley. If removed from the forcing house as soon as the flowers open and placed in a greenhouse temperature, this Squill will remain a long time in flower, provided the atmosphere is not too moist. In button-hole bouquets its spikes of blue bells are much appreciated. Bulbs of this *Scilla* are received from Holland along with our annual consignments of Dutch bulbs. They are potted pretty thickly together in 6-inch pots, the soil used being of a rich loamy character. After potting they are set on a sheltered spot, given a thorough watering, and then covered with coal ashes, in which condition they remain till the roots get into active operation. About the middle of November the first batch is removed into the forcing house, in which flowers are quickly developed. In common with most bulbs forced early into bloom, this *Scilla* often fails to push up its flower-spikes sufficiently for the lower blossoms to show themselves. Should such a thing appear likely to happen, invert a pot over them for a few days, thus keeping them in darkness, or nearly so, and under this treatment the flower-stems will become sufficiently elongated. When done blooming we place them in a frame and protect them from frost, which, owing to the forcing to which they

have been subjected, would greatly injure them. This practice is carried out in the case of all forced bulbs, which come in useful for permanent planting in borders, on the Grass, or in the many suitable spots that can be found for them.—H. P.

5291.—Double Tuberose.—In reply to "W. C.," we would say that Tuberose may be had in succession by potting the tubers in February, March, and April, and plunging them in a cold frame, covering them 4 inches deep with Cocoa-nut fibre refuse, but they start a little more quickly and with greater certainty in a gentle bottom-heat. Loam and well-decayed manure in about equal parts, with a little coarse river sand, is the most suitable compost in which to grow them. The pots may be taken out of the frame as soon as the flower-stems appear above the leaves, removed to a greenhouse, and taken into the forcing pit as required, to be in perfection in October and November.—CARTER, *High Holborn.*

LATE NOTES.

Eriogonum Drummondii.—In a disused hollow on the island of Treco this *Eriogonum* has spread of its own accord and caused an unattractive spot to glow with colour. By means of a acre of trees such clips in the ground can be adequately sheltered.—C. A. M. C.

Odontoglossum crispum.—I have a plant of this bearing a spike nearly 3 feet long, having nine branches and no fewer than seventy blossoms. I have also several others bearing branching spikes having from twenty to thirty blossoms. Has anyone had a greater number than seventy blossoms on a spike?—HY. McCOWE, *Bellvue, Cork.*

Chou de Burghley Cabbage.—If Gilbert's Universal Savoy is anything like his Chou de Burghley cabbage, the sooner he sends it out the better. We think the Chou de Burghley the best Cabbage grown, and nothing else is used here as long as it lasts. We shall make several sowings of it next season, so as to prolong the season during which it can be used.—A. H. T.

Conifer insects (F. K.).—Your Conifers are not attacked by a fungus, but by one of the Aphididae, or plant lice, probably *Chimaphys*, but the insects are dead and so dried up, that I cannot name them with certainty. If your trees are not too large, syringe the affected shoots with soft soap and tobacco water, or soft soap two wine-glassesful and paraffin oil one wine-glassful to one gallon of water.—G. S. S.

Fungus (J. P., Longleat).—The fungus is dry rot (*Merulius lacrymans*). It only grows in damp, unventilated places. Dryness is death to it; if you can keep out the damp, you will not have the fungus. Dilute cubolic acid, creosote, and corrosive sublimate have been recommended as washes, but they are expensive, difficult of application, and dangerous. The better plan is to keep the place dry if possible; fungi cannot spread in a dry house.—W. G. S.

On going out early this morning (December 21) I found part of the lawn covered with lumps of a white gelatinous substance, of which I have sent you specimens. Can you or any of your correspondents give me any information respecting its nature and origin?—J. ASHBURNHAM, *Sherfield Park, Kent, Sussex.*

* The white gelatinous lumps, resembling masses of colourless jelly or blanc-mange, belong to one of the gelatinous Algae named *Dasygloia amorpha*. It is one of the Oscillatoriaceae (confervoid Algae), and your plant is, we believe, the only species of the genus. Judging from our experience, the plant is, we think, as rare as it is curious. Examples might possibly be preserved in spirit. The authorities of the department of botany, at Kew Museum, South Kensington, would possibly like to have it.—W. G. S.

Heating (F. K.).—Fox's "Compactum" hot-water apparatus would probably suit you. It is cheap, needs no brickwork, and is said to do its work well.

Naming plants.—Four kinds of plants or flowers only can be named at one time, and this, only, when your specimens are sent.

Names of plants.—R. P.—1, *Oocidium Fœrbesii*; 2, *O. crispum*; 3, *O. pretextum*.—North Devon.—1, *Dendrobium alatum*; 2, *D. chrysanthum*; 3, *Calanthe veratrifolia*.—Amateur.—Common *Helleborus niger*, not the altilifolius variety.

Naming fruit.—Readers who desire our help in naming fruit will kindly bear in mind that several specimens of different stages of colour and size of the same kind greatly assist in its determination. Local varieties should be named by local growers, and are often only known to them. We can only undertake to name four varieties at a time, and these only when the above condition is observed. Unpaid parcels not received.

Names of fruit.—Subscriber.—1, Benheim Orange; 2, Cox's Orange Pippin.—C. M.—1, Wellington; 2, Court of Wick; 3, Cox's Orange Pippin.—Others next week.

"This is an Art
Which does mend Nature: change it rather: but
THE ART ITSELF IS NATURE."—Shakespeare.

WINTER ORCHIDS.

*A morning among the winter Orchids at Messrs.
Backhouse's Nursery, York.*

MANY of the *Lælias* are in lovely bloom in the winter months. They have their name from Roman mythology. *Lælia* was a vestal virgin, whose office it was to keep alive the sacred fire in the temple of *Vesta*. They are singularly elegant flowers, and as they sport freely we find among them exquisite and delicate forms of flower-life. *Lælia anceps* is a noble plant, and cultivation has done much for it. It is doubtful why it is called *anceps*. Some think the name given because the flowers appeared originally in pairs; others look to the bulb, so-called, that differs so essentially from that of *L. autumnalis*; others again look for explanation of the name *anceps* to the two-edged spathe that enwraps the flower. But, whatever be the true explanation, it is a noble flower, and placed side by side with its near ally, *L. autumnalis*, especially the matchless variety *venusta*, what two plants can look more conspicuous for winter display? Both, I believe, are natives of Mexico, and of comparatively recent introduction. Many of the forms obtained from *Lælia albida*—more especially *rosea*—are exceedingly graceful and elegant in contour and colour, and they are fragrant too. The *Cypripediums*, as a group, are wonderfully attractive. No fewer than seven species were in flower. *C. Spicerianum*, a native of the East Indies, is, to my fancy, the most attractive of the group. It is a native of the East Indies, as I said, and its blooms—white, green, red—contrast most effectively. Then we have Mr. Seden's hybrid, first introduced by Mr. Veitch, formerly of Exeter—rosy in colour; the parentage, we are told, is not difficult to trace. The *Comparettias*, as a genus, are decidedly difficult of cultivation. They grow on the twigs of trees, which are thus clothed with a beauty not their own. Hence arises, doubtless, the difficulty of adapting our cultivation to their requirements. They lack the rocking of the tropical breeze. *C. rosea* and *C. macroplectron* were flowering, though shyly, the colours respectively rosy and white. They are mostly natives of Colombia. The deliciously fragrant *Oncidium ornithorhynchum*, from Mexico, was in full drooping lilac flower. The specific name implies similitude to a bird's bill, if you call imagination to your help. It is a very conspicuous spike of bloom. The *Odontoglossums* are always favourites. *O. crispum* and *O. gloriosum* were in exquisite flower. The tooth-like processes on the labellum of the flower characterise, more or less, the whole genus. I would especially mention *O. Pescatorei*, an Orchid from New Grenada, with its white and pink blooms. The forms vary from white flowers to those exquisitely spotted. Other *Odontoglossums* in flower were *O. membranaceum* and *O. nebulosum*. The *Masdevallias* are most attractive in form. They are chiefly from South America. A pure white species, white as the whitest porcelain, occurs in Colombia. I refer to *M. tovarensis*, introduced in 1865, and first named, if I mistake not, *candida*. *Trichopilia tortilis* is a lovely Orchid. The petals and sepals are

twisted, as the name implies. It is from Mexico. I must not omit *Cypripedium Schlimi*, white and crimson-spotted, that was introduced from New Grenada in 1867. The flowers are more compact than usual in the Slipper-worts. The *Cœlogynes*, as the generic name suggests, are characterised by their inflated pistils. *C. cristata* was in full flower. The bloom is white and yellow. It is a native of Nepal. A rare Orchid from Colombia, *Restrepia antennifera*, was in flower and bud. The appropriateness of the specific name is readily noticed. The lip of the flower is yellow, closely spotted and freckled with purple. Nature's mimicry is, probably, nowhere more conspicuous than in this genus. The *Angræcums* are chiefly natives of South Africa. The giant of the group comes from Madagascar. It has white flowers and a spur a foot and a half long; indeed, *A. sesquipedale* should have a place in a collection, if only in a contrastive point of view. *Manilla*, in the Spice Islands, gives us an assimilative flower in the lovely *Phalænopsis amabilis*, which looks like a white moth at rest on a flower. Though introduced in 1836, it never fails to attract the eye and win our hearty admiration. *Saccolabium giganteum*, a Burmese Orchid, the bud of which tells you of its name, had opened a spike of purple-white flowers, the bagged labellum being nearly as conspicuous as the bud itself. *Odontoglossum Rossi majus* had developed largely-swollen buds, ready to open with the first gleam of sunshine in the new year. It is a charming dwarf-growing species. Three more Orchids I should wish to add, and I have done. *Lælia elegans* should surely occupy a foremost place. It was introduced in 1865, and its lovely blooms—amethyst-purple—cannot fail to attract even a careless eye. *Lycaste Skinneri*, with its many charming varieties, is a noble flower. It is a native of Central America, introduced long ago, I believe in 1842, but it continues to hold its own, though one of an extensive genus. The last to which I would draw attention is an old favourite, introduced from Ecuador in 1844. I allude to *Cattleya maxima*; it is one of the largest of the group when well grown and very showy.

PETER INCHBALD, F.L.S.

The Mount, York, Dec., 1884.

Calanthes are wonderfully well grown at Powderham Castle, and the way in which they are rested may be worth recording. As soon as they go out of flower they are removed from the soil and laid in a box; the box is then taken to a shed from which frost is excluded, and this is their winter quarters. At the proper time they are brought out and potted in the usual way, and the large bulbs and ample foliage which the plants were making when I saw them early in autumn left nothing more to be desired. Plants in such robust health could not fail to produce good flower-spikes. It is evident that cool treatment while at rest suits them, although directly opposite to the baking process to which they are often subjected. Now is the time to act on this suggestion by such as care to do so.—J. C. C.

Odontoglossum Alexandræ.—The flower-spike of *Odontoglossum Alexandræ* with nine ramifications and 70 blooms, referred to in last week's queries (p. 16), is certainly remarkable and well worth special notice. I may state, however, that plants with both more flowers on one spike and with spikes longer than that which he mentions are not so rare as he imagines. A spike only twice branched measuring 54 inches has borne 83 flowers. It occurs in M. le Comte de Germiny's collection at Gouville, near Dieppe, where it is admitted on all sides, and as your readers will be

able to judge by the following figures, Orchids are grown in perfection by the gardener, M. Rondeau. The above is no solitary instance, for there are several others which measure from 3 feet to 3 feet 10 inches in length, though not yet quite fully developed, and which all bear between 54 and 62 flower-buds; it must be borne in mind, too, that these are single spikes without any ramifications; the flowers are also of good substance and large size. I may add that at Gouville there are over 800 spikes of *Odontoglossums* now in course of development.—S.

IRIS PUMILA AND ITS ALLIES.

A GREAT many persons give the name *I. pumila* to any low-growing dwarf-bearded Iris with a very short stalk bearing one or at most two flowers of somewhat small size. But anyone can see that the various forms thus indiscriminately called *I. pumila* differ a good deal from each other; and indeed this is recognised by the numerous names used in gardens to denote many so-called varieties of *I. pumila*; and when we come to consult the botanists we find that many of these forms are considered by them as distinct species clearly separable from *pumila*. Of all these dwarf Irises perhaps the least common in our gardens is the real typical *pumila*, most of the plants called *pumila* belonging properly to one or other of the other species. The tendency of botanical study has been, in fact, to restrict more and more the application of the term *pumila*. Thus, while according to some of the older writers, *I. pumila* occurs abundantly over a very wide area, stretching from the south of France, through Southern Europe, along the Caucasus, to North-central Asia, and even reaching to Siberia, successive authors have limited its range. In the south of France, for instance, what was once called *pumila* is now recognised as either *I. Chamæiris* or *I. olbiensis*. In Italy it has been supplemented by *I. italica*, *I. pseudo-pumila*, and *I. panomitana*, and it is exceedingly probable that many of the plants in Central and Eastern Asia which have been called *pumila* are in reality specifically different.

It would be hardly worth while to discuss here the characters distinguishing them and other forms from *pumila*. But I may mention that the plant most commonly confounded in this country with *I. pumila* is *I. Chamæiris*, and that among the points of difference between the two insisted upon by Spach perhaps the most striking is that whereas in *I. pumila* there is no stalk at all, or one so short and covered by leaves as not to be visible naturally, *Chamæiris* has a distinct stalk carried above the sheathing leaves, and hence naked and visible. A curious physiological difference exists also between the two; *I. Chamæiris* seeds freely, but *I. pumila* very rarely goes to seed; and hence by seeding, the former has, on the one hand, become more common as a cultivated plant, and on the other has broken out into several varieties.

The relations of *I. pumila* are not uninteresting. On the one hand, it passes almost insensibly through *I. Chamæiris*, *I. olbiensis*, &c., into the biflora group, and then to the ordinary tall bearded Irises. On the other hand, it may be traced through such forms as the *I. melitta* of the Balkans and the closely allied *I. rubro-marginata* of Asia Minor into the fugacious *arenaria* group, several members of which show curious affinities with some of the dwarf forms of beardless Irises.

As a garden plant *I. pumila* in its several varieties is of value on account of its early and profuse blooming. A good large clump, or, better still, a whole bed of it, in full flower on some bright, warm April morning, the fresh, bright green, short foliage almost covered with blue or purple flowers, affords a very pleasing sight. Unfortunately, each bloom is soon gone, and though this is partly made up for by the number of successive flowers, the whole period of beauty lasts a comparatively short time. But there is this to be said that when out of flower the plant is not ugly; the short swords of the foliage have a beauty of their own, lasting well nigh throughout the year.

As regards their culture, little need be said save that they must have, if they are to flower well, some warm, dry, sunny spot. Coming from the sunny south, they need all the sun they can get in our dull clime. While growing fast in spring water is very acceptable to them, but it is death to them to be waterlogged in winter; and their fleshy rhizomes tell us that a good baking in summer will turn the energy, which might otherwise be wasted in leaf, into bloom buds for the coming year. A place on the rocky or some clear spot in the border, where the sun can always reach and whence surplus water can readily flow away, is their proper home. As to soil, they do not seem to me to be very fastidious, though they appear to do best in a sandy loam, enriched by leaf-mould, rotten manure, or peat, so as to increase the humus constituents of the ground. But their food must be in proportion to the sunlight which they catch. In a dull damp spot, rich food will only furnish leaf and rapidly lead growth on to decay. In a bright warm corner in some happy place, and where the sun shines and burns in summer, their extra food will be turned into fuller bloom. One word more; if a plant has found its right place, never move it. Like other Irises, *I. pumila* dislikes being divided and transplanted; constant meddling with it is the best way to ensure its never blooming. M. F.

GREENHOUSE FLORISTS' FLOWERS.

AMARYLLISES.—The resting period of these handsome flowering plants is during the months of November, December, and part of January. About the second or third week in January the bulbs should be shaken out from the pots in which they had grown the previous year and repotted in good soil. I do not think the *Amaryllis* is very particular as to the character of the soil in which it is potted. We grew our plants one season in good substantial loam with a little decayed manure and sand, and in this they succeeded very well. During the last few years we have used a lighter compost formed of a third part of peat with sufficient sand to keep the compost open. Various sized pots are required. The largest bulbs are potted in 8-inch pots, and the smaller ones in 7-inch, 6-inch, 5-inch, and 4-inch ones. In repotting do not plant the bulbs too deep, and press the soil firmly round them. After they are potted, plunge them in a gentle bottom heat, but do not give any water to the roots until they have made some start in growth. It is not desirable to have too great heat in the house at first; 45° is quite enough, and this should not be increased until the plants have shown some signs of growth. Everyone does not possess the convenience of a house entirely devoted to these plants. In that case, if the use of an early vinery that has been started about the middle of January can be obtained, that would be the next best arrangement for them. It is a good plan to form a hotbed inside the earliest viceries. In country places, where plenty of tree leaves can be raked up, a heap of these can be formed and mixed up with some manure from the stable yard; the heat from this mixture is very lasting, and a bed of this kind does well to start the *Amaryllis* bulbs upon.

THE CYCLAMEN is one of our finest winter-flowering greenhouse plants, and, judging by what one reads about it, its culture is not at all sufficiently understood. Some of the growers for Covent Garden Market turn out magnificent examples. They sow the seeds about the first week in July, and as soon as the first leaf or two is formed the small plants are pricked out singly into small pots; they will do well in cold frames until the end of September, when they should be placed on shelves near the glass in a greenhouse for the winter. It ought to be a warmer place than an ordinary greenhouse; a temperature of 45° to 50° will answer best if a choice can be had. The small plants should be kept growing during the winter. The large plants are now flowering freely in a temperature of about 50°, with a rather dry atmosphere. The flowers are useful to gather for bouquets or house decoration. The stems ought not to be cut; it is better to pull the flowers out from the crown of the corms. If the stems are cut, the

portions left on the plants will decay, doing considerable damage.

AZALEAS.—By December all the older leaves will have dropped off, the early flowering varieties having arrived at the same stage a month or more previously. These early varieties are now ready for forcing, and may be placed in a house where they have a gentle heat. Thrips and red spider both do much mischief to the plants. The best way is to destroy them together by dipping the plants in soft, soapy water in which some Tobacco liquor has been mixed. The soapy water will of itself destroy green fly, but not thrips or red spider. Some persons make a grave mistake by keeping their plants too dry at the roots during the winter season; they certainly do not require a great deal of water, but what they do need should be given in a way that the whole mass of roots may be thoroughly wetted. If such plants become thoroughly dry at the root, it is not easy to wet the entire ball of roots. Some cultivators are constantly rapping the pots with their knuckles to ascertain their state of dryness, but in many cases this is deceiving, and when plants are so dry that the pots give forth a ringing sound when rapped, they are likely to suffer. The reason they do ring is because the compost and the roots shrink by reason of dryness; they separate from the sides of the pot, leaving a small space; it may be but a hair's breadth, but it is sufficient to cause the water to pass down between the ball and sides of the pot instead of wetting the roots in the centre, as it ought to do.

THE PELARGONIUM requires considerable thought in winter. The admission of air is of considerable importance, and the plants should be placed where they are fully exposed to the light, that is as near as possible to the glass. The reason of this care is because the plants are in growth all through the darkest days of winter, and light as well as air is necessary to the perfect development of the growths. Much water will not be required, but the plants must not become dust dry. Let the soil become fairly dry before watering, and then give plenty. If the plants were not all in their flowering pots during October and November, they should be potted at the earliest opportunity. It is best to fumigate the house during the winter about once a month. This will keep the plants clean, which is far better than killing the insects after they are present. The zonal *Pelargoniums* have become the most useful of winter-flowering plants; the house where they are growing should be heated to 50° at night, but to do them well there should be a constant circulation of air through the house. It will not do to let a current of ice-cold air blow directly upon them; a very small opening at the highest part of the roof has the desired effect. Roof heating, as practised in Messrs. Cannell's nursery at Swanley and in our own garden here, is the best arrangement. The roof glass is kept comparatively dry, the air also being dry and in motion over the flowers. At this season the plants have a tendency to run up into growth, carrying off the vigour that ought to be thrown into the flower trusses. This is avoided by pinching out the points where a flower-truss is forming.

THE FUCHSIA is a deciduous plant, and does not require much attention in winter. After the leaves drop the plants may be removed anywhere provided they are secure against frosts. Verbenas and Petunias pass the winter on a shelf near the glass in a vinery or Peach house. The first named are very liable to be attacked by green fly and mildew, but they are easily destroyed, or if early precautions are taken they would not be attacked.

CINERARIAS AND CALCEOLARIAS require very similar treatment. The last named are rather more impatient of a warm, dry atmosphere, and are not liable to be injured, even if the temperature of the house falls to the freezing point. See that the plants are kept quite clean; no other plants suffer so much from the attacks of green fly. If good specimen plants of either are required, they ought to be carefully attended to, and the growths of the *Cinerarias* should be tied down to the rim of

the pots. Scarcely any other plants suffer so much from over-dryness at the roots, and the *Calceolarias* are also most liable to be injured from this cause. J. DOUGLAS.

CHRYSANTHEMUM NAMES.

In a catalogue of *Chrysanthemums* recently issued by Mr. Davis, of Camberwell, a list is given of kinds that are known by two or more names; purchasers need not, therefore, be disappointed through receiving the same variety under different names, as often happens; for instance, I have been supplied with Mr. R. Ballantine, said to be a new variety, but it turned out to be the same as *Sourcé Japonnaise*, obtained from the raiser, M. Délaux. Again, for *L'Enfant d'Espagne* I received *Soleil Levant*; for *Miquillon*, *Delphine Caboché*; for F. A. Davis, *Jeanne Délaux*; for *Christmas Number*, *Princess Teck*, and others in like manner. The practice of changing recognised names and sending out old kinds as new varieties is strongly to be condemned, and that such is done to a considerable extent is shown by Mr. Davis's list, in which the following names and their synonyms are given:—

Proper Names.	Synonyms.
Albert de Nurius	Albert
Angelina	President Sanderson
Boule d'Argent	Silver Ball
Christine (white)	Mrs. Forsyth
Comte de Morny	Purple Poupone
Delphine Caboché	Miquillon
Elaine	Mrs. Marsham
Elise	Eliza
Empress of India	Snowball, Mrs. Cunningham
Empress of India	White Queen of England,
	Lady St. Clair
Emperor of China	Webb's Queen
Flamingo de l'unch	Punch
Golden Empress of India	Bruce Findlay
Golden George Gleny	Mrs. Dixon, Mrs. Glover
Golden Mlle. Mar hé	Miss Oubridge
Golden Queen of Eng and	Emily Dale
Jeanne Délaux	F. A. Davis
John Salter	Mr. Howe
La Frisure	Early Rose Queen
L'Africaine	George Gordon
Le Chinois	Chinaman
L'Or du Rhin	Golden Rhine
La Bienvenue	J. Hillier
Little Bob	Scarlet Gem, Dr. Dubois
Mabel Ward	Benldigo
Mlle. Augustine Gauthert	Augustine
Mme. Bertier Wendatler	Curiosity
Mme. C. Desgrange	Malze
M. Deveille	E. C. Jukes
Mrs. Hurlington	Alderley
Mrs. Sharp	Incognito
Miss Marchaux	Miss Thurza
Miss Mary Morgan	Pink Perfection
Marguerite de Col	Defiance
Nanum	Sistou
Princess Imperial	Lord Alcester
Princess Teck	Christmas Number
Princess of Wales	Beauty of St. John's Wood
President	Mr. Murray
Queen of England	Blush and Striped Queen of England
St Mary	Souvenir d'un Ami
Sourcé Japonnaise	Mr. R. Ballantine
Soleil Levant	L'Enfant d'Espagne
Striatum	Album Striatum
St. Croix	Saddington, Pollion
Tricolor	Mr. J. Starling

II. P.

QUESTIONS.

5304.—**Mossy lawns**.—What is the best way of bringing a lawn round that has got mossy, short of re-sowing it? Plantain can be killed by a drop of carbolic acid, I believe, but will some of your readers tell me how to get rid of Moss?—R. FRED. WARD.

5305.—**Raising seedling *Alstroemerias***.—Will someone be good enough to inform me how to raise *Alstroemerias* from seed? I have seed, which seems to be perfectly sound, sent me from Ireland. I have tried every way I can think of to make it germinate, but it will not do so. Is *Alstroemeria* seed slow in germinating?—G. C.

5306.—**Woodlice**.—Will some reader of THE GARDEN be kind enough to supply some information with regard to the destruction of woodlice? Two vineries and a Melon house are badly infested by them. Several things have been tried to eradicate them, but all have failed. Boiling water has been recommended, but fears are entertained that it might have a bad effect on the roots of the Vines.—W.

5307.—**Ice and icehouses**.—Could any of the readers of THE GARDEN inform me if ice is better preserved when stored in a perfectly dry condition, resulting from a clear, hard frost, or whether it is best to wait until a slight thaw reduces it to a softer condition? and if a lining of Reeds, straw, or other material is necessary for its longer preservation? also if from experience they can suggest an ice-house which might be considered perfect?—R. D.

IGHTHAM.

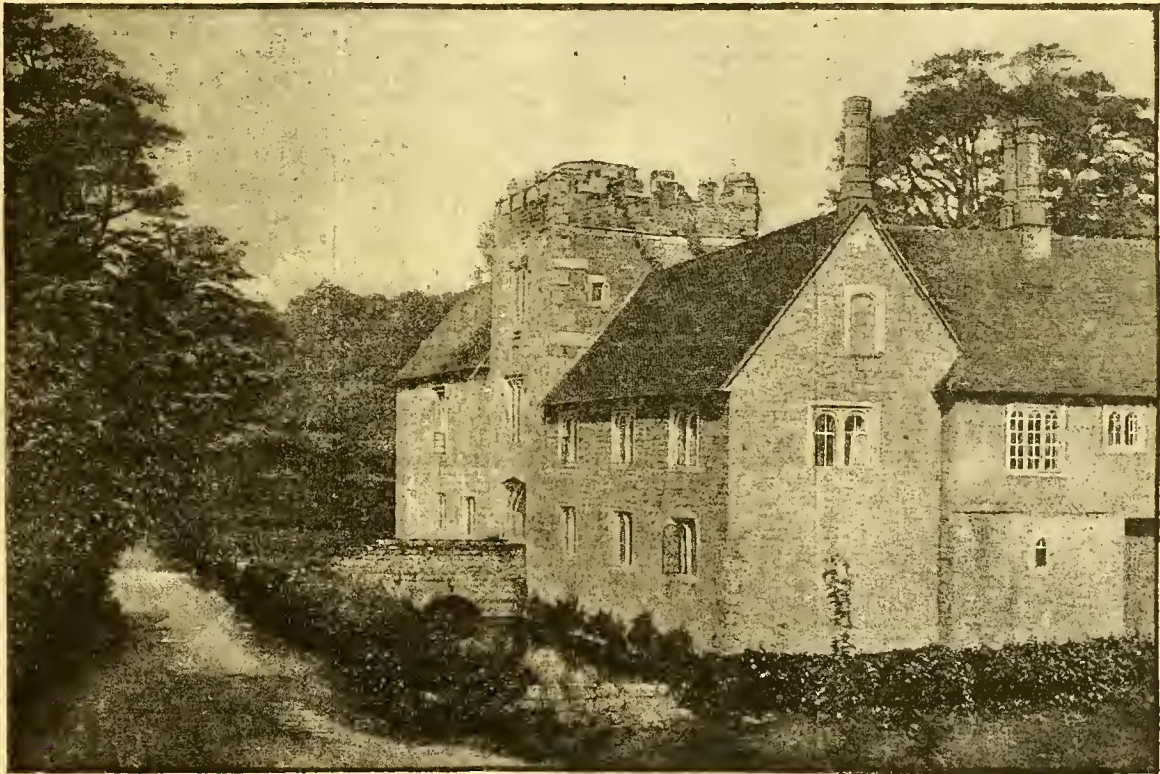
THERE are few places in England which bring us back five hundred years in such a vivid way as this. The beautiful old house, simple in its lines, surrounded by water—in fact, built in water—brings the requirements of old times before us more clearly than do many large castles with like defensive surroundings. Flowers cluster over the old walls, and Ferns, even in moist places high up, creep about. The little Fumitory is luxuriant on some of the walls of the fosse, and creeps about here and there with its Fern-like grace and many flowers. Much, however, as one may be pleased by the external aspect and ancient air of the place, it is only when we step across the little bridge and enter the courtyard that we are charmed with the beautiful aspect of the old house, for someone, acquainted with all the graceful climbing and garlanding plants that we have, has grown them and trained them in a most careful way all over the interior of the courtyard, without, how-

trained to walls were allowed to grow freely above them on a series of light bent arches made of long slender stakes. In one narrow wall border an occasional plant of the Japanese Bamboo (*B. Metake*) broke up the continuity of surface and gracefully varied the border. On the top of a rising grassy slope a long fringe of Yuccas and fine hardy plants has a very good effect and prettily conceals a walk. There are very fine hardy Firs and other trees.

Less interesting to us than the flowers and trees of the present is, perhaps, the history of the old place, but that we cannot wholly ignore even in *THE GARDEN*, and so far as it is known it is as follows:—

The family of De Haute, or Haut, came over with William the Conqueror. Ivo de Haute lived here in the reign of Henry II., and his descendants appear to have had the property in possession (except during a part of the fourteenth century) till the year 1520, when it was sold to Sir

Note to his adherent's family. The date of the hall and crypt is supposed to be about 1340—whether built by a Cawne or a De Haute is not known; other portions of the building are probably older. The chapel (from seeing Sir Richard Clement's arms on a "Poppy-head" on the right immediately beyond the screen in the chancel seats, and his arms empaied with those of his first wife, who died in 1528, on another Poppy-head opposite) may be supposed to have been built by him about 1521. The devices on the painted ceiling are the different badges in connection with the Tudor family and Henry VIII.'s queens, viz., the Red Rose for Lancaster, the White Rose for York, the Portcullis the Tudor family, in allusion to their descent from the family of Beauforte; the Fleur-de-lis for France, the Pomegranate for Arragon, also a sheaf of arrows. The instrument at the east end of the chapel is the date 1579. The coat of arms with sixteen quarterings is Carey, made Lord Hunsdon



The Mote, Ightham, Kent.

ever, hiding the lines of the building or in any way interfering with its beauty. On the contrary, that is very much heightened by the exquisite wreaths of the Nasturtium, Jasmine, Vine, Virginian Creeper, and many other similar plants which throw their graceful leaves and flowers over the old timbers of the walls. Without, there is an air of severity in the look of things, ancient and beautiful as they are, but the moment one enters the courtyard the highest grace and charm of which gardening is capable is felt at once. We never remember to have experienced greater pleasure in a garden than in entering this one day in last September. Among the ordinary sweet and graceful creepers well known to all we observed a brilliant wreath of the common black Bryony, shooting many feet high up one corner; near it were large trusses of the always tender and elegant Jasmine-like Solanum.

In the gardens without there are many pretty hardy flowers prettily arranged, and though it was late in the year, they had a very graceful effect in some cases, owing to the freedom of habit things were allowed to assume. For instance, Clematises

Richard Clement, who came from Milton, in Northamptonshire; he dying without heirs male, it went to his sisters. It then passed into the hands of Sir Christopher Alleyne, or Allen, who was Lord Mayor of London, and his son sold the property about 1590 to Sir William Selby, of Branxton, in Northumberland, warden of the Marches and governor of Berwick-upon-Tweed. The property has been in the possession of the family of Selby ever since, the present possessor being Mrs. Luard Selby, daughter of Prideaux John Selby, of Twizell House, in Northumberland. Sir Thomas Cawne, whose mailed effigy lies in the north side of the chancel of Ightham Church, appears to have been in possession about the year of his death—1374, but there is no record to show how it came into his hands or when it returned to the family of De Haute. The De Hautes, who had large properties also in Kent, espoused the cause of the Red Rose, and were attainted by Richard III., who gave the property to Sir Richard Brankesbury. He was killed at the battle of Bosworth Field, and one of Henry VII.'s first acts was to restore The

by Queen Elizabeth; also the Carey crest. The principal part of the entrance tower across the mote (or moat) is of the date of Henry VIII.'s reign. The Selby arms are seen in the hall and on the tower—barring of 8, or and sable; crest, a Saracen's head; motto, *Fort et loyal*. The moat washes the walls of the house all round and has three bridges over it.

Hardiness of Camellias.—Against a west wall at Kew the old *C. japonica* has stood unprotected for at least a dozen years, and has now reached a height of from 12 feet to 14 feet. It flowers abundantly every year from December until February, but its flowers are not of much value, though welcome at that season. In the wood garden at Wisley some of the better sorts are also growing successfully without protection, and their vigour and the thick leathery feel of their large leaves show clearly that they are quite at home. At Kew the situation is open and exposed, but in very severe weather a slight covering at top keeps the frost from falling directly on the plants. At Chiswick large bushes

have grown against a north wall for years and they bloom well, but the flowers get injured by early frosts.—K.

GARDEN IN THE HOUSE.

EXCESSIVE CHURCH DECORATIONS.

EVERY year these increase in profusion and extent, so that one dare hardly speculate where they will end. I heard one of the best and most enlightened of vicars say, not long since, that when a curate his pulpit was so shrouded in wreaths and Evergreens at this season, that he "used to feel like an owl looking out of an Ivy bush." He condemned in strong terms the burying of most of the architectural beauties of many churches undersenselessly disposed "decorations," as is often done. To prevent this without offending the susceptibilities of those parishioners who liked to contribute in that way about this season, he prohibited the driving in of nails or supports of that kind anywhere on the walls or woodwork, small pins only being allowed, and in that way he prevented the pillars with their carved capitals and the pulpit, desk, windows, and altar, &c., from being smothered with Evergreens. I would commend this idea to others, for I have an impression that not a few good-natured parsons are a good deal worried about Christmas and Eastertide by would-be church decorators who, if allowed their own way, would soon make the interior of the house of worship look hideous. I am told that the extent to which neighbouring woods and gardens are now run upon for Holly and Laurel for the decoration of churches and schools is so great, and the injury to trees so serious, that in many places proprietors have been compelled to discontinue the practice of giving Evergreens for such purposes. Some of the descriptions of church decoration suggest the suspicion that the arrangements have been copied from a ball-room. Here is an example: "The first thing which attracts attention is the font.—This is mostly decorated at the base with Ferns, Lycopods, and dwarf foliage plants plunged in green Moss, the other ornamentations being some brilliant-berried Solanums, white and red Tulips, and the early Roman Hyacinth. The windows are generally festooned with Ivy, and on the window-sills a bed of fresh green Moss makes a capital groundwork for cut flowers, &c. The columns or arches are lightly wreathed with long sprays of Ivy, as are also the candelabra and various devices in variegated Holly, and other handsome foliage surround the texts that are placed on the walls. The pulpit and desk are prettily decorated with wreaths made of the very finest Conifers, Box, or Ivy, associated with dried Cape flowers or Everlastings, and designs in brilliant Holly berries. At the base, plants of dwarf habit are used with good effect, notably Ferns and other fine-foliaged plants, intermixed with red and white flowering plants, &c. One would have thought a smother like this would have been enough to satisfy the most prodigal, but the writer continues to describe how the best efforts were concentrated upon the altar and reredos, where 'the most lavish display of flowers was found.' Here the decorations consisted of Moss, Lilies, Ferns, Chrysanthemums, Poinsettias, Amaryllises, Palms, Christmas Roses, &c." Now, what is any rational person to think of a display of this description? Clearly some good-natured persons must have nearly emptied their conservatories for the purpose, and that at the most inclement season of the year, when flowers are scarcest, and one can imagine the maledictions, not loud, but deep, of the gardener at "such prodigal waste" of his stock. There is not the least necessity for such profusion; it is vulgar and in bad taste and indefensible from any point of view. The decoration mania spreads by example, and one church outvies another. As a rule, when the vicar or his curate controls the arrangements there is not much to complain of, but it is a delicate business when several lady parishioners insist on contributing, and each on doing their own part of the work. It is then not the quality

of the work that is considered so much as the quantity, and as a rule not one in ten has knowledge or good taste in such matters. I am not a high churchman, nor a low churchman, nor yet a dissenter, but I must give our high church friends the credit of showing most taste in decorative art. In the houses of worship of some denominations the burden of the decorations can hardly be borne at times. The demand has given rise to the vocation of Holly stealers, who go about previous to Christmas cutting branches, which they sell in the towns. We have to employ a number of men doing nothing else but watching such miscreants during December. NORTHERNER.

Hanging basket plants—In a cottager's window I noticed the other day three Cocoa-nut shells suspended from the ceiling; the centre one contained a golden Creeping Jenny (*Lysimachia Nummularia aurea*) and was a little higher than the two side ones, each of which contained a beautiful trailing specimen of *Viola gracilis*, and although not profusely bloomed, yet sufficiently to make a lively and pleasant picture. Thus treated these plants flower more or less all the year round. In summer they are taken down and thoroughly watered every day; in winter they only receive occasional sprinklings. *Campanula garganica* and its variety *hirsuta* are both pretty plants for window decoration. Substituting pots for Cocoa-nut and introducing saucers would doubtless be an improvement, and also lessen the attention needed, and all of them being quick growers, the saucers would soon be hidden.—K.

KITCHEN GARDEN.

ASPARAGUS FORCING AT WALCOT.

THIS can be done as follows without destroying the beds or incurring the labour of making fresh plantations. When at Walcot I forced the same roots for forty-six years, and had, if anything, finer heads every year. The plan is not my own, but that of the late Mr. Geo. Mills, of Gunnersbury, whom I had the pleasure of knowing over sixty years back. He published a useful treatise on the forcing of Asparagus in brick pits 3 feet wide, with trenches between them 2 feet wide for the heating material. The depth was 3 feet and all were pigeon-holed. The beds were filled with suitable compost and planted, two rows being in each bed, 16 inches apart from plant to plant. The trenches were filled with leaves and a little stable-yard manure, and during the first two years they were kept filled up as the material sank, and likewise the soil in the beds. The second and third season after planting they were liberally supplied with liquid manure, and the third season after planting the Asparagus was excellent. Where the first expense is no object this is the best way in which to get good Asparagus, and it soon pays for the first outlay. Where two beds and trenches are made together they are much more handy in the way of working and covering up than any other arrangement. There is a kerb round the beds, with a framework to carry glass on the front or south side, and wooden shutters on the back. These in very severe weather are protected with asphalte and covered with litter. I am aware that early forced Asparagus is required in many places, but during all the years I have been a grower of it I could never find it worth sending to table, compared with that which I used to cut from these pits from February till outdoor Asparagus was ready for use. Our Asparagus beds require making 3 feet deep, with good material, as the soil about here is not like the fine sandy soil about Mortlake. Therefore destroying Asparagus beds for a little early forced Asparagus was a serious consideration where labour was short, to say nothing of the superiority of the produce, which I have been told by those who partook of it was equal to the best French Asparagus. The fine roots that work through the pigeon-holes into the manure in the trenches it is surprising to see, and when replanted with fresh material, the crowns, being already formed, are rather benefited

than otherwise by the change. The tops left last May to grow up reached as high as 8 feet. I never injure the beds by too long cutting. If required earlier than these pits are started, a hot-water pipe as a flow from an adjacent boiler could be carried along under the span-roof of the frame, and a return pipe in the bottom of the trench of leaves would meet any difficulty as regards severe weather, and where expense is no object, this would be found by far the cheapest arrangement in the end, to say nothing of the fine quality of the Asparagus. G. BOND

Lydbury North, Shropshire.

GROWING AND FORCING SEAKALE.

FORCED Seakale fit for use can be had early in December, and by growing a sufficient number of plants a constant supply may be maintained till late in the spring. The crop of roots may either be grown from seed sown in the spring, or by selecting roots from plants lifted in the autumn to be prepared for forcing, which may be easily accomplished in any warm structure kept dark for blanching purposes. Seeds of Seakale may be sown in March or early in April in drills 9 inches apart, or broadcast upon beds 4 feet wide, covering them with fine soil. When large enough the young plants should be thinned out to several inches apart to afford ample room for growth. The following spring they will be large enough to transplant into a piece of ground deeply trenched, and dressed with rotten farmyard manure. Some time in March lift the plants carefully with a fork and plant them in rows 12 inches asunder and 9 inches plant from plant, *i.e.*, when grown for lifting in autumn for forcing. But if to be planted to make stools for forcing in the open air—which may be done by covering them with hot manure and leaves—plant the rows 3 feet apart and 2½ feet clump from clump. This will give plenty of room to cover the plants with heating material. Three or four plants may be planted in each clump, allowing 3 inches or 4 inches between each plant. Take care that the plants are 3 inches clear of the rims of the Seakale pots when placed over them when ready for forcing. Where the plants are grown from roots or thongs, when lifted in autumn for forcing, the strongest should be selected, but where the stock of roots is scarce, thongs may be used about the thickness of a quill pen, when they will be strong enough to force the following spring. Cut the roots 9 inches in length, leaving the top or thick end level, and the thin end slanting about half an inch, when it will emit a number of fibres. Tie the roots thus prepared in bundles, and lay them in some fine sandy soil, covering them 2 inches in thickness.

Ground intended for Seakale should be deeply trenched during autumn, and enriched by several inches in thickness of rotten manure. If ridged as the trenching proceeds, the ridges must be levelled down in spring before planting. Early in April is a good time to plant the roots or thongs; they will then be found to have formed crowns, and will be pushing out young fibres. Rake the ground level after levelling down the ridges, tread it firmly, and plant the sets in rows 12 inches asunder and 9 inches plant from plant. The ground will require to be frequently hoed between the plants during summer to keep down weeds and the surface open. Liquid manure will be found of great benefit to the plants during summer, and if at hand, a dressing of artificial manure may be given, for by feeding well during the growing season fine strong roots will be the result. As soon as frost kills the leaves in autumn the plants intended to be lifted for forcing should be taken up and laid in some light soil. Open a trench at one end of the plantation and lift the plants, with as many roots attached to them as possible. After taking off the thongs for next year's crop, lay the roots in some light dry soil, covering their crowns over with some dry litter to keep frost from them. Thus a few roots may be had during winter for forcing when required. From 55° to 60° will be heat enough, and the roots may either be planted in large flower-pots or

boxes. If in pots, invert another the same size over the one in which the roots are planted. Thus circumstanced and placed in the temperature just named, fine, crisp, well-blanchd Kale will be produced. If required soon after being put in warmth, place a few barrowloads of hot manure in the house, and on that set the pots. The warmth induces quick growth and superior heads. If in boxes, they should be deep enough for the roots to stand upright, and there should be depth for the Kale to grow to its full length before it reaches the lid of the box.

If more convenient, the roots may be planted in light soil in the Mushroom house, covering them over with some light material to keep the crowns in darkness. Fine crops may also be grown upon ordinary hotbeds covered with frames and wooden sashes; if glass sashes are used, they must be covered with straw and double mats to exclude light and keep the temperature of the frames equable, *i.e.*, about 60°. The roots may be planted in light soil or in pots placed upon the heated material, which should be covered with sifted ashes or some light material to keep down the rank steam. Where Kale is required in large quantities a Cucumber or Melon house with bottom heat at command will be found to be one of the best structures in which to produce it. Put a few inches of soil over the slates or boards forming the bottom over the pipes or hot-water tank; in this set the roots upright several inches apart, running some soil in between them and water well, and as soon as the crowns show signs of growth, give another soaking, and cover the crowns to the depth of 9 inches or a foot with dry, sifted leaf mould or Cocoa-nut fibre; thus treated, in a very short time the tips of the leaves will appear above the covering, when the Kale will be fit for use.

When forced in the open air Seakale pots or boxes having wooden covers must be placed over the clumps of plants, and the pots or boxes must be covered with fermenting material consisting of hot stable manure and leaves well mixed together. Care must be taken that the manure does not overheat, or the crowns will get scorched and the crop lost for the season. When planted in rows, if a covering of ashes or light, loose soil is placed over the crowns from 9 inches to a foot in depth just before the crowns start into growth in spring, the heads of Kale will grow up through the covering, and when uncovered the result is often a very superior crop, which being late is often very acceptable, especially if, after a severe winter, other crops are scarce.

WM. CHRISTISON.

White Plume Celery.—In the spring of 1884, Mr. Peter Henderson, the well-known seedsman of New York, sent me a packet of seed of this Celery, and as I had previously seen some favourable remarks on it in American papers, I was pleased to have the opportunity of giving it a trial. The seed was sown in a gentle heat in April. The plants came up freely, and were treated like other young Celery plants until they were ready for planting in their permanent quarters; then they were not put into trenches in the ordinary way, but planted on the level. As the stems, heads, leaves, and everything were said to blanch without earthing up, trenches were superfluous. When planted out, just as they were about 6 inches high, they were quite green, and in August, when large plants, they were also quite green—so much so, indeed, that about that time I had great doubts respecting the American "White" Plume blanching; but in September the centre leaves and stems whitened, and by November the entire plant became perfectly white, and in every way agreed with the American representation of it. The stems are now as tender and the flavour as good as it possibly could be in earthed-up Celery of the ordinary type. The White Plume is, therefore, both novel and valuable. It is distinct from any other Celery, and, in my opinion, a great acquisition, as the labour of making trenches for it and earthing it up is saved. These are two important points in its favour, and there is another which I must not forget to point out, *viz.*, that it

is never worm-eaten or destroyed by Celery pests, Worm-eaten Celery and rotten Celery, too, are produced in the majority of instances through the earth being put up around the stems; but as this is unnecessary in the case of the White Plume, it is not in any way injured by grubs. I see most of the English seed firms are introducing it this year, and it deserves to find many cultivators.—J. MUIR. *Margam, Taibach, Glamorgan.*

GARDEN DESTROYERS.

BIRDS AND BUDS.

MANY will have completed the pruning of their Gooseberry and Currant trees ere this, but some doubtless have not yet commenced. The weather having been so mild, the buds have not been so liable to the attacks of birds as they are when frost and snow prevail at this season of the year. Some defer pruning until spring, and allow the birds to help themselves. I have seen large Gooseberry trees completely spoiled for at least two years by birds. It is not only the crop of fruit for the ensuing year which they destroy, but the shoots also, which spoils the shape of the trees. Perhaps this matter is not taken into consideration; still, a good shaped tree is better than one badly proportioned. It is not really necessary to allow birds to have any of the buds if the following instructions are attended to. All trees, whether Gooseberries or Currants, should stand on a single stem if only for appearance sake; therefore, all suckers springing from under the soil should be removed, clearing the soil away and cutting them clean off from where they grow, which will save much trouble afterwards. Red and White Currants should have their main branches limited to grow from six to ten. In the case of trees so formed, more sun and air can get amongst the branches than when they are allowed to grow thickly and have many branches. The young wood made during summer should be cut in to one eye of the main stems, allowing the points of the leaders to advance about a foot each year until the desired height is attained, which may be 5 feet or 6 feet high. In pruning Gooseberry trees, young wood should be left wherever there is room for it; if too thick cut out entirely some of the older branches, as the fruit produced on the young growth is larger and more in number and easier to gather than that from trees denuded of all their young growth and allowed to fruit on spurs. Of course the branches must be wide enough apart not to touch each other. Keep the middle of the trees fairly well open to admit sun and air freely; the bottom branches must not be allowed to touch the ground, or the fruit will get spoiled by grit. Many are the ways and means taken to protect fruit buds from birds. Some syringe the trees and then sprinkle them with lime; this rains soon wash off. Some weave cotton amongst the branches, but the birds soon disregard this. The best plan is to thoroughly paint the trees all over with the following mixture, which to a certain extent prevents the attacks of caterpillars in summer and keeps the trees free from Moss: Thoroughly mix together some lime, soot, and clay to about the thickness of paint, without being particular as to quantity of each sort; with this we incorporate some fat or grease, which we procure from the kitchen; this we melt over a fire and thoroughly mix it with the other ingredients when hot, and with a small painter's brush apply it to the trees, thoroughly covering all parts of them with it.

E. MOLYNEUX.

5281.—**Ants.**—If "R. T. R." (p. 450) will get two or three toads and put them in the house infested with ants, he will have but little more trouble with them or with woodlice. I have frequently cleared houses of both these pests in little time in this way.—E. D., *Cilfig.*

—Let your correspondent set the pots infested with ants on a level dry floor; sprinkle dry sugar around them, choosing a fine morning for

the purpose. When the ants get actively to work they can be readily destroyed by rubbing them hard with a roll of paper, repeating the operation until the house is cleared, which it will not take many days to do. After trying various remedies I found dry sugar to be the best.—CHARLES RAFFILL, *Low Hill, Bushbury, Wolverhampton.*

Cinerarias (*G. L. H.*).—The leaves of your Cinerarias are infested by the grubs of a small fly (*Phytomyza affinis*) which attacks the leaves, as you suggest, in the same way as the Celery maggot does. There is no effective means of destroying this insect but by picking off and burning the infected leaves, or pinching them where the grubs or chrysalides are, so as to kill them; the sooner this is done after the commencement of the attack the better.—G. S. S.

ROSE GARDEN.

HEDGEROWS AND WILD ROSES.

ALTHOUGH I sympathise with the lady who in the last year's volume of *THE GARDEN* (p. 539) deplores the destruction of the gigantic Brambles and wild Roses in her neighbouring hedgerows, I must at the same time inform her, though the information may hardly seem necessary, that hedges are generally planted for the purpose of separating fields from each other and from roadways, and that such hedges should always consist of plants which possess considerable powers of resistance, such as the common white Thorn and the Holly. Such plants submit readily to trimming, and in order to render them effective as fences, they should be kept wide at the bottom and narrow at the top, *i.e.*, in the form of a wedge; therefore, the "clodhopper's" idea of keeping them "neat and square" was not far from being correct. High straggling hedges are justly considered as an indication of slovenly management and wasting of land, and such soon cease to act as fences; they become weak and thin below, and form no barrier against stock of any kind. As to Brambles and wild Roses, they, of all plants, should never be allowed to come in contact with hedges, although, unfortunately, they too frequently do so, to the great detriment of the fence. The proper place for Brambles, wild Roses, and similar plants is the covert, the wood, or the wild garden, where they may festoon and cling to the stems and branches of trees, and, in short, be allowed to ramble at will and to display their wild beauty without restriction.

As to the trimming—or mutilation, if the latter term be preferred—of shrubs in pleasure grounds and gardens, so far as my observation has gone, I should say that such plantations in most cases suffer more from the lack of trimming than from its application. The plants, which form groups or clumps in pleasure grounds, are too often left to fight the battle of life as they best can; this might be well enough were they all of one kind and given a fair start in the race. This is, however, seldom or never the case. As it is generally desirable to form such plantations of various species of plants—some robust, others less so, although equally valuable or ornamental—they are, nevertheless, allowed to be smothered or crowded out of existence by the stronger growing varieties; therefore, judicious and timely pruning of such plants is very far from being a needless operation, nor need it be by any means a costly one. Many Evergreens, as well as deciduous trees and shrubs, are benefited by the removal of rival leaders and the foreshortening of strong lateral shoots or branches. A confirmation of the truth of this assertion may be seen at a short distance from where I now write. The plants to which I allude are mostly common Yews which had been planted some five or six years ago. Some of them are 6 feet or 8 feet high, but many of them appeared inclined to unduly extend themselves laterally, while the upright or leading shoots were weak. Some three or four years ago all the side or lateral branches were cut back late in the spring, so as give the plants a pyramidal form, which they still retain, and they are all now very

handsome, symmetrical young trees, and did not appear to suffer in the least degree from the somewhat severe trimming which they experienced four years ago; indeed, they now contrast favourably with other groups of plants of the same species which have never been pruned. Whatever, therefore, theorists may say to the contrary, it cannot be doubted that there are few, if any, species of trees or shrubs that during their early stages of growth are not greatly benefited by careful, timely, and judicious pruning.—P. G., *Bury St. Edmunds*.

—No doubt the tangled hedgerows consisting of wild Roses, Brambles, and Thorns, &c., are pretty and interesting, nor are there any objections to them, so far as I know, next to roadsides, commons and such-like places; but elsewhere they are incompatible with good farming or forestry, and the surest marks of a neglected estate is the state of the fences. In the best cultivated districts of Scotland where farming is understood the fences are good, but too trim and straight for some, while in many parts of England where the farming is poor the fences are miserable. The hedge that the lady who wrote in *THE GARDEN* last year (p. 539) found trimmed to "a line of sharp stumps" was probably one of those neglected fences that had reached that stage at which it could be neglected no longer, and probably the only way was to cut it down or lay it. Hedges kept in moderately good order should never get into such a condition, but there are thousands of miles of such, I suppose, all over the country. At the beginning Quicks are planted with the intention of making a hedge; years go by, and it is allowed to run to top, getting proportionately thin at the bottom. Then comes the laying process of mixing the hedge with riven stakes and twisting the tops among them. Eventually the Quick disappears altogether, and is superseded by bindings to hold up the stakes, and which are cut out of the woods elsewhere. Such fences do well enough and look well enough, but must be kept in repair, and no little underwood is needed for that purpose. One thing is certain; you cannot make fences of wild Roses and Brambles, and when either come in a fence they are, as a rule, interlopers and have no business there. On the whole, as the editor remarks, if we keep our gardens in good order we need not trouble about the fences in our fields, as they will, I fear, always be sufficiently neglected to insure all that your lady correspondent desires.—S. W.

BUSH ROSES.

It has been often said, and truly, that the greater the extent to which a mistaken practice is carried the more decided the progress in the opposite direction will be when the change sets in, and the extent to which bush Roses are taking the place of standards goes to confirm the truth of the proverb. The fashion of growing Roses in standard form may be traced to two causes—a disposition to favour something fresh, as the standards undoubtedly were from the old natural bush-shaped plants, and the facilities for propagation which the standards presented. It was an easy process to go into the hedgerows and woods to get stocks ready made by the thousand without the time and trouble and forethought required in raising stocks from cuttings or seed. Besides this it was a cheap way of proceeding, as those who got the stocks were often ordinary out-of-work labourers, who otherwise would have had nothing to do, and would procure them at a nominal price. So the practice went on until people seemed to almost forget that a Rose could grow on its own roots, or could be so managed in its infancy by the use of a foster-parent as to ultimately get established on roots of its own. Yet although the fashion for standards was such that for a long time nearly everyone was content to grow Roses in that way, still there were always those who neither admired their appearance nor were oblivious of the defects from a cultural point of view which are inseparable from growing Roses in this way, and which are too well known to require repeating. There were not a few connected with Rose growing for sale who imagined

that the preference for standards was so far a fixed principle with buyers, that nothing else would satisfy them. I well recollect a few years back one of the great growers telling me that I and others who were so far heretical on the subject as to advise the adoption of the bush system of culture in preference to standards might say as much as we liked, but the public would always stick to the standards. Yet the outcome of following this opinion by propagating nearly all standards, and few in bush form, has been that an immense number of the former have had to be got rid of at any price. To unlearn in such matters is always a slow process, and there will no doubt be a good many of the public who for a time will continue to grow standards, but the combined advantages, in both appearance and



Ightham. Creeper-covered gable in courtyard. (See p. 19.)

general results, attending the bush system of cultivation are such as to insure its ultimate general adoption. T. B.

Pyxidanthera barbulata.—Although hitherto attempts to flower this little gem have ended in failure, some plants of it look so healthy now as to promise better results. A quantity of it has been received by one of our leading nurserymen, and, being distributed, some, let us hope, may be successful with it. In peat mixed with plenty of fine sand its progress has been slow, but Pine leaves chopped up and mixed with the soil seem to suit it better, thus resembling the "Pine barrens," in which it grows naturally. It has a tufted procumbent habit, and creeps along the ground. It is rarely more than 2 inches to 3 inches in height. The stem leaves are alternate, oval, and of a beautiful green colour; when in flower they are entirely covered with pretty white petals, with just a tinge of rose at the outer edges—not unlike some of the *Gillias*. In the bud state they are

beautiful deep rose. It is very impatient of damp or shade; therefore it should be planted on raised beds and be exposed to full sunshine. It is a native of North Carolina, where it flowers in early summer. It is well named in English *Pine Barren Beauty*.—K.

RECENT PLANT PORTRAITS.

MAGNOLIA CAMPBELLII (*Botanical Magazine*, plate 6793).—A fine double plate of this most beautiful Indian Magnolia, which is a native of the Eastern Himalayas, and is found at altitudes of from 8000 feet to 9000 feet on the hills about Darjeeling. The specimen here figured flowered in the month of March, 1884 (it is believed for the first time in Europe), in the shrubbery of Mr. W. H. Crawford, at Lasclands, near Cork. This truly magnificent species is perfectly hardy in the south of Ireland, but as it unfortunately opens its lovely large rose-coloured flowers in the month of March and before the leaves appear, the delicate petals are apt to be much injured, if not destroyed, by bitter and cutting winds and late frosts, but should we be favoured with a mild and genial March in 1885, Mr. Crawford's specimens of this splendid tree, which are now set with numerous flower-buds, will be worth coming a long way to see.

IDESIA POLYCARPA (*Botanical Magazine*, plate 6794).—A very handsome foliaged and perfectly hardy small tree, which is a native of Japan, and is named by Maximowicz, the learned Russian botanist and Japanese traveller, after Ides, a Dutch botanist. It has also been described under the synonyms of polycarpa Maximowiczii and Flacourtia japonica, and its native Japanese name is Kara sendan.

FUCHSIA TRIPHYLLA (*Botanical Magazine*, plate 6795).—A most interesting plant, from being the type of the large genus of Fuchsia, which was founded upon it 180 years ago, and yet it has been almost unknown to science till the present year, when specimens of the plant were sent to Kew for naming by Messrs. Henderson. It is a native of St. Domingo, where it forms a small round bush of about 18 inches high, every shoot of which is terminated by a raceme of bright orange-scarlet, wax-like flowers.

DENTARIA POLYPHYLLA (*Botanical Magazine*, plate 6796).—One of the most elegant of early spring-flowering plants, and admirably suited for the rock garden from the bright green of its leaves and the grace of its drooping corymbs of white or pale straw-coloured flowers, sent to Kew by Herr Froebel, of Zurich.

TORENIA CONCOLOR AND T. FORDI (*Botanical Magazine*, plate 6797).—These are two pretty stove trailers, which are natives of China, whence seed of them was sent to Kew in 1883 by Mr. Ford, the superintendent of the Hong-Kong Botanic Gardens, and they bloomed in the Royal Gardens in June, 1884. The first named (which is also known under the synonyms of *T. longiflora*, *T. rubens* var. *grandiflora*, and *T. asiatica* var. *concolor*) has comparatively large flowers of a pale purplish shade of colour faintly streaked with white. *T. Fordi* has much smaller flowers of a pale straw colour, with a small purple blotch on the inside of each of the two side petals.

ABUTILON THOMPSONI FLORE-PLENO (*Revue de l'Horticulture Belge* for January, 1885).—This is an exceedingly pretty and fully double flowered variety of the well-known *A. Thompsoni*, with the same golden variegated foliage. It is of American origin, and was sent out first early in 1884.

CYPRIPEDIUM SPICERIANUM (*Revue de l'Horticulture Belge* for January, 1885).—A delicately coloured and pretty Lady's Slipper, which is a native of Assam, whence it was introduced by an amateur florist, Mr. Herbert Spicer. This plate shows two fully expanded flowers and a bud.

W. E. G.

Vaporised Tobacco juice.—I was on the point of writing to thank M. G. Lebeuf, through your columns, for his most useful article on the

above subject (p. 372, Vol. XXV.), but Mr. McIntosh has forestalled me on p. 539 of your last volume. After six months' trial, I can entirely confirm all that has been said in favour of vaporising *v.* smoking, or, indeed, any other process for keeping the houses free from all insect life. It is not only thoroughly efficacious, but involves a minimum expenditure of time and money. It ought to be universally adopted.—A. K.

MATERIAL FOR GARDEN WALKS.

MUCH has been said on the necessity in a garden for good walks, but their presence is far from being general even in gardens of an important description. Yet it cannot be denied that one of the first essentials in any department of a garden is good paths, that is paths so made that, after due allowance for weather influences, they may be depended on to keep firm and dry. In no part of the world is this so necessary as in our variable climate, where, even during the summer season, the sky is so often bright and clear when the ground may be too wet to walk on with any degree of comfort. So far as appearance goes, nothing can surpass Grass walks where they occur in suitable places, such as in partially kept grounds somewhat distant from those that are in near proximity to a dwelling, and which frequently are not the least enjoyable part of a garden. The same may be said of the Grass walks now and then met with in old-fashioned kitchen gardens, and which have an old-world sort of charm about them that one cannot fail to linger over with pleasurable feelings. Still, they are only dry-weather walks, that in the case of the more utilitarian department named have much inconvenience attending them, and wherever Grass walks are used in pleasure grounds of the character above spoken of every precaution should be taken in their formation to ensure their being as dry as possible, so that in wet weather the water will pass off in a way to admit of the surface being firm. In the neighbourhood of towns

ASPHALTE WALKS have in comparatively recent times come into use. Something may be said in their favour, but very much more against them. The fact of their being hard and clean in wet weather and of their giving no trouble in rolling or weeding, and also, if well made, of their endurance, may be set down on the credit side; against which there is the ever-present more or less stench from them when the sun is shining, their often slippery condition during frost, and, above all, their unmitigated ugliness, despite the presence of spar, limestone, or other materials frequently added to the surface, which only to a small extent conceal the objectionable colour. In addition to the above objections, asphalt walks, as usually made, with gravel, broken clinkers, or cinders, mixed with coal-tar, are out of character with everything in a garden, acting as a continual reminder of the near presence of places and pursuits that in themselves are as injurious to gardening as they are opposed to feelings connected with it. In very hot weather, too, they are so soft as to be disagreeable under the foot. Where a hard, solid walk is required at all times and during all weathers

CONCRETE made of gravel, sand, and Portland cement possesses all the advantages with none of the defects inseparable from asphalt made with coal-tar. Concrete walks, when well made, in addition to their durability, are always hard and clean, and, so far as colour is concerned, this can be varied by mixing different materials with the cement, and which form the body of the concrete; burnt ballast made of good clay, mixed in the proportion of equal parts to that of the gravel employed, will give a warm brown colour after a little wear, that will admit of the thin coating of cement which adheres to the particles of ballast getting worn off. In making walks of this kind it is necessary to be

strong roots near the collar, in thickening, lift up and crack the concrete. Walks of this description can be used with advantage where, through the ground descending quickly, gravel, or even the ordinary pebble pavement, gets washed up when heavy rainfalls occur, and through which cause gravel, where even the best means are used to prevent accumulations of surface water, gets periodically washed up.

GRAVEL WALKS.—For general utility and appearance, combined with comparatively small cost as regards construction, gravel is not likely to be superseded for garden walks; at the same time there are very great differences in the quality, as there are in the appearance, of this well known material, from the lively reddish brown colour obtainable in some parts of the kingdom to the fine yellowish white pea-like limestone to be had in some parts of the northern counties, and which possesses all the properties required of binding and wearing well, yet it is somewhat objectionable on account of its too light colour. But to secure a firm, thoroughly dry walk, there are several matters in the making that must be attended to. Unless the drainage is sufficient, even the best material will be found wanting; it must be such that it will not only take off the water quickly that passes through the gravel, but the pipes that are laid in the bottom for the double purpose of taking this and of carrying away the surface water must be ample in size to take both even at the most exceptional times, such as in the heaviest thunder storms, which latter occurrences are very often not sufficiently provided for by having the pipes large enough, through which cause the water gets dammed up on the surface, leaving the earthy deposit, that dirties and spoils the appearance of the walk. With the like object of water at all times being carried off as fast as it comes there should be a sufficiency of gullies and grids to pass the top water down to the pipes without hindrance. Through insufficiency in the size of the pipes and the grids being too far apart, many otherwise well-made walks are spoilt. In addition to ample drainage, the material of which the walk is composed must be sufficient in depth and of a clean open character, to let the water that soaks down from the surface pass wholly and quickly off. An ordinary path should consist of 10 inches of material; 6 inches or 7 inches of the bottom part ought to be perfectly free from any earthy matter that will hold water in the least.

THE ORDINARY DIRECTIONS given for making walks—of putting the coarse gravel at the bottom and fine at the top—may be sufficient, or may not; if the gravel put in the bottom, and which forms the principal body of the walk, contains any loamy or clayey matter, such as most of that which is obtained in districts where flint and little or no grit stone exist, unless all the earthy matter is sifted out of the bottom portion the walk will never dry during spells of wet weather as quickly as it should do. Even if the finer portion of the coarse gravel in the bottom is of a sandy nature, this is better absent; clean shingle, such as is obtainable from the seashore, clinkers reduced small enough, broken rubble or burnt clay ballast are all good materials for the bottom



Ightham. In the courtyard. (See p. 19.)

particularly careful that the under surface is made quite firm and equal in solidity by thoroughly ramming in the material that is used for filling any hollows that may exist, otherwise it necessarily follows that when the under surface settles the cement breaks and settles similarly through want of support. Another matter of equal importance is to see that a sufficient body of the concrete is used. For an ordinary path the material should not be less than 3 inches in thickness; if less than this it will be liable to break through the action of severe frosts that strike deep into the ground. It is not advisable to make a walk of this kind close to the stems of trees, as their

portion of a walk, as, where used, the water as soon as it is through the fine portion of which the top is composed passes off as quickly as through a sieve into the drain and away. Walks so made, even if in the neighbourhood of trees or buildings where little sun or air reaches them, will not grow mossy or green in the way often seen in such situations. The best position for the drain is under the centre of the walk, the bottom of which should slope a little from the sides to the middle. In all cases the pipes should be laid in a trench low enough to admit of their upper side being quite as low as the bottom of the walk; and if the subsoil is wet and retentive, it will be better to lay them a foot deeper, filling the trench above them with clean, open material, such as the body of the walk is made of. Respecting the 3 inches or 4 inches of fine gravel which forms the top of the walk, this should be of the right binding description, that is, it should contain a sufficient quantity, but not more, of fine holding matter that will set hard and firm without being sticky in wet weather. Without this a perfect walk is not to be had, for although paths are occasionally met with that are surfaced with non-binding gravel that has a fresh appearance, yet such are never so agreeable to walk on as when the surface is smooth and hard. There is, however, one thing connected with walks of this description—they are easily kept free from weeds, as an occasional rake over keeps them clean.

FOR WOODLAND WALKS, or indeed anywhere where there is a difficulty in procuring good gravel, burnt clay ballast might with advantage be much more generally used than it has hitherto been. Where walks of this material are a good deal used, the surface soon gets hard, solid, and very agreeable to walk on, as when the drains are sufficient to carry off the water and enough thickness of the ballast is used, sifting it and putting the coarse at bottom and fine at top, the natural open character is such as to insure a thoroughly dry path. Where gravel of a binding nature is not plentiful, or where it cannot be had of the required warm colour, a mixture of one-half fine clay ballast will be found of much assistance in helping it to bind, as well as improving the colour. There is one advantage connected with these burnt clay walks, which is that weeds are much less troublesome on them than on those made of ordinary gravel; the nature of the material is such that Grass in particular, which by the way is the worst of all plants to deal with on walks, does not vegetate and grow in it to near the extent that it does on gravel. T. B.

Potting Lilies.—My experience of these quite agrees with that of Mr. W. J. Murphy as to the necessity of annually repotting Lilies, for when left without change of soil they become weakly, striking instances of which I have seen again and again. Our stock of *L. speciosum* being on several occasions more than we required, some have been left without being shifted, and in every case the pots of these have not been half so good as the others; the stems have been less strong and the blooms considerably smaller. Why people fail with Lilies, or form an opinion that fresh soil for pot plants of them is not necessary, is through leaving the repotting till late, instead of doing it as soon as the stems die down, which is the proper time; then the roots sustain no injury, and all that form afterwards get to work, feeding and nourishing the bulbs and helping them to send up their young shoots. These I like to have about 3 inches below the rim of the pots, and as they are growing to place lumps of fresh loam and peat around them, which the rootlets at the base soon lay hold of and thread through and through with fibres. When potted, the best place for the plants is a cold frame, where they should be stood on a hard coal ash bottom to keep the worms from getting into the pots, as when they effect an entry they do much harm to the bulbs by working between the scales, which they pierce and cause to rot. To prevent decay from this or any other cause, it is a good plan when potting to throw some

sharp sand over the bulbs; this keeps them clean and healthy by stopping the soil from coming in immediate contact with them, and drains off any water that may lodge in the crowns.—S. D.

INDOOR GARDEN.

CULTURE OF VIOLETS.

IN reply to "V. M." (p. 521) and "C. York" (p. 532), of your last volume, I would say, as soon as the plants have done flowering, in the end of March or early in April, divide them, securing as much root as possible to each crown. These divisions should be planted 9 inches or 1 foot apart on a piece of ground that has previously been well manured and dug, and if the soil is at all dry give a good watering, which will settle it around them and prevent them from flagging. No more attention will be needed until the plants begin to grow and throw out runners. These should be pinched off as soon as they appear all through the summer, the object being to have one good strong crown. In the case of a new variety, or one of which a large stock is wanted, the runners may be made into cuttings and dibbled in under hand-lights, or put into pots and plunged in a hotbed. When rooted they may be pricked off into boxes, and they will make good material for planting out with the divided plants in the following spring. When they have begun to grow freely they will be greatly benefited by a liberal top-dressing of rotten manure, which answers the two-fold purpose of keeping the soil moist—an essential point in Violet culture—and stimulating the plants.

The greatest enemy to Violets is red spider, particularly if the plants are grown near a sunny wall or on a south border. Its ravages must be kept in check by a free and constant use of the syringe, garden engine, or watering-can; this should be done twice a day, if time will permit—early in the morning and again after sunset. This is absolutely necessary where the soil is of a hot, sandy character. By the end of August or early in September they will be ready for planting in their winter quarters. The best place is brick pits facing the south, but if these are not at hand, ordinary garden boxes or frames will answer. The bottom of the pit or box should be filled with leaves and manure for bottom heat, but it is often difficult to procure leaves in sufficient quantities so early as the end of August, and in that case manure alone must be used; but on no account should they be planted until its heat is on the decline, otherwise they would make weak growth, which would only damp off on the approach of dull weather. On the manure should be placed 6 in. or 8 in. of rather light soil; the plants should then be lifted with good balls of earth and planted in this from 8 in. to 10 in. apart each way and as near the glass as possible. The whole should then have a good watering. If the planting is done at the time mentioned the lights may remain off for a week or ten days, the night dews being very beneficial, but on the first approach of frost or cold rain they should at once be put on and remain on till spring. Before putting on the lights it is advisable to wash the glass, for plenty of light is indispensable to their well-doing. If water is wanted in winter, a fine bright day should be chosen in which to give it, and abundance of air should be given, weather permitting, every day. I tilt the lights both top and bottom on all fine days, and thus a circulation of air passes through the frames, which keeps the plants dwarf and strong. I should not recommend "V. M." to keep air on all night, particularly through the months of November and December, when fogs are prevalent. If properly ventilated during the day, the foliage gets thoroughly dry, and the lights are better closed than open. I should think "V. M.'s" plants are too far from the glass, that being one cause, or perhaps the cause, of his failure. In severe weather they should be protected with mats. Although frost does not kill them, it makes the flower-stalks flabby, and also causes the foliage to damp, and if such foliage is allowed

to remain it would soon spoil the whole. In very damp localities it is advisable to sprinkle a little powdered charcoal amongst the plants, charcoal being a good antiseptic.

The single varieties should be divided every spring, and the ground should be manured and dug. They should be planted a foot apart in 4-foot beds, off which the blooms can be readily picked from either side. If allowed to become matted together they degenerate so much as to be scarcely worth picking. The same liberal treatment recommended for double Violets holds good in the case of single varieties also, the only difference being their remaining in the beds in which they are grown instead of being planted under glass. They are quite hardy and will survive any ordinary winter. The varieties grown here are: Doubles—Marie Louise, one of the best of rich lavender-blues, with white and red eye, but better in spring than in winter—my plants have thousands of buds on them; *De l'arme*, a good free-blooming kind, of a pale lavender colour; New York, said to be better than Marie Louise, but I cannot say much about it, having only grown it one season; *Marguerite de Savoie*, a large, deep blue, very good variety; King of Violets, very dark indigo-blue, does best out of doors; Swanley White, a variety with which I am much disappointed, it is too much the colour of a Snowdrop—a greeny white; it may come better in the spring; Comte Brazza's is, I believe, much better. Singles—*Odoratissima*, the largest of the blue singles; Victoria Regina, the best purple; Czar, purple; White Czar; and *Argentædora*, a reputed perpetual-flowering variety, silvery in colour and very fragrant. J. TURNER.

Pierrepont Gardens, Farnham.

CHRYSANTHEMUMS.

WHILE the Oak, Maple, and other trees are arrayed in crimson and gold, and the woodlands and hill-sides are glowing pictures of autumn foliage, our Chrysanthemums are only bursting the buds of their floral loveliness. The flowers of the fields and woods have passed, unless it be a stray Aster or Golden Rod, or the modest Witch Hazel in the thicket, yet the gayest of our garden treasures, the Chrysanthemum, is only being announced. It is the middle of October, and our *Coleuses*, *Heliotropes*, and *Dahlias* have been destroyed by frost; scarlet *Pelargoniums* appeal for protection; the summer garden has been broken up, and litter and decaying stems, leaves, and plants cry for removal. But the end is not yet; brighter and gayer than summer's gaudiest masses are the Chrysanthemums. There are many

KINDS OF CHRYSANTHEMUMS. For instance, the white weed of our hay fields, the Paris Daisies, white and yellow, so much grown now for winter flowers; the annual tricolor varieties of our summer gardens and others; but the most esteemed of all are the Indian or Chinese Chrysanthemums to which I now refer. The varieties of these are legion, and I shall endeavour to arrange them in classes or sections under the designations of Japanese, Chinese, Anemone-flowered, pompones, but there is no rigid line of separation. The Japanese have large, loose, ragged-looking, bunch-of-ribbons, or mop-of-shavings-like flowers, as we find in *La Frisure*, *Ceres*, and *Julius Scharff*. The Chinese have large, symmetrical flowers, many of them being as full, regular, and double as those of the finest *Dahlias*, and the flower-leaves incurved, as in *Mr. Gladstone*, *Golden Beverley*, and *Prince of Wales*; or they may be flat or recurved, as in *Mrs. Forsyth* or *refulgens*. The Anemone-flowered may be Japanese, Chinese, or pompones, and are beautiful, though peculiar flowers; the disc florets—those in the centre—are short, tubular, and toothed, while the outer, or ray florets, are broad, flat, and longer than those of the disc. *Mrs. Rithers*, *Fleur de Marie*, and *Marie Stuart* represent the three classes. Pompones have the smallest flowers, and though not very showy, are peculiarly neat and pretty, and, as a rule, have the fullest double and most perfect flowers; the

plants are stocky and extremely free flowering. St. Michael, Souvenir de Jersey, and Brilliant are fair examples.

PROPAGATION BY SEED.—Seeds advertised by all prominent seedsmen, sown in pots or boxes in the house or greenhouse in spring, or in frames or hotbeds, germinate freely, and with due care afford fair-sized flowering plants by next November. But it is unlikely that one plant among a hundred will be worth perpetuating. The bulk of the Chrysanthemum seed upon the market is raised in the Channel Islands, the south of France, and Algiers, but of recent years many have devoted earnest attention to Chrysanthemum culture, saved seeds and raised multitudes of seedlings from their own plants, and produced some of the loveliest flowers in cultivation.

CULTIVATION OUT-OF-DOORS.—As soon as Chrysanthemums are done blooming, cut them over for tidiness' sake; see that they are securely labelled and cover them with leaves, evergreen branches, Fern, or other handy material. On the approach of spring uncover them, and after they have started to grow a little, lift and divide them, replant the healthiest pieces, and throw away the rest. Never preserve the old plants undisturbed, as young plants produce finer flowers; indeed, single well-rooted sprouts make large specimens before autumn, and I much prefer them to pieces having several sprouts. The ground should be well enriched. In dry summer weather it will pay to give occasional heavy waterings to your Chrysanthemums. In order to secure nice stocky plants, their shoots should be shortened two or three times before the end of June; after that let them grow unchecked; and if you supply one stout stake to each plant and tie the shoots thereto as they grow, you will have nice, shapely plants in the autumn. Of course, you may let them blossom where they have been growing all summer, or lift and replant them elsewhere at your pleasure; if carefully lifted and replanted and well watered then, and kept watered till the next rain comes, they will go ahead and grow and blossom as well as if they had been left undisturbed. During the summer months I grow my Chrysanthemums in plots by themselves in rows 3 feet apart each way, and as my Abutilons and other summer plants begin to appear shabby, I root them out and replace them with Chrysanthemums. And in order to prolong the blossoming period, I transplant a lot in a sheltered nook, where I can protect them in the event of frosty weather.

CULTIVATION IN POTS is mostly practised by those having greenhouse room. The plants are raised from cuttings or slips in spring, repotted as they require it, and kept moderately cool till the end of April, after which they are fully exposed till about the middle of May, when they are planted out, and cared for during the summer months as advised for out-of-door-grown plants. Between the 1st of September and October lift and pot them, water well, keep them faintly shaded, as under a tree, for a few days, stake firmly, and plunge out of doors till there is danger from frost, then remove them to a cool, light, airy greenhouse. When they begin to blossom, keep them dry overhead, but water abundantly at the root, and weak liquid manure will greatly assist them. Some growers say they get finer blooms from plants that have been grown all along in pots than they do from those planted out in summer and lifted and potted in; but such is not my experience, and it is a notable fact that the best growers plant out all their Chrysanthemums in summer. Unusually large flowers may be had by disbudding, that is, by removing all the buds except the end ones on the shoots, as soon as they appear; also by pinching the lateral shoots of the main branches so as to throw the strength of the plant into the flower-buds at the ends of these branches. As cut flowers they are very useful, and last in perfection a week. Like Dahlias, Gladioli, and Lilies, they look better alone than when mixed up, bouquet fashion, with other flowers. All are pretty in daylight, and the golden-bronze colours particularly so by lamplight.

THE GREATEST IMPROVEMENT in Chrysanthemums in recent years has been the introduction of many fine Japanese varieties. Among the Chinese sorts we cannot boast of better flowers than were grown several years ago, and, alas, many of the choicest sorts, as Golden Beverley, Souvenir de Merceades, and Mrs. George Rundle, are very subject to mildew. But the Japanese are a sturdy, vigorous, hardy race; so, too, are the many varieties of American origin.

EARLY FROSTS.—Four or five degrees of frost, if of short duration, will not materially hurt either plants or flowers, but winds and drenching rains mar them considerably. There are some early-flowering ones, as: Madame Desgrange and its yellow form, Red Dragon, Gloire Rayonnante, La Frisure, Mdle. Mancey, Madame Bachoux, Anastasio, Petite Marie, Bois Duval, Précoité, Trésorier Lacoste, and Frederic Marronet, that come into blossom several weeks earlier than the general mass. Or the plants may be planted in pots, boxes, &c., and, in the event of frosty nights, taken indoors, put into a shed, or elsewhere overnight.

VARIETIES.—These have now become very numerous. The following is my selection:—

JAPANESE.—Admiration, rosy lilac; Ben d'Or, yellow; Boule d'Argent, rose-purple; Bouquet Fait, rose and white; Ceres, pale purple to white; Comte de Germigny, brown and yellow; Duchess of Albany, darker than the last; Elaine, white; Fair Maid of Guernsey, white; F. Délaux, velvety crimson; Gloire Rayonnante, satiny rose; Golden Dragon, yellow; Grandiflorum, yellow; Julius Scharff, deep purple; La Charmeuse, deep purple and silver; La Frisure, silvery purple; Madame C. Audiguier, rosy pink; M. Planchenau, rose, purple, and white; Madame Desgrange, white; P. Délaux, crimson; Red Dragon, crimson and yellow; Rubra striata, red and yellow; Soleil Levant, yellow; Source d'Or, red and yellow; Striata perfecta, purple and white; Triomphe de la rue du Châtelet, buff and nankeen.

CHINESE.—Barbara, yellow; Baron Beust, buff bronze; Duchess of Connaught, pink-purple; Felicity, white; Golden Beverley, yellow; Jardin des Plantes, yellow; Gloria Mundi, yellow; Mabel Ward, yellow; Mrs. Forsyth, white; Mrs. N. Hallock, yellowish white; Prince of Wales, deep purple; Procure, bright amaranth; Venus, rosy lilac.

Some that I should regard as too small to be classed with the preceding and too large to be placed with the small pompones are as follows: Aimée Ferrière, white, purple tipped; Eléonore, crimson and yellow; Madame Bachoux, lilac-purple; Mdle. Marthé, white; Golden Mdle. Marthé, yellow; Mrs. Cullingford, white; Perle des Beautés, yellow tipped with crimson; Princess Meletia, white and pale purple; Webb's Queen, white.

POMPONES.—Amphilla, bright crimson; Anastasio, pink-purple; Arbre de Noël, bronze and chrome; Fanny, crimson; Inimitable, yellowish; Lucrèce, crimson or yellow; Mdle. Mancey, pink-purple; Salamon, cherry red; Sanguineum, red; Secrétaire Daurel, chestnut and yellow; Trésorier Lacoste, yellow shaded chestnut.

SINGLE AND SEMI-DOUBLE.—America, white tinged purple; Bonnie Rose, deep rose-purple; Cassino, deep purple; Cineraria, rich purple, white band around eye; J. Y. Murckland, white; Mari-gold, brown-red; Mrs. C. L. Allen, deep rose-purple; Mrs. Robertson, creamy white tinged with purple; Peter Henderson, clear, bright yellow; Zephyr, yellowish white. I have several other singles of more or less importance, and some, as Attraction, Rosalind, and Yellow Gem, that are not worth growing.—W. FALCONER, in *Rural New Yorker*.

Winter-blooming Pelargoniums.—We often read or hear of certain sorts of zonal Pelargoniums being the best or among the best for winter blooming, thus conveying the impression that it is necessary to have such sorts if we

wish to be successful. As it happens, we invariably have plenty of bloom at this time of the year, and that too on nearly all the varieties which we have. The secret lies in well preparing the plants and at the proper time giving them a light position in a warm greenhouse. Young plants are preferred, and they are not allowed to bloom till the first week in September, or when transferred to their winter quarters. During the winter they are carefully watered; they are given air on dry warm days and fire heat almost constantly.—I.

PLANTS ROOTING THROUGH THEIR POTS.

AFTER reading the note on naturally grown Chrysanthemums (p. 462) one is forced to the conclusion that the superiority of the plants in question was principally due to the fact that their roots ran out of the pots into good soil. What renders this the more interesting is that hitherto most good growers have considered it bad practice to allow the roots to issue from the pots, and emphasised instructions have more than once been given to turn the pots round now and then when plunged, so as to check all tendency to do so.

Whether by allowing the roots to go through and into the soil below the highest stage of Chrysanthemum development can be attained I cannot say, but it is evident that very excellent results are obtainable in that way. Such being the case, it follows that fine Chrysanthemums can be grown with much less labour in the matter of watering and shifting than by the ordinary routine—an important consideration. It also follows that comparatively large plants can be obtained by pot culture—a great advantage where they are required for decorative purposes—and small pots with tolerably large plants in them are a desideratum. It seems paradoxical to assert that the cutting off roots which issue in some quantity from the pots increases the amount of fibres in the pots themselves, but I am inclined to think that that is frequently the case.

At one time we used to grow a number of Strawberries, which remained several years in the same pots without fresh soil. Our plan was to set them on a piece of free soil and allow them to root through for two or three months. At the end of that time they had generally made quite a thick mass of fibrous roots outside of the pots, and one would have thought that by their destruction the welfare of the plants would have been seriously endangered. Facts, however, pointed in the opposite direction, for if they were well attended to in the way of watering, they did not appear to suffer, and, what was curious, a fresh series of strong roots issued immediately from the crown, which, thick and wiry, soon found their way down round the outside of the pots. Not only was this the case, but the old roots at once began to throw out white fibres the whole of their length, so that the soil soon became filled with them. Naturally, too, the strong leaf-growth made by reason of the rooting through would have its effect on the renewal of the roots, as with a large head of foliage plenty of water can be given. In this way we have kept Strawberries five years in the same pots with no decrease in their bearing power; indeed, they were only turned out of the pots when the crowns projected so far from the soil as to render the production of roots from them practically impossible. After breaking them off in September a good top-dressing of soot was given, which encouraged the formation of surface feeders, and gave the plants the food they needed.

I do not say that it would answer to allow every kind of plant to root through, but there are many free-rooting ones that would be benefited thereby. Such things as berry-bearing Solanums, Ficus elastica, many Palms, zonal Pelargoniums, and similar things required in small pots for decoration could be more easily and better grown by plunging the pots in some light material for a couple of months or more than by shifting. I believe that most plant growers think too much of shifting and not enough of top-dressing or feeding in some way, the consequence being that

plants often get into pots out of proportion to their size.

J. C. B.

Salvia boliviana var. verticillata.—This beautiful variety of *Salvia*, now beginning to flower, forms a useful succession to the majority of plants grown for winter decoration. It is one of the most vigorous of *Sages* in general habit, and is easily grown if potted in rich soil and given plenty of water at all times. Cuttings of it rooted in spring, grown on, and finally shifted into 9-inch pots will form plants the following winter some 4 feet high and nearly as much in diameter. Such plants, with their deep green leathery leaves and dark scarlet flowers, are among the most attractive of greenhouse plants at that season, and form good substitutes for out-going *Chrysanthemums*. The variety just named is very distinct, and well worth extended cultivation.—J. G. K.

Erica melanthera.—This is one of the most interesting of autumn and winter flowering *Heaths* that bloom at the same time as the better known and more largely grown *E. hyemalis*; although its flowers are very small, they are produced in great profusion on every little point of the preceding summer's growth. They are nearly white, but are rendered conspicuous on account of their exerted stamens and dark coloured anthers. Young plants produce shoots nearly as long as other strong-growing *Heaths*, but when several years old this species forms a compact, bushy head, and generally grows evenly without pinching. The slender growths are very useful in a cut state, as they keep good for a long time in water, and a delicate perfume is emitted by the flowers when fresh. With even a small stock of established plants and a little management by way of hastening and retarding some portion of them, the usefulness and general decorative value of *E. melanthera* may be extended over some three or four of the duldest winter months.—BETA.

Vriesia brachystachys.—Many Bromeliaceous plants are certainly worthy of more attention than has hitherto been bestowed upon them in this country, their requirements being easily satisfied, and in several cases the foliage is very beautiful, while the flowers of many of them are showy and attractive. One of the most conspicuous in bloom now is *Vriesia brachystachys*, a smallish growing kind that flowers freely in small pots. The flower-scape is about a foot high, and the blossoms are arranged in two opposite rows on the upper part of it. Each bloom is subtended by a large keel-shaped bract, which forms the principal attractive feature of the inflorescence. These bracts at the base are intensely bright crimson, shaded more or less with purple, which gradually merges into the orange colour of the upper part. In some the orange is much tinged with green. The blossoms themselves are yellow, but do not remain long in perfection, and as they protrude but a short distance beyond the bracts, they are at no time very conspicuous. Our plants are simply potted in fibrous peat (the pots being well drained) and kept on a shelf in the stove except when in bloom, when they are placed in a more conspicuous position.—H. P.

Coleuses in winter.—Although *Coleuses* are usually seen to greatest advantage in summer and autumn, they may be successfully employed as winter decorative plants where a brisk growing temperature can be given them. On dark winter days the beautiful colouring of their foliage is even more attractive than in summer, from the fact that there is then little that is brilliant to compete with it. Small plants are most serviceable where drawing-room and table decoration is carried out on a large scale, and as plants used for these purposes get rather rough usage, it is best to employ as far as possible such as can be rapidly increased and grown on to a useful size. I put my cuttings of *Coleuses* in September and October in 2½-inch pots, and as soon as rooted set them on a shelf near the glass in a stove temperature. They soon acquire a serviceable size, and when seen under strong artificial light, are even

more effective than many plants of greater value. The varieties sent out during the last few years have been great improvements on those cultivated a dozen years ago, and their lovely foliage is always admired. Where, indeed, cut flowers are scarce, even the tops of old plants of *Coleuses* that have got too large for decoration may be utilised for filling the cut-flower basket, which at Christmas-tide usually taxes the resources of even the largest establishments.—J. G., *Hants*.

GARDEN FLORA.

PLATE 474.

BORDER CARNATIONS.

(WITH A COLOURED FIG. OF BELLE HALLIDAY.*)

IF we were asked which is the most charming of our hardy summer border flowers, we should unhesitatingly name, next to the *Rose*, the border *Carnation*, which is, moreover, one of the oldest of our border plants, for we read of the *Carnation*—probably an improved form—having been introduced by Gerard from Poland in 1597. That it was commonly grown about London in 1629 may be inferred from the fact that as many as fifty sorts were cultivated by Parkinson. It must have been a general favourite in Shakespeare's time, for in "The Winter's Tale" he makes Perdita say:—

The fairest flowers o' the season

Are our *Carnations* and Stock *Gilliflowers*.

Abercromby grew upwards of a dozen *Clove* or self-coloured *Carnations*. But it is with existing varieties we are now chiefly concerned. In colour these range from deep crimson, through glowing scarlet, to the purest white, and while yellow has not been altogether unrepresented, the examples of this colour have for the most part been of weak constitution, and unable to withstand the rigour of our winters. A notable exception in this respect is the beautiful *Belle Halliday*, the subject of the annexed plate for this week. It has been sent out by Messrs. Dicksons, of the Filrig Park Nursery, Edinburgh, and is, as will be seen, of a lovely shade of lemon-yellow. In robustness of constitution it is equal to the old *Clove*, and that it is floriferous is sufficiently attested by the fact that as many as a hundred flowers and buds have been counted on a one-year-old plant. Like the rest of the family, it begins to open its blossoms in July, and continues to bloom in the greatest profusion till pinching winter frosts set in; and if the exacting cultivator is still dissatisfied, he has only to take up the plants, pot them, and place them in a cool greenhouse, where they will reward him for his trouble by continuing to open their unexpanded buds throughout the winter months.

THE CULTURE of border *Carnations* is so simple as to bring them within the reach of the humblest cottager, and although, like all other flowers, their clear and beautiful colours will appear to most advantage in smokeless atmospheres, they are much less fastidious in this respect than most plants. There are, indeed, but few hardy border flowers that accommodate themselves so readily to unfavourable surroundings as the *Carnation*; as an evidence of this we may mention that the flowers from which our drawing was made were grown virtually in the heart of Edinburgh, where all attempts to make the *Rose* feel at home have proved ineffectual. For a long period the *Carnation* has been, so to speak, the property of the

florist, our fine old *Cloves*, if tolerated at all, being relegated to any out-of-the-way corner; but, thanks to the reaction that has set in during these last few years, *Carnations* have been reinstated in the prominent position to grace which they are so well fitted, and from which, we venture to hope, they will not again be deposed. We have only to turn to Hogg's treatise on the *Carnation*, published in 1820, to see how much simple beauty was sacrificed at the shrine of the fashionable florist in those days. Any *Carnation* that did not exactly fit the then existing conditions was ruthlessly thrown to the rubbish heap. The following are the properties which, according to florists, a *Carnation* should possess: "The stem should be strong, tall, and straight, not less than 30 inches nor more than 45 inches high; the flower should be at least 3 inches in diameter, consisting of a great number of large well-formed petals, but neither so many as to give it too full and crowded an appearance, nor so few as to make it appear thin. The petals should be broad and substantial, particularly those of the lower or outer circle, commonly called guard leaves; these should rise perpendicularly about half an inch above the calyx, and then turn off gracefully in a horizontal direction, supporting the interior petals, and altogether forming a convex and nearly hemispherical corolla. The interior petals should rather decrease in size as they approach the centre of the flower. The petals should be regularly disposed alike on every side, imbricating each other in such a manner that both their respective and united beauties may captivate the eye at the same instant; they should be nearly flat; however, a small degree of concavity or inflection at the broad end is allowable, but their edges should be perfectly entire, that is to say, free from notches, fringe, or indenture. Whatever colours the flowers may be possessed of, they should be perfectly distinct, and disposed in stripes, broadest at the edge of the petals. Each petal should have a due proportion of white—i.e., one half, or nearly so, which should be perfectly clear and free from spots." Most of these and other needless requirements are, we need hardly say, now disregarded.

As we have already remarked, the culture of border *Carnations* is of the simplest kind, but at the same time we may add that *Carnations* well repay, in the quantity, quality, and duration of their bloom, good cultivation. To have them at their best, the ground should be deeply dug and enriched with well-rotted manure. In a sheltered situation they may be planted out in autumn, when the layers are taken off, or they may be wintered in a cold frame in free, rich, fibry soil, keeping the lights off always, except during heavy rain or hard frost. In either case they will be benefited by a mulching of Cocoa-nut fibre refuse or of short stable manure. Spring planting may be done in the end of March or beginning of April, and a top-dressing of cow manure will serve the double purpose of feeding the plants and counteracting the effects of severe drought. Should the summer prove exceptionally dry, liberal waterings ought to be occasionally given. Treated in this way, they will send up strong flower-stems, which must be staked, in order to keep the flowers clean. If desired, the plants may be left undisturbed for two or three years, when they will form large masses and yield bloom in proportion. Young plants may be obtained either by layering or from pipings (cuttings) put in when the shoots are slightly firm, which will be some time in July.

* Drawn from flowers sent by Messrs. Dicksons & Co., Filrig Park Nursery, Edinburgh, in first week of September.



They should be put in pots in a light compost with plenty of drainage, placed in a spent hotbed, and shaded for ten days or so, when they will root freely. If it be desired to save seed, the plants should not be layered, as this is said to prevent seeding. The seed should be kept in the pods till the beginning of May, when it may be sown in pans in a light compost, and the seedlings should



Japanese Bamboos in a border at Ightham. (See p. 19.)

be planted out when about 3 inches high; they should be shaded, and in September they may be planted where they are to flower, which they will do the following summer.

As to varieties, the following are some of the best of their respective colours: White—Bridesmaid, Duchess of Connaught, Gloire de Nancy, Miss Matthews, The Bride, The Governor, and the White Clove; scarlet—Coroner, Duke of Wellington, Fire-eater, Helton Hall, and Martial; crimson—Dominie Sampson, Hindoo, Prince of Wales, and The Nigger; purple—Gog, Neptune, Purple em, Royal Purple, and Sultan; striped—Acis, Adonis, Eurydice, Lord Stamford, Miss Muir, Prince Hal, and Titania; yellow—Andalusia, Beauty of Penshurst, Belle Halliday, and Mrs. George Hawtrej; Picotees—Prince of Orange, Pillrig Park, and Redbraes. With border Carnations ought to be associated their equally hardy and equally easily grown relatives, the border Pinks, to which many charming varieties have recently been added, both double and single; these for the most part begin to flower quite a month earlier than the Carnations, and the two together furnish fragrant blooms during the whole of the summer and autumn.

Primula Rosy Queen.—I am growing a considerable number of Chinese Primulas, and the collection proves quite as interesting as I anticipated it would be. One of the earliest bloomers and one of the best is Rosy Queen. It

is a Fern-leaved variety, but more compact in growth than the ordinary strains in this section, and when the neat and pretty pale green leaves are surmounted by strong trusses of well formed delicate rose-coloured blooms it is certain to attract attention. In a cut state it is also serviceable, and looks very pretty on the dinner-table. Altogether I consider it to be one of the best Primulas in cultivation, and that is saying a good deal seeing how many varieties now exist. —W. I.

FRUIT GARDEN.

NEGLECTED FRUITS.

THERE are three kinds of fruit which, it is my belief, have for years past been much neglected, viz., Medlars, Mulberries, and Walnuts. They were extensively planted by our forefathers, but, according to my experience, the present generation of proprietors of gardens, as well as gardeners, very rarely think of planting trees of any of them. There may be some slight excuse for not planting Walnuts, as these take many years, perhaps not less than half a century, to attain a profitable size, but neither Medlars nor Mulberries are many years before they commence to fruit, and those who plant them, in addition to the satisfaction of feeling that they are making some slight provision for their heirs, may reasonably anticipate some return for their trouble. I believe I may safely assert that Medlars are only to be found in about 25 per cent. of medium-sized and large gardens, and very rarely indeed in small ones. The Medlar season, it is true, is not a long one, but Medlars are available during the latter part of November and December, a time at which desert fruits are very limited. I do not say Medlars are appreciated by all who have an opportunity of tasting them, but, as it often happens with other comparatively uncommon fruits, there are some who acquire a very strong liking for them. The only variety we have here is the Nottingham, this being the smallest fruited, but the best in point of flavour. The broad-leaved Dutch Medlar produces much finer fruit and of very good flavour. A strong loam appears to suit Medlars well, but as a rule they will succeed with Apple trees wherever these may be grown. They are usually grown as standards, and require but little pruning beyond an occasional thinning out of the branches where these are at all crowded. The fruits should not be gathered till early in November, as if gathered earlier they are liable to shrivel. They

MULBERRIES, in spite of their longevity, are getting scarcer every year; they are liable to be destroyed by heavy gales, especially when in full leaf. When once a principal branch is blown off the rest of the tree soon shares the same fate, and all who possess a fine old tree will do well to anticipate this much-to-be-regretted destruction by simply chaining the principal branches to each other, in such a manner as to insure their mutual support. The Mulberry is essentially a lawn tree. Here Mulberries are of imposing appearance; the isolation causes a sturdy, fruitful growth, and the clean turf preserves the fruits as they fall. It is only in the southern counties, however, that lawn Mulberry trees may be depended upon for perfecting a crop of fruit; in the more northern counties Mulberries, however, succeed surprisingly well when planted against a wall and rather closely nailed in, the fruit being produced on spurs as well as at the points of short-jointed young growth, or the trees may be allowed to grow in a semi-restricted state, such as so well suits Figs when grown in similar positions. For lawns standard trees are the best, and these when properly staked up require no further attention. A rather light loamy soil suits them, and little or no manure should be given young trees, or they will grow much too strongly to be fruitful. When well established they rarely fail to ripen good crops, and some healthy old trees yield bushels of fine fruit, considerable quantities of which are bought up and converted into a syrup by wholesale druggists. During the hot summer months the fruits are very refreshing, though rather too acid to suit all tastes; they are also rather too juicy for tarts, and are therefore best mixed with Apples. The black Mulberry is the variety cultivated for its fruit; when ripe the fruit should be quite black, and when fully grown $1\frac{1}{4}$ inches in length.

WALNUTS are too well known to need any comment, though, as it happens, very few people grow their own. At a farmhouse near here there is a fine row of trees, which in some seasons produce heavy crops, and I have often wondered why more trees have not been planted in similar positions, or that avenues have not been more frequently formed with them. As park trees, Walnuts are quite as ornamental as any other deciduous tree, young trees especially producing very fine foliage, and I should think that their timber is as valuable as any grown in this country. If planted in fairly good soil they are not at all slow growing, though in rather low positions both the delicate young growths and fruit are liable to injury from late spring frosts.



Yuccas by walk on top of slope at Ightham. (See p. 19.)

may be stored on a cool shelf in the fruit room with the open side downward. Part of the crop, if placed at once in a box, covered with glass, and set near some hot-water pipes, may be ripened by the middle of November, an acceptable dish of fruit being thus provided for any special purpose, and its season is also lengthened.

The very large-fruited sorts are rarely of any use; the best for planting are Highflyer, Thin-shelled, and Dwarf Prolific. W. I. M.

Lifting fruit trees.—This practice may be necessary occasionally, but it is not one that need be put in operation annually anywhere. Yet there

are gardeners who persistently advocate the annual lifting of their Peach trees, even under glass, and who adopt the practice regularly, or at least profess to do so, as the pages of some of your contemporaries testify. For my part I think one need hardly distinguish between lifting and root-pruning—the difference is merely one of degree and not of principle, but it is certainly not needful to do either every year. If you lift a Peach tree, or any other fruit tree, and replant it again, the consequences are a severe check to growth, the risk at least of loss of crop the following year or partial loss, and a general check to the tree, root and top. The second or third year after lifting are the most fruitful, and after that the operation may be repeated, but not any oftener. Root-pruning and lifting are not beneficial in themselves except in so far as they check over-luxuriance, but when practised too often the cure is worse than the disease, for the result is the enfeeblement of the trees and poor crops of fruit of inferior quality. Root-pruning and lifting might, however, be obviated in many cases by planting in properly prepared borders at the outset. So far as I have noticed, no tree, whether it belongs to the garden or the forest, ever grows too vigorously in a poor, well-drained, or shallow soil. The degree of vigour and maturity may be measured exactly by these conditions, and numerous examples of the kind come under the gardener's observation every day. No one could produce an over-vigorous Pear tree, for example, by growing it in a poor or very shallow soil out of which the roots could not get. Not only does poverty check growth, but so also does a shallow soil, however rich, and much of one's labour in lifting and root-pruning might be done away with by a realisation of this fact.—S. W.

SUPERNUMERARY VINES.

In forming new vineries a great saving is effected by planting supernumerary Vines. In lean-to houses of good width—say, 15 feet or 18 feet—much valuable space may be utilised by them for from four to six years which would otherwise be lost. More Grapes can be cut from such Vines in a much shorter space of time than from permanent rods, which under the circumstances need not be cropped quite so heavily for the first few years, thus giving them time to gain strength, when they will last longer in good condition than if cropped heavily from the commencement. I have had many good crops of Grapes from supernumerary Vines; therefore I can speak with confidence as to their value. Bunches produced by them have been awarded first prizes more than once. Our vineries, three in number, 18 feet wide and about 14 feet high at the back, where there is a light about 3 feet 6 inches in length, are well adapted for supernumerary canes. When planting them five years ago we had many Vines to spare, and the idea struck me to plant them in the way indicated. The permanent Vines are planted about a foot from the front wall, and the supernumeraries about 8 feet from it. The border was made 8 feet in width at first, and it has been added to since as the roots extended. When planted the Vines were cut down to two eyes; the most promising shoot was left and the other rubbed off. They grew rapidly, reaching the top of the house the first year; at pruning time they were cut in to three eyes on the wires—i.e., a pair of side shoots and a leader. These the same season bore three bunches, or one on each shoot. The lower buds which broke from the stem below the wires were rubbed off, leaving a clean stem 6 feet high. They were quite like standard Vines. After the first two seasons of bearing the lower spurs were cut away to give more room and light to the permanent Vines. The supernumerary ones were allowed to have a longer length of leader to fruit from in consequence of the loss of spurs at the bottom. At present we have a good crop of Alicante and Lady Downes hanging on Vines thus treated. In the early house some rods of Hamburgs are still left to carry one more crop of Grapes preparatory to cutting them out altogether.

In the same house we have cut out this season rods of Foster's Seedling and Madresfield Court, which answered remarkably well treated in the way just named. Muscats, in the Muscat house, and Madresfield Court, along with those of Alicante and Lady Downes before mentioned, have all borne good fruit. A Vine of the Duke of Buccleuch, planted in the late vinery as a supernumerary, bore this last season eighteen good bunches, the berries of which swelled to a good size and coloured well, free from spot, and they kept in good condition till the first week in November. E. MOLYNEUX.

THE APPLE CROP.

NOTWITHSTANDING that we had such a good crop of Apples last year, there has been a fair average crop this season, and one or two features connected with it are worthy of remark. In the first place, the fruit has been everywhere in this district larger, more uniform in size, and clearer in the skin than it has been for some few years past. In the next place, perfectly sound fruit dropped from the trees earlier than usual. The healthy condition of the trees was also remarkable; they were more densely covered with foliage than usual late in the season. The leaves were also larger, and there was a greater depth of green in them than ordinary, while insect pests were anything but troublesome. I stored this autumn the finest lot of Apples I have had during my seventeen years' residence in Somerset; they were gathered from pyramid and bush trees, which are about 8 feet in height and proportionately broad. They consist of the following varieties: Cox's Pomona, always with us an exceedingly prolific sort, producing large and handsome fruits that are much esteemed for culinary purposes, while the tree makes a handsome pyramid or bush; Glamis Castle and Emperor Alexander both large culinary sorts that have borne well; Worcester Pearmain has produced some fine highly-coloured fruit; and Kentish Fillbasket and Lord Suffield are good. Cellini has borne some fine fruit, as have also Peasgood's Nonsuch and King of the Pippins. In connection with the management of the bush and pyramid form of trees, especially as regards pruning, I may mention that I have no hard or fast rules to work by. I rely more upon root-pruning than on curtailing the branches. At the same time, I prefer to have sufficient vigour in the trees to require the use of the knife on the branches sometimes, for without pruning I am quite sure large fruit cannot be obtained. My rule is to root-prune such trees as are getting too vigorous, but in our strong soil the time varies according to the season and the habit of the variety. Sometimes I do not have to touch the roots of such strong-growing sorts as Kentish Fillbasket, Glamis Castle, and Emperor Alexander but once in four years, and sometimes less. I am guided entirely by the condition of the branches. When the trees are strong enough to make growth 2 feet long in one season I think it time to root-prune, no matter when that operation was last performed. In root-pruning we are careful that it is performed without seriously mutilating the smaller roots. The soil is taken out on one side of the tree, from 18 inches to 2 feet from the stem, according to its size and age. The largest roots are then searched out and severed with a knife. The soil is then put back in its place and trodden firmly. Every tree to be root-pruned is marked in September before the branches are pruned. The root-pruning I like to have done in October. As regards pruning the branches, I have altered my time of doing it. I used to prune about the middle of August, but as the trees did not remain so healthy as I thought they ought to do under the circumstances, I decided to defer the cutting away of the branches until the fruit was gathered, and under this system the health of our trees has certainly improved. In regard to the value of summer pruning, I at one time held the same opinion as many more, viz., that it promoted the formation of fruit buds, and therefore it was an essential part of fruit-tree management. I do not say now that it is not so, but observation has shown me that any fruit tree, under a judicious

system of root-pruning, will perfect as many fruit buds according to its bearing surface as it is able to produce fruit, and bring it to maturity without the aid of summer pruning. Summer pruning may—in fact, it does—increase the number of fruit buds, but unless the bearing surface is increased proportionately there is nothing gained by it, and the bearing surface of any tree must necessarily be in proportion to the form in which it is grown. Any particular branch upon a tree may, by the skilful manipulations of the pruner, be made to form any number of fruit buds according to its length, and supposing it had set thirty or more, the strength of the tree might only be able to bring to maturity one-third of that number; therefore I maintain that, although it may be desirable in the case of young trees to adopt summer pruning in order to bring them into form, it is neither necessary nor desirable to practise it on well-formed specimens. J. C. C.

MELON CULTURE.

It is generally supposed that Melons require more heat and attention than they really do, and many refrain from cultivating them on that account, but if plants are started any time from the beginning of April up to the end of May or middle of June, they may be grown successfully in any ordinary pit or frame deep enough to admit of light fermenting material to afford a little warmth for the roots, as sun heat will do the rest. The most important point is to obtain good strong plants to start with, and as many of these can be raised and got up to a proper size in a one-light box, the best way, where there are not houses in which to sow and rear them, is to make up a hotbed specially for the purpose, as by so doing they may be nursed on till the frames are clear of bedding plants and the weather is favourable for planting them out. The hotbed, to be sweet and wholesome, should be made of manure and leaves or tan that have been mixed up and turned over a few times to let out the fiery gases and sweeten, when the material will be ready for putting together and may be used without risk of injury to the most tender foliage. To save having to disturb the young Melons after they are up, it is a good plan to sow two seeds in the centre or sides of a pot, and when up, to pull out the weakest and leave the other to grow; or if sown in a pan it should be done thinly in finely sifted leaf-soil, from which they will lift with plenty of roots. They may then be potted singly in fibry loam and shaded slightly for a day or two till they get fresh hold, when the more sun and light they get the more stocky and robust will they grow. If the temperature in the frame stands anywhere above 60° by night, that will be quite hot enough, and to conserve the warmth and keep it steadily at that, the glass should be covered with mats or protected in some way against wind and frost. In the morning, as soon as the heat in the frame reaches 75°, air should be admitted by tilting the backs of the lights, but this must be done cautiously, so as not to let in cold, cutting draughts or to lower the heat beyond the point mentioned. With air on, no harm will accrue if the heat runs up to 85°, and when it reaches that point it will be necessary to raise the lights higher, or the foliage may burn. By two or three in the afternoon the frame may be closed, but the plants and interior on fine sunny days should be syringed with tepid water to make the atmosphere moist, which will keep the plants clean and help to push them along. As soon as they have made a rough leaf or two, they should be stopped by having the points nipped out, which will cause them to break from below and branch, so that when planted out they will lie flat on the ground. All that is requisite by way of

BOTTOM-HEAT to grow Melons during the summer is, as above stated, just enough to give them a good start, which a foot or two deep of any fermenting material will do. This, put into the pits or frames in a hot state, should have a good ridge of soil laid along the middle, and if the lights are then kept close for a few days, sufficient warmth will have been driven into it to

make it ready for planting. Before doing this, however, it should be rendered firm by pressing or treading, as Melons do best in a firm root-run. If the pits or frames are wide, the plants may be placed about 2 feet apart, and a yard if narrow, which will afford ample room for them to run and spread. By the time the shoots reach the outside of the ridge it will be necessary to nip out the points, as when they lengthen out they will reach the limits of the frame, and the stopping causes laterals to form. On these the fruits show, and the laterals should at once be stopped one joint beyond the fruit; as the flowers open they must be fertilised, otherwise they will not set. As soon as it can be seen that they are set and swelling, all, except three or four of the best situated, should be removed, as either three or four are quite enough for a plant, unless each can have a great deal of room.

THE PRINCIPAL POINT to be attended to in growing Melons in frames is to keep all lateral growths stopped as they show, so as not to allow them to overshadow the main foliage, which should have plenty of room, and the branches so trained by pegging out as to cover the whole of the ground. To prevent red spider there is nothing like clear water, which may be sprinkled on daily during sunny weather just before closing the frames, but to save chilling the leaves, the water must be warm and so poured on as to avoid wetting the collars of the plants, as when that is done continuously they are apt to canker at that particular part. The heat Melons will stand and enjoy when damped down and closed is surprising; the frames may, therefore, be always shut by three at the latest; but during the day they should have plenty of air, which will keep them healthy and strong. When the fruits are swelling fast liquid manure is a great help, but this should be discontinued some time before they ripen or the flavour will be impaired, as also occurs if kept too wet at the roots. As to sorts of Melons to grow, their name is legion, and each cultivator has his particular favourite. The following, though not new, are as good as any, and all do well in a frame: Read's Scarlet Flesh and Scarlet Gem among the coloured kinds, and Eastnor Castle, Bailey's Hybrid, Golden Perfection, and Queen Emma in the green-fleshed class, and all these grow to a moderate size, are handsomely netted, and look well on a table. S. D.

PRUNING AND DRESSING VINES.

Now that the leaves have fallen, and where the fruit has all been cut, the Vines should be pruned. The long-rod system consists in taking up one or two young canes from near the base of the Vine each year, which, at the time of pruning, are shortened back to from two-thirds to one-third of their entire length, the crop being borne on the young rod or rods from the bottom up to where they are cut back, and on the old cane that has produced them above where they were severed, except in cases in which it was cut away as soon as the fruit was removed; in that case the young one is generally left nearly the entire length of the rafter; but this method is now comparatively little practised, and never had very much to recommend it, although by it larger bunches are often produced than by the other system. Amateurs are more likely to succeed under the spur system, though the Vines in time, owing to the length which the spurs assume in the course of years, have a less slightly appearance than in the case of the long-rod system. This is a fault which can, however, be avoided by yearly cutting from each rod a few of the spurs completely; young shoots will spring from the base where these have been removed and will take their place, though it often happens that such shoots do not show fruit freely the year after they have been formed. It is, however, always better to prune with a view to a crop than for mere appearance sake, and I should not recommend any bearing wood ever being shortened closer than to where a good plump eye can be retained, even should this be

the second above the base where the current season's shoot had sprung, and in no case to sever the shoot too near the eye that is retained. The advantage of pruning in this fashion is that the second eye may produce a good stout bunch, whilst the usually weaker bud at the base of the shoot may show no bunch, or one that is a sort of half bunch, half tendril; and if the lower eye shows fruit satisfactorily, then the shoot from the second eye can be removed altogether. Where Vines are strong enough to bear freely, there is little to be feared as to their showing a sufficient crop, provided the wood has been fully ripened, unless where over-cropping has been practised, or they have been so grossly neglected as to allow them to become a prey to red spider or thrips early in the season, long before the leaves had fulfilled their allotted functions. There is one other point to which I would direct attention, and that is, not to retain too many spurs on each rod; it is a common occurrence to see a spur retained at the greater number of the joints, which is much too close, crowding the roof with small half-developed leaves; whereas, if the spurs be from 1 ft. to 15 in. apart, they are quite near enough. In the case of Vines that are pruned now with a view to their being started more or less early, it will be as well to give them their winter dressing at once. Before applying this it is usual to strip off some of the outer bark, but in this operation I would especially urge the inexperienced to be cautious, and only take off such as is quite loose and hanging in a dead, stringy condition; the unnatural practice of close scraping, so as to remove the whole of the outer covering almost down to the living inner bark, polishing the rods off smooth like a knotted walking-stick, is fatal in its effects, preventing the Vines ever growing and thickening as they ought to do. This scraping process, I am aware, is often done with the intention of removing the eggs of red spider, thrips, and other insects, but in this case the cure becomes worse than the disease. After removing just the loose outer portion as just described, dress at once with the usual mixture of clay, sulphur, a little Gishurst and soot, and fresh cow manure, the latter to help the dressing to stick, stirring all well together, and using it about the consistency of thick paint, brushing it in thoroughly to get it into every crevice, especially about the base of the spurs. After they are dressed, the rods may either be tied up in their places under the rafters or across the house over the front path if there happens to be one; in this way a fair amount of light will be admitted to whatever plants occupy the house during the winter. T. B. S.

Strawberries in autumn.—"In the first week in August they were just beginning to pick Strawberries some fifteen miles north of Inverness." This fact thus reported to me seems to bear directly on a discussion which took place some twelve months ago concerning the autumn treatment of Strawberries in pots. I then counselled the top dressing of plants which had become thoroughly root-bound, as a means of increasing their fertility by the natural process of strengthening the fruit germ, which must form from the first week in September to the end of October. Any deficiency of nutriment at that time, I argued, would be one means of decreasing the crop the following year. This was, however, objected to on the ground that, after August, Strawberries having completed their growth require nothing more than pure water, which is tantamount to saying that during September they make no growth, for all the time a plant grows it requires food. But what, it will be asked, has all this to do with the ripening of the fruit in the far north? Why, simply that if Strawberry picking begins there in August only, the season lasting from three weeks to a month, we will say, the plants which have borne must make their growth again in September, since the fruit is not taken from them much before that time. It therefore follows that the fruit germ on which the next year's crop depends is then formed, and that a Strawberry plant, to yield well, must not lack for nourishment

during the early autumn months. It would be of real interest to know whether the average yield of Strawberries in the open is greater in districts where the crop is over by the latter end of July than where the fruit ripens a month later. According to my experience, plants grow with greater freedom during the first three weeks in September than at any other time, and when the autumn is mild they will no more than be at rest by the end of October, all depending on the absence of frost and general temperature. I therefore contend that during this period there should be no lack of food, and that root-bound plants are often sufferers from the want of it.—J. C. B.

Pruning Gooseberries.—In July last I saw a wonderful example of the effects of high culture on the Gooseberry in a villa garden not far from Quarter Bridge, in the Isle of Man. Last year I saw the bushes at the same season, and noticing that they were growing in good soil, and that they had produced some fine shoots of great length, I advised the proprietor to give up the cutting-back plan of pruning and simply thin out, leaving the longest and best shoots. The result was highly gratifying. On one bush, for example, of an erect habit I measured one shoot, which was about 3 feet long and bore a perfect string of fine berries the whole of its length. The tall branches had become top heavy with the weight of fruit on them, and they had to be supported by stout stakes. By this mode of pruning the proprietor reckoned he had doubled his crop in one season. As Gooseberries are a paying crop, it is well to know that the secret of quick returns is good soil and manure and strong annual growths or shoots, which may be reduced in number, but never shortened. I hear that some of the London market gardeners adopt this plan successfully. Unlike most other fruits, the Gooseberry can hardly be over-cropped, for no matter how much fruit a bush bears, if it at the same time produces good wood, a full crop is sure the following season. Good culture therefore consists in securing such growths.—J. S. W.

New Chinese Plum.—A number of shrubs and small trees which came from an European correspondent a few years ago, says the *American Agriculturist*, were planted in a nursery row preparatory to making a final disposition of them. This year one of these attracted attention by a show of fruit. It proved to be *Prunus Simoni* (Simon's Plum), a native of the northern part of China. The tree, now about 10 feet high, has slender, erect branches. The lance-shaped leaves are minutely serrated on the margin, and have from two to four small globose glands at the base. The leaves are dark green and shining on the upper surface and lighter coloured and dull below. The fruit, ripe about August 10, sometimes reaches 2 inches in diameter, though usually smaller, and has a very short stem. It is much flattened lengthwise, and at a short distance appears like a diminutive Apple. It has a distinct, but not very deep suture. The skin, which is perfectly smooth, is of the dark red colour known as cinnabar. The flesh is of an apricot colour and somewhat adherent to the stone. The stone has a nearly orbicular outline, thicker on one side than on the other, and marked with furrows and holes in a similar manner to that of the Peach, though in a less degree. The fruit has an agreeable and peculiar odour, recalling that of the Apricot. The flesh, while not very juicy, is, when fully ripe, agreeable, with a marked and pleasant flavour, in which the taste of bitter Almonds is quite perceptible. It is the possibilities that this new Plum presents, rather than what it now is, that interest us. When we see what has been done in improving the Sand Pear by hybridising, we hope someone may experiment with the Simon's Plum, and make it the foundation of a new class of Plum and perhaps of Peaches. Pomologists will observe in this fruit a remarkable union of the characters that distinguish the Plum and the Peach. Its smooth skin and the character of the flesh are those of a Plum, while the glands at the base of the leaves and the grooved and rough stone are like those of the Peach; indeed, Decaisne originally named it *Persica Simoni*.

(Simon's Peach). This species shows that Benham and Hooker were right in uniting the Almond, Peach, Plum, Cherry, Apricot, &c., all under the single genus *Prunus*.

FRUIT TREES FOR NORTH OF SCOTLAND.*

LATE spring frosts and hail showers while the blossom is expanded or the fruit young and tender are the most frequent sources of disappointment, while, in addition to atmospheric changes, there is sometimes cold, unfavourable situations to contend with, having poor soil, or an unsuitable subsoil, so that only the very hardiest of hardy fruits will succeed in such places. It has hitherto been too much the practice to select sorts of fruit trees of reputed excellence and high quality, and plant them, without first taking into consideration whether or not the conditions are in every way suited to their requirements. To a want of due discretion on these points may be attributed much of the failures often experienced. It is of the utmost importance that fruit cultivators should first of all consider the climate, soil, and situation on which fruit trees are to be grown, and wherever doubts exist advice should be obtained from those whose authority can be relied on.

THE CHERRY, owing to its early ripening, I will take first. It is easily grown upon most kinds of soil that is not too damp or waterlogged below. It does best budded on the Gean or wild Cherry, but has of late years been a good deal in demand budded on the Mahaleb stock, which brings it into earlier fruit-bearing, as well as dwarfs its growth. I do not, however, approve of this stock for general out-door cultivation; the Gean is preferable; on it the tree will attain a larger size and live longer. Most of the varieties of Cherry will succeed grown against walls of any aspect in this northern district, while the early varieties do well as orchard trees, where birds can be kept off. The May Duke, an old favourite sort, can be had in succession for nearly three months by planting against a south wall for early fruiting, and others against an east or west aspect for the summer supply, and some on a north aspect, where they can be safely kept under a net until late in September. Here we seldom fail in having a succession up to that date. The Black Circassian or Tartarian, Late Duke, Black Eagle, and Florence, the latter a variety of the white heart type, firm in flesh, rich in juicy, flavour, and also a good keeper, are the sorts which we grow for dessert. The Morello and Kentish, grown principally for cooking purposes and preserving, are best upon a north aspect wall or as standards in the orchard. The great difficulty here, however, is protection. The following are mentioned as being worth growing where a variety of kinds is desirable, viz., Downton, Bigarreau, Elton, Ludwig's Bigarreau, Ox Heart, and Royal Duke. I may also here remark that although the Cherry is not a fastidious tree as regards soil and situation, yet it does not like its roots tampered with and disturbed when grown up to well-established trees. It does not, therefore, replant well, neither is it suited for root lifting, like most kinds of fruit trees. It has also a disinclination to grow on a spot where a tree of the

same species had grown before, unless the soil has been either wholly renewed or otherwise liberally mixed with an additional quantity of fresh loam.

THE PLUM, one of the hardiest of stone fruits, grows freely on most kinds of soil, and is fairly suited for our northern climate. A number of kinds are well adapted for growing against walls of a south-east or west aspect, where they ripen well and prove of excellent flavour. Early Prolific is one of the earliest and most useful Plums for growing on walls of east or west aspect, and on standards for succession. It is, as the name designates, an abundant bearer, and suited for either table or culinary purposes. It is small in size, rich purple when fully ripe, and carries a fine bloom. It was sent out by the late Mr. Rivers

The tree is strong and a good bearer. The Green Gage is a sort so well known, that no description is required. It is quite hardy, and ripens here on a standard. It is not surpassed by any other sort in rich flavour, and is much prized both for dessert and kitchen purposes. On the whole, it is not a profitable Plum, being rather a shy bearer and soon over; it ripens about the end of August. Jefferson is a fine, showy, egg-shaped Plum, yellow, and spotted with crimson on the side exposed to the sun. Its flavour is good and it is juicy and melting; a good dessert fruit. The tree is a free grower; it does well here on east and west walls, and in good autumns ripens on standards. It is ripe in September, and hangs well on the tree for keeping up a succession. Orleans is an old well-known sort, worthy of a place on a wall of east or west aspect, although it does well on a standard, and is more commonly grown as such. Its fruit is round, red and purple in colour, flesh firm, parting freely from the stone; when well ripened on walls it may be used for dessert, but it is best suited for culinary purposes. It ripens in August, and may be termed a second early Plum. Drop d'Or, a small, round golden Gage of French origin, ripens early. Its fruit is rich and sweet and well suited for dessert. It

is a shy bearer and weakly in constitution. Cloth of Gold is a large yellow sort, with a clear, smooth skin like White Magnum Bonum. It is a free-stone, firm in flesh and of mild flavour. It is best adapted for culinary use. The tree is of free growth and its foliage large. Kirke's is a pretty, round, medium-sized Plum, stalk long and slender, colour blue, with a beautiful bloom when well ripened, nearly equal in appearance to what is seen on the Alicante Grape. It is a clingstone with greenish coloured flesh of good flavour; a handsome fruit for the dinner table. The tree is of free growth, shoots long and slender, with smooth, shining foliage. Royal Hâtive, a small round, reddish speckled fruit, ripens on a west aspect wall in September. It is a rich, highly flavoured dessert Plum, free in growth, but a shy bearer. Victoria possesses two valuable qualities much wanted in all classes of fruit, viz., hardiness and free bearing. It is a variety so well known, that I need not here describe it. When well ripened, it is not a bad table fruit, but its principal merits consist in the two qualities above mentioned. Washington is a large, oval, greenish yellow Plum, round and flattened at the ends, juicy, and of a flat-tish flavour, possessing no particular merit; a gross-growing tree, with large foliage, and a shy bearer. Purple Gage is a variety not much seen in cultivation. It is, however, a useful late Plum, ripening on east aspect walls in October. It is a free grower, with large foliage; the fruit is round, medium sized, and of a dingy purple colour; flavour good. Its principal merit consists in ripening after autumnal varieties are over and hanging well on the tree after it is ripe. Violette Hâtive, a medium-sized purplish Plum of good flavour, is suited either for dessert or kitchen; growth vigorous. Gisborne's Seedling is a yellow free-stone fruit of medium size and mild flavour; it is a great bearer and does well as a standard. Guthrie's Golden Gage, a hardy, free-growing Plum, bears small oval-shaped fruit, which assumes a rich golden colour, with small crimson spots when fully exposed to the sun; flavour fair, best suited for kitchen purposes. Coe's Gol-



Ightham. Entrance. See p. 19.)

about thirty years ago. Both it and Early Purple, a Plum of similar size and colour, were stated to have been produced from the Early Orleans. It may be interesting to know that I raised two seedling Plums from a fruit picked up under a tree of the Early Prolific. The fruit contained a doublekerneled stone, and both vegetated and grew up together. Some curiosity existed to know whether both plants would prove to be of the same kind. One fruited a year sooner than the other, and carried fruit almost identical with that of the parent, while the other variety, which had a larger and rougher leaf, had also a larger fruit, which was later in ripening and in appearance and colour like the Orleans. Columbia, a large red Plum of American origin, ripens at Gordon Castle on an east wall early in August. Its fruit is ovate-roundish at both ends; flesh firm, parting freely from the stone, and of an agreeable acid; it is best suited for kitchen purposes,

* Read at the North of Scotland Horticultural Association's meeting by Mr. J. Webster, Gordon Castle, Banff.

den Drop, a fruit of great merit, resembles Jefferson both in colour and shape, with a little more taper at the stalk end, and also spotted with crimson on the side next the sun. It is a clingstone with a rich juicy, pleasant flavour. It ripens on an east or west aspect. The tree is hardy in constitution, and keeps its fruit hanging until shrivelled; altogether a first class dessert Plum. Webster's Gage, a seedling raised here from Coe's Golden Drop crossed with Green Gage, bears medium-sized fruit, oval roundish at both ends, stalk long and slender, flavour rich and juicy, a good dessert Plum. The tree is vigorous and ripens its fruit best on a south aspect. Ickworth Impératrice, one of the latest Plums grown, is most valued when allowed to hang on the tree until the fruit shrivels before gathering, when it resembles a dried Prune both in size and shape; flesh firm, sugary and rich. The tree is vigorous, shoots smooth, long, and slender. The above have all been grown and proven here, along with about two dozen seedlings of considerable merit and some other named sorts. In this northern district the roots of Plums and other fruit trees which are well established are the better of being raised and kept near the surface, as a means of obtaining short, well-ripened wood and higher flavoured fruit. The list may be thought somewhat rather lengthy, but it is given in order that intending planters may judge for themselves as to the sorts best suited for their requirements.

THE APRICOT, although a native of Asia, succeeds well in a favourable situation against a south wall north of the Grampians. It is commonly budded on the Plum stock, for which it is well adapted. It does well also on its own roots, but, being hard and brittle, they are not so well suited for root-raising or replanting when large as the Plum stock. The Moorpark is best suited for general cultivation, and may be raised from the kernel without grafting. I have had numbers of them produced in that way, and have always found them to correspond with the parent. I never had one that I could say was any improvement upon it. We also grow several other varieties, such as Hemskerk, Gros Pêche, Breda, Brussels, &c., but none equal Moorpark either for free-fruiting or quality. The soil best suited for this tree is a dry, friable loam, resting on a dry sub-soil. In some places the trees are apt to produce gross rampant shoots that do not properly ripen. To overcome this the best method is to curtail the roots and bring the remainder near the surface by root-raising. An Apricot when well ripened is one of our best fruits, and is well worthy of any extra trouble as regards root management. Keeping summer growths well shortened and the shoots close to the wall is important both for fruit and buds. The great trial in Apricot management is in spring when the blossom is open, and even after the fruit is formed frost and heavy showers of hail frequently injure it, although well protected by the ordinary methods.

THE PEACH, a native of Persia, is even more difficult to manage in our short summers than the Apricot, as it continues to make later growth. In autumn the wood is often imperfectly ripened, and Scotland, taken as a line of demarcation, cannot be considered to be within the radius of good Peach cultivation, although in good summers fruits of good size, colour, and flavour are to be found along the south shores of the Moray Firth

and in Easter Ross—perhaps as fine as are to be found in any part of Scotland. In order to check late growth it is necessary to have the roots under thorough control. Here, the border on which they were to grow was excavated to the depth of 3 feet 2 inches; 18 inches deep of stones was put in the bottom, and only 20 inches in depth of soil allowed for the roots, which are thus kept thoroughly well drained and near the surface, no cropping being allowed over them. They get a copious watering once or twice in a season, especially in such summers as the last. There are seasons, however, such as that of 1879, that baffle all our efforts; several large trees were entirely ruined then, and others had to be put in their place. As a rule, I would not recommend Peaches to be planted for outdoor cultivation, except in very favoured localities. The sorts that succeed best here are Royal George, Barrington, Noblesse, Bellegarde, Violette Hâtive, and Hale's Early. Nectarines take a little longer than Peaches to ripen, and therefore they cannot be recommended for outdoor culture in Banffshire.

PEARS AND APPLES.—The cultivation of these is, I consider, better understood than that of stone fruits. I will, therefore, only select the names of sorts which I have most confidence in recommend-

ties, and, although not equal in quality to many new kinds in cultivation, still it is better to keep to those which are best adapted to this district, where our summers are short, than to make a change. The following is a list of table sorts, which ripen early, and are pretty hardy and free-bearing, viz.: Early Harvest, Juneating, Oslin, Thorle Pippin, Kerry Pippin, Devonshire Quarrenden, and Margil. The last resembles the Ribston, ripens better, and is nearly equal to it in flavour. To these may be added Irish Peach, Margaret, American Pippin, and Ribston, which requires a wall to perfect its flavour in this northern district. Kitchen varieties consist of such free-bearing sorts as Lord Suffield, Hawthornden and its red variety, Echlinville Seedling, Keswick, Royal and Dutch Codlins, Stirling Castle, Alfriston, and Cellini. In addition to these may be added Northern Dumpling and Beauty of Moray—two sorts raised by myself from hardy, free-bearing varieties, which cannot fail to be equally as fruitful and hardy as any of those enumerated. This short list will, I fear, be somewhat disappointing, but in reality the sorts suited to our climate are small in number. Let me here remark, however, that an addition to the number of varieties of a hardy, free-bearing type is much wanted—free-

bearing kinds that will withstand our adverse climate with impunity.

Early Hellebores.

—The mild weather which we have had and sharp frosts lately have injured some of our Hellebores; *H. guttatus*, *H. colchicus*, *H. purpurascens*, *H. abchasicus*, *H. cupreus*, and others that were too forward have suffered almost, I fear, irrecoverably. All those just mentioned had towards the middle of December pushed their flower-stalks a good 2 inches or 3 inches above the mulchings, and at this season, when the leaves being few afford little or no protection, those just opening their blossoms have suffered most. They have never been protected by hand-lights or cloches, but they are growing in

naturally well-sheltered nooks, with exposures varying from west to north. *H. niger* and its varieties *angustifolius* and *altifolius*, clumps of which stand side by side with those injured, have not been affected in the least.—K.

Polygala Chamæbuxus—It is strange to read in M. Correvon's note (p. 7) that he expresses surprise almost amounting to incredulity at this capital plant being grown successfully in England. Certainly with us there is no difficulty. We have perhaps some sixty or seventy plants grouped in different positions; one patch on the flat in full sun, one on a northward and another on a westward slope, some on perpendicular wall-like rockwork facing south, and a nursery line under a north wall. Of these the greater part were from the north-eastern end of the lake of Geneva, at an elevation of 1600 feet, and from the lake of Como at about the same elevation; they came by post and were by no means well rooted; a few were from northern and midland home nurseries. All have done well; I may even venture to say that we have never lost a plant, and many have been given away. With us it forms dense, close tufts not more than 5 inches high. I do not know if it ever acquires in English cultivation the freely bushing and even straggling habit that one notices in its alpine homes. May this be the effect of age? Our oldest have been planted six years and show no disposition to enlarge upwardly, though they increase freely



Ightham. Covered way in courtyard. (See p. 19.)

ing as offering the best chance to produce satisfactory results. Amongst Pears, the Early Crawford, or Lammas, so named from its ripening early in August, and the Green Chisel, are both suited for early use, and ripen well upon standards, the quality of both being fairly good when well ripened. Citron des Carmes, a good early green sort, succeeds best, like the Jargonelle, against a wall. The following six sorts have been grown here with success upon espaliers, but in ordinary cases it is preferable to plant them against a wall, viz., Beurré d'Amanlis, Beurré Blanc or White Beurré, Flemish Beauty, Williams' Bon Chrétien, Louise Bonne of Jersey, and Summer Franc Real. These, when well ripened, are good, showy dessert fruits. The other six sorts are also fairly good in quality, and of a size suited for table, viz., Caillet Rosat, Moorfowl Egg, Swan's Egg, Windsor, St. James, and Grey Gudewife, the last a large Pear of Scottish origin, with russet skin and good in quality, tree vigorous in growth. The remarks just made regarding the Pear are equally applicable to the Apple. Indeed, of the two, I would consider the latter best understood, there being much less difficulty in getting trees to grow than in getting them to fruit. The secret of success depends more upon suitable sorts than on the soil. High class Apples are of little use in the north of Scotland, except under glass in orchard houses. The sorts which I have found to do best in this locality are principally well-known varie-

laterally by underground runners. Our soil is peaty sand upon rock, about 400 feet above sea-level. It seems to do best where it is coolest at the root. Probably the climate of Geneva is too hot and dry. In any case it is highly interesting to hear M. Correvon's remark, and encouraging to know by this and many other instances how well suited for our English gardens are hundreds of the loveliest of alpine flowers.—G. J., *West Surrey*.

FLOWER GARDEN.

NOTES ON HARDY PLANTS.

ANDROSACE LAGGERI.—This has not only much of the beauty and habit of the best of the Androsaces, but its capabilities of enduring our climate all the year round give it an importance which is worthy of careful note. It is as easily cultivated as most of the Saxifrages, and more so than many. Those who have tried their hand at this genus would not do amiss to try this species, for whether they have succeeded or not with such as *A. villosa*, *pyrenaica*, *ciliata*, *obtusifolia*, *helvetica*, *Wulfeniana*, and one or two others of the difficult European species, it would appear to be desirable to have at least one in such a vigorous state of growth as that in which this may be had, and as, perhaps, no other can be; at any rate, no other European sort grows like it with me. I believe this to be due to its glabrous character, and the endurance of these alpine gems under culture may almost be measured according to the smooth or hirsute surface of their herbage. For instance, *A. carnea*, *lactea*, *coronopifolia* (biennial), and one or two others may be managed with ordinary care, and these are nearly free from hairs, but most of the kinds above named are not only thickly beset with hairs, but they are smaller in the leaf and of more compact habit than the others. These last named features are doubtless the cause of many succumbing wholesale to our autumn fogs and wet winters. If, in planting, provision is made for the silky roots going deep in a soil mainly composed of humus, we are pretty well on the way to success with all the Androsaces, whilst with the glabrous sorts, hardly another difficulty remains; for when the long roots get at the moisture natural to depth, they can endure any amount of sunshine. That much may be said in favour of the different species requiring humus and detritus of specified qualities is no doubt true, as evidenced by altitudes and formations by which their habitats are so well defined, but when Nature gives up such plants to the foster-mother—art—it seems that the greater changes in one set of conditions open the way to changes or even a total neglect of minor details. True, it is, however, that with a judicious mixture of English peat, leaf-mould, loam, and sandstone grit, all the above named Androsaces may be grown in this country, with of course the protection of glass for the hairy kinds in winter as just indicated. *A. Lageri* may be grown by all; in ordinary loam in the open ground well rooted plants may be set, and they will grow like the mossy Saxifrages. Bits the size of a florin spread to a diameter of 6 inches or 8 inches, or fill a 3-inch pot in one season. It is the freest of all I have grown excepting the Himalayan *sarmentosa*; it much resembles *carnea*. Flowers, rosy red, in compact clusters on erect scapes from 2 inches to 3 inches high.

HARPALEUM RIGIDUM.—Not one word of praise too much has "W. C. T." used (pp. 527-28) in regard to this plant, which may excusably be called a Sunflower. But I cannot imagine how anyone could take it for an annual, nor on account of its non-production of seed should there be any difficulty in getting plenty of stock of it. I am aware that the exact spot where a fine growth stood one year may not know it again, but nothing could be more prolific of underground stems, which vary in length from a foot to 3 feet, running just under surface and terminating in a sort of tuberous knob, from immediately under which fleshy roots issue whilst yet the parent plant is green; later the old stool dies, also the

underground stems right close to the new crowns. This sort of plant can hardly be called annual, I think; if so, numerous others, generally taken for perennials, would require to have their durations altered, as they only differ in the length of their offsets or underground stems. I can also assure those wishing to grow this plant that there is not the least want of hardiness about it, and certainly no need to take up the roots the same as those of Dahlias; if the new roots have run too far, they may be lifted and placed where desired, but that is all that is needful. Here a big patch is literally roped with its thick roots, and the young crowns crop out, and also are bare on the walk, and from the great abundance of it, it receives no care. This has been so for many winters, thus to my mind proving its prolific, perennial, and hardy character.

RANUNCULUS ACONITIFOLIUS FL-PL (known as the Fair Maids of France or the true Batchelor's Buttons).—Of this it may be asked, why is it so rarely seen? It is charming in a cut state, and the crop of flowers is both large and of long duration. The best results are always to be had from cultivated single crowns. On old roots left in the ground the crowns become crowded and small; besides, from the manner in which the plant forks and becomes dense too many crowns are objectionable. When the roots are dormant they should be lifted, and such of the large crowns as can be taken with a full complement of the fasciculated roots may be divided from the rest and replanted for the following season's bloom. The other parts may be cut to a single crown, no matter how small, and if set in a nursery bed of rich light loam, they will make fine stock for another year. Those who may care to try this plan of preparing single crowns will find that they will have not only as large a crop of flowers, but they will be vastly improved in quality.

CYPRIPEDIUM SPECTABILE.—It is not long since I said a few words about this Slipperwort, but as it is a plant of more than ordinary interest and value, other seasonable notes concerning it may be allowable. We have just been lifting from the open the annual stock for potting purposes. I am sure it cannot be generally known how vigorous this plant may be had in sticky peat and sand kept moist. It has battled bravely with Foxgloves, Horse-tail, and Roses, and the new roots are long and thick and the crowns more plump than are newly imported roots. But what caused me to speak so soon again of this hardy Orchid was what I consider to be most suggestive, viz., bits of old black rhizome, which must have been thrown down when trimming the roots for pots last year, have under the above named conditions sprouted. Here we have not only a proof that these simple conditions are ample for it, but that the plant has much vitality. Before the present lifting a part of the patch was in greater shade than the other, and it was found that those roots more exposed to sunshine were the better grown; the hottest summer will do no harm if the moisture at the roots is well sustained.

ERICAS are very attractive at this dull season, owing to their pretty habit, rich, though sombre, tints, and, in one or two instances, their flowers. *E. carnea* is a well known favourite, but the variety *alba* is not yet cultivated to a great extent. Much as the type is liked, many will prefer the white kind; both are now in flower. Nobody sees *alba* but they wish to possess it; the foliage is a paler green, and the myriads of tiny white bells with reddish protruding anthers render this very dwarf leathery one of the most attractive rock plants that could be named for winter effect; and then let those who have not tried it dress their greenhouse bouquets with sprigs of it and they will have a strong argument in favour of its culture for cut blooms in winter. *E. mediterranea nana* will soon be in flower, unless the weather becomes severe, but otherwise it is a pleasing object among dwarf plants. *E. vulgaris Foxi* is most distinct. It forms itself into dense, rounded cushions but a few inches high. What a lovely heathery mound might be had of it, with Snowdrops appearing between the cushions in

winter, *Sisyrinchium*s and *Scillas* later, Dog's-tooth Violets in spring, *Anomatheca cruenta* in summer, and *Colchicums* and autumn Croci to follow. Its winter tint is a fine bronzy green. If even the *Ericas* required peat, the little that would serve their short roots could not be denied them, but they thrive admirably in a loose loam on a well-drained plot.

THYMUS CARNOSUS is a handsome little shrub. Few would take it for a Thyme who had not had some former acquaintance with it. A plant here several years old is but a foot high, and resembles a miniature Conifer, or it, perhaps, may be better compared with a very dwarf Rosemary, and the scent of the evergreen foliage is all but identical with that of that sweet herb. Its minute, almost white, summer flowers have no merit as bloom, but the Lombardy Poplar-like habit, the sage-green, fleshy, cocoon-shaped leaves, not much larger than a groat, all go to make it a distinct object for rockwork. In a cut state it forms a sweet contribution to the scent jar, and as I have proved it to be capable of enduring drought at the roots, it would make a useful winter green for the dwelling-room window. Many things as we have, we cannot yet well afford to neglect hardy sweet-scented Evergreens of such neat habit as this. As herbaceous plants lose their foliar parts day by day the garden grows darker, and what remains of verdure becomes more noticeable.

HEUCHERAS.—Some eight or ten kinds are to be found, showing almost every shade of green, running on to brownish purple. No one who grows them in variety can want for beautiful foliage in mid-winter, and if a corresponding quantity of Christmas Roses are grown, the two combined are capable of decorating a table in no mean style. The outline of the leaves of the Alum roots is roundish, heart-shaped, broken by lobes which in their turn are toothed. Throughout their growing period their tints are changing, say hardening, so that by the end of the year they have a ripe bronzy effect, in some instances resembling the variations on zonal Pelargoniums. This foliage keeps good if not cut until new growth sets in in spring. Few of the Heucheras have flowers of any worth. J. WOOD.

Woodville, Kirkstall.

PLANTING PINKS.

PINKS may be planted with success in permanent beds any time after the pipings are rooted in autumn, or the planting may be deferred till spring, when beds may be made for them as late as February or March; but autumn planting—i.e., as soon as the pipings are well rooted—is best. Pinks need a rich loamy soil thoroughly drained, being impatient of stagnant water at the root. If the soil is naturally unsuitable for their growth, rich loam, consisting of rotted turves from 12 inches to 18 inches in depth, should be substituted, and at 1 foot deep place 2 inches or 3 inches of rotten cow manure, to form a rich bottom in which the roots can run. The easiest method of managing Pink beds is to dig out the soil 1 foot deep and place the manure in the bottom of the bed, making the soil rich to the depth of 1 foot by forking into it some rotten manure and leaf-mould before putting in the pipings. If planting is deferred until spring—thus giving the plants a second move instead of bringing them direct from the striking bed—the roots must be carefully spread out, and after being well watered their roots should receive some protection during frosty weather, alternate freezing and thawing being against them—in some cases even pushing the plants out of the ground. Beds 3 feet wide are best, and the plants should be 9 inches apart in the rows, but when four rows are planted in each bed, 6 inches will be found to be a good distance from plant to plant. Leave alleys 12 inches wide between the beds. If comeatable, the plants will be greatly benefited by frequent applications of artificial manure. The end of July or beginning of August is a good time to put in pipings, which may be made in

the usual way; they may either be dibbled into pots filled with sandy soil or pricked into a hand-light filled with loamy soil, having a good portion of sharp sand mixed with it to keep the whole open. Shade from bright sunshine during hot days until thoroughly rooted, which generally takes six weeks to accomplish. When rooted give plenty of ventilation, and expose the plants to the open air before planting them out into the beds.

Homewood.

WM. CHRISTISON.

TREE PEONIES.

By way of reply to Mr. Frank Miles, who seeks information respecting Tree Peonies, I send you herewith the names of the original Chinese varieties, all or most of which were introduced by Fortune:—

Atalante	Ida
Atropurpurea	Lord Macartney
Atrosanguinea	Mandarin
Beauty of Canton	Olorata rosea
Bella	Osiris
Berenice	Picta
Camellia	Pride of Hongkong
Colonel Malcolm	Purpurea
Confucius	Reevesiana
Cornelia	Robert Fortune
Dr. Bowring	Salmonia
Empereur de Chine	Samarang
Globose	Sir Geo. Staunton
Glory of Shanghai	Vivid
Hippolyte	Zenobia
Jewel of Chusan	

In reference to these, it would be unfair, perhaps, to name any firm in preference to another, but I am at Mr. Miles' service if he wishes to know by letter the names of firms which are most likely to best attend to his orders. As to Von Siebold's introductions, they were partly sold to Prince Frederic of the Netherlands, and never passed into commercial hands; the rest, as far as I remember, were bought by Messrs. E. H. Krelage & Son, of Harlem. The Prince Frederic collection consisted of—

Empereur de Russie	Prince Henri
Impératrice de Russie	Princesse d'Orange
Prince Alexandre	Princesse Frédéric
Prince d'Orange	Princesse Louise
Prince Frederic	Princesse Sophie

Those given over to commerce were—

Alexandre de Humboldt	Prince Albert
Baron de Hügel	Prince de Metternich
Duchesse d'Orléans	Prince de Prusse
Empereur Alexandre II.	Princesse Amélie
Empereur d'Autriche	Princesse Demidoff
Empereur de France	Princesse de Metternich
Flora	Princesse de Prusse
Grand Duc de Saxe-Weimar	Reine de Prusse
Grande Duchesse Hélène	Reine des Belges
John Lindley	Reine Victoria
Impératrice d'Autriche	Roi de Prusse
Impératrice de France	Roi des Belges
Madame de Cock	Roi de Wurtemberg
Nymphaea	Von Siebold
	Germania

The Chinese varieties are nearly all very double, the Japanese, on the contrary, are mostly single or slightly double, but many of the latter are variegated, striped, and speckled. These beautiful plants never were much in fashion in England, perhaps because a long time elapsed ere they flower well; moreover, perhaps, in the moist climate of England they do not produce many flower-buds, and being excited early into growth they are liable to suffer from spring frosts. Therefore Continental countries became their headquarters, and many of the best varieties have been raised in Belgium, the Netherlands, France, Italy, and lately also in Germany. The honour of having produced the best variety—Gloria Belgarum—belongs to a citizen of Ghent, M. Goethals. Casoretti's Elizabeth and some of M. Seneclauze's seedlings stand in the foremost rank, and I hope that a future generation will admire a few from my own garden. The latter part of August is the best time to graft Tree Peonies, and the scions used should as a rule have no flower-buds on them, though even with them a union is often effected. *P. edulis* makes a good stock, and, after grafting, the roots should be potted and the pots plunged in a frame, which is well drained and filled with well-worked common garden soil; the top of the stock-root (*P. edulis*) should be covered up with at least half an inch of soil. The

sashes should then be put over them and they should be shaded and kept close for about eight days; then sooner or later, as the case may be, the sashes may be tilted and air admitted. A union between stock and scion soon takes place, but it is well to leave the plants undisturbed until the following spring. No bottom heat is needed.

Baden-Baden.

MAX LEICHTLIN.

SINGLE CHRYSANTHEMUMS.

I do not think that single Chrysanthemums will ever be so popular as single Dahlias. If we could keep to a few pretty small-flowered varieties like those which Mr. T. S. Ware staged at the National Chrysanthemum Society's show at the Royal Aquarium, they would find a place in the garden; but the newer seedlings, and especially the American importations, are in not a few respects large, ungainly, if not positively ugly. We shall for a time have a rush of seedlings, as in the case of single Dahlias; there will be a want of discrimination in selecting from them, and size and ugliness will be the prevailing characteristics. Then there is such a large group of charming small-flowered pompon varieties, all of which are admirably adapted for decorative purposes, and among them a few of the Anemone-flowered pompones that to my mind are far superior to the best of the single varieties. And in regard to seed of Chrysanthemums saved in this country, it is a fact that there are but very few English raised seedlings, while many of the Japanese section especially are constantly being raised on the Continent. I have no doubt, now that there are such a quantity of good early flowering varieties, it is not so difficult to obtain seed in England as it was in the late Mr. John Salter's time; but our English seedsmen have to depend upon Continental supplies. As a matter of course, I cannot say whether Mr. Cullingford's and Mr. Teesdale's flowers are the produce of English saved seed or not. I think it would have been a comparatively easy matter to have obtained seed in this country after such an unusually dry summer as that of 1884. I am not quite certain that it is so easy, as "F. W. B." appears to assume, to raise and bloom Chrysanthemums from seed in one year, making annuals of them in fact. I did see, however, during the past summer, in Messrs. Sutton & Son's seed grounds, a number of seedlings raised from seed sown in January last in heat, and grown on quickly, so as to have the plants in good size before they were placed out in the open ground. The plants had every encouragement, but, with the additional advantage of a season eminently favourable, they did not flower until late in October and early in November. If the plants were grown on in pots under glass they might flower earlier, but the head of blooms could scarcely be so satisfactory as when the plants are grown in the open air. In a season when sharp frosts come at the end of September or early in October, there would be but a poor chance of blooming seedlings in the open ground. R. D.

Chrysanthemums at Christmas.

Every one knows the great value of Chrysanthemums during the autumn, but few have any idea of the great usefulness of many of the late kinds, and therefore "J. G. Hants," deserves thanks for having directed attention to them, as they are deserving of extensive cultivation; they come in at a season when showy flowers are very scarce and last long in perfection. Our greenhouse is now quite gay with them, and will be for a fortnight at least yet to come, the sorts being Meg Merrilies, Splendens, Golden Thread, Ethel, Bouquet Parfait, Baron de Prailly, Nelly, and Peter the Great. Baron de Prailly and the last named are not so late as the others; still by keeping them out doors as long as the season will permit, they remain good till quite the middle of December, up to which period the petals become more incurved and the blooms assume a more regular form. Meg Merrilies has large ragged flowers, it being one of the Japanese kinds, with, slightly twisted petals of a yellowish cast, shading off to creamy white at the edges.

Splendens is a very bright yellow with loose, irregular shaped flowers, and Golden Thread is, as its name implies, like twisted string or thread, and so light and elegant looking, that it is one of the best for cutting to dress epergnes or glasses, where it makes a fine show. Ethel is a large white, its only drawback being that it shows a dark centre, which in some of the flowers is very conspicuous. Bouquet Parfait is one of the oldest of the pompones, and has nice regular shaped blooms of a rich creamy white colour, that fade off and get lighter with age. Baron de Prailly has very large, loose, ragged flowers, which are lilac, and fine for cutting to dress as single specimens, as they look best alone. Peter the Great is a well-known kind, having canary-yellow blooms, that soften and incurve regularly with age. What spoils Chrysanthemums, in my opinion, is the thinning out of the buds, as for decorative purposes they are far better and more effective when grown naturally instead of having just one huge blossom stuck on the end of each shoot. To get the finest developed flowers for cutting to exhibit, the practice must of course be resorted to, but for general use they should be left to come as they will.—S. D.

Chrysanthemums in the open air.

With great satisfaction I see lately several letters encouraging the hardy growing of Chrysanthemums, and much hope that it will be still more strongly urged. In the case of shows I scarcely think that dishonesty could be practised (as suggested at p. 2) by substituting house-grown for outdoor flowers, because the foliage of the latter is so incomparably finer and stouter, and the stalks carry the flowers in such a much stronger and bolder way. Moreover, both stalks and leaves are mostly tinged with some healthy-looking bronzing that is never seen in house plants, whose foliage is apt to be comparatively limp and often of a mildew-like complexion. This presupposes that the plants are grown perfectly naturally and the flowers cut long enough to show the habit of a whole spray of leaf, stalk, and flower, which I hold to be the only true way of showing any flower whatever, but especially where flowers and leaves are naturally grouped together, as in the Chrysanthemum. To cut any flower off close and exhibit it on a card by way of showing what is a Pansy, or Carnation, or Chrysanthemum is not a way of honouring a beautiful plant, but rather reminds one of the human head on the pike of barbarous times, to let the world see how traitors are treated.—G. J.

Sedum spectabile.—This most useful autumn flower was the only occupant of our garden that seemed to enjoy the long protracted drought, and on light dry soils it is especially serviceable in keeping up the display in beds and borders at a time when many plants are on the wane, for it is only where an unlimited quantity of water was available that many plants could be kept in good condition during the drought; Sedums were, however, decided exceptions; they seemed to revel in heat and drought, and the flower-heads opened of a richer colour. *S. spectabile* is, in addition to its merits as a permanent bed or border plant, one of the best subjects for transplanting that we have, and a good quantity of it grown in the reserve garden will be found most useful for making up beds that have failed or become seedy-looking, as one of the effects of drought is to hasten the seed-producing powers of all kinds of plants that are reproduced in that way, and the effect of a garden is sadly marred by any blemishes in the way of seedy-looking beds. After a season like the past, it is but few gardens, at least in the south of England, that will not have had some failures to record. *Sedum Sieboldi* is one of the easiest plants to increase, either by division of the roots in spring or by using the old flower-stems as cuttings; they strike root freely, and in spring send up a quantity of shoots from the base that make fine flowering shoots in September. An open sunny position is the best for developing high colour in this plant, in the shade, although it flowers freely, it is much paler in colour.—J. GROOM, Gosport.

WORK DONE IN WEEK ENDING JAN. 6, 1885.

DECEMBER 31.

FINISHED pruning Currants and Gooseberries and cleared away prunings; the ground will now be lightly forked over, and the first frosty morning a dressing of good manure will be given in form of a mulching. To prevent injury from birds the bushes are made distasteful to them by splashing them thickly with a mixture of soot and lime in liquid form; this mixture also destroys Lichen and Moss that often grow on the branches of old trees particularly. Morello Cherries are now being pruned, and some of them need help, the fruit for the last year or two having been very puny and the growth weakly; to remedy this the old soil is being removed right down to the roots, and a trench cut round each tree at a distance of 4 feet from the stem, this trench being filled with good maiden loam, a few wood ashes, and half-inch bones, and the like mixture is also being placed over all the roots that have been bared, and over the whole a thick mulching of stable manure. The trees in question are on a north wall, the usual position for this variety of Cherry, a position that by many is supposed to be the only one on which this particular variety of fruit will do well, an error that may easily be corrected by a visit to some of the London market gardens, where they are grown as standards in any and every aspect. We have several trees growing as standards, and the produce is prodigious, much greater than from trees on walls, and if it were not for the difficulty of preserving the fruit from birds, this form would be the only one in which we should grow them. Graveling new walk, trepching in kitchen garden, turned over manure bed in early vinery, and placed on the bed a few more Spireas, Roses, Dentzas, Rhododendrons, and Ghent Azaleas. Strawberries on shelves in this vinery being in flower were moved to the Melon house, the atmosphere being rather too moist for the fruit to set satisfactorily in the vinery. A later batch of plants has taken their place in the vinery. Thinned out the fruit of first batch of Strawberries to about six on each plant; they are in 5-inch pots, and are a solid mass of roots, so that extra care is taken that they never get dry, because of the difficulty there would be of again getting the balls moistened through. The plants are now syringed at midday with tepid water, and clear liquid manure is given on alternate days. As a preventive against green fly, early Peaches were fumigated to-night, and another dose will be given them to-morrow; by doing this just before the buds unfold we are never troubled with blight till it is safe to fumigate without fear of injury—namely, after the fruit is set.

JANUARY 1, 1885.

Twelve degrees of frost this morning, and ice half an inch thick, made us begin to think about filling the ice house, and our time has therefore been entirely taken up with this duty; our store was quite exhausted, as none could be got last year, so that the house has had a good clean out, the drains put in order, and a lining of straw placed at the bottom and part way up the walls; the remainder of lining will be placed as the house is filled. Hooks for drawing the ice out of the lake, poles and rammers for breaking and pounding the ice in the house have all been got ready for a start to-morrow if the ice does not dissolve meanwhile, and unfortunately there are indications in that

direction this evening. Work in houses has been picking over bedding plants, making note of kinds that are most needed, the stock plants of such being put into heat for the production of cuttings at an early period. Coleus and Alternantheras want the warmest places; the shoots of the latter during winter generally run to flower, and shoots of this character never make good plants; hence we always pinch out flowering shoots, and this induces the plants to throw up shoots from the base, and cuttings from such shoots never fail to make good plants. Potted off a few of the choice Pelargoniums that are to be grown on as vase plants for the flower garden, and put in cuttings of others of which the stock is short. Mesembryanthemum cordifolium variegatum is a favourite bedding plant with us, and the stock needed

in many places is looked upon as such a tremendous undertaking, that extra allowances are considered indispensable, and on such occasions beer is to be had in any quantity, the consequence being bad work, quarrelling, and the men unfit for work the following day. All these evils we avoid by giving each man two shillings extra instead of beer, and if the work is not done better (I think it is), it is certainly done quicker. On beer the filling of the house took two days; now it is easily accomplished in one. All hands, indoor and out, have to share in the work of ice storing, so that all that has been done in the houses to-day was the necessary watering and stoking.

JANUARY 3.

The thaw has been quite imperceptible; not a particle of rain or sleet, but every place as dry as if there had been no frost, so that we were able to do our weekly sweeping up and rolling of walks, and afterwards to complete graveling of new walks, and also a little shrub pruning—Rhododendrons of the ponticum type, growing in large clumps by the sides of coach roads, and on which they encroach, were the first to be done. As for the most part they are growing under the shade of timber trees, there are but few flower-buds, but what there are we endeavour to retain so long as they are not on shoots that hang over the roads, or that present a straggly appearance, for it is with a view of avoiding this latter state and ensuring a bushy growth that annual cutting is had recourse to. As is our wont on Saturdays, cleaning up of houses was thoroughly done. Pines watered and early Muscat vinery (inside) border was also watered with water at a temperature of 90°, which warms the border, and the heat imparted we strive to retain by at once applying a little additional litter to the mulching already on. The buds are getting prominent, and our present night temperature is 60°, and this will not be exceeded till the buds are on the verge of expansion. Watered Fig house border. This fruit we do not require till midsummer, so that forcing, in the strict sense of that term, is scarcely needed, as the trees start naturally with the merest pretence of artificial heat, which will shortly be turned on, and syringing on fine days begun.

JANUARY 5.

Cutting the straggling shoots of Rhododendrons and Laurels that are growing under the shade of trees. Made drain and put in drainage for a new Vine border. The subsoil being gravel, very little

artificial drainage is needed, and none but a few brickbats, and the outlet drain has been done; over the brickbats turves have been laid Grass-side downwards to keep the soil out of the drainage. Turf cutting and carting for making Vine border, and also for stacking for potting purposes. Planted Potatoes in hotbed frames. The beds are principally composed of leaves, the heat from which is never so violent and is much more lasting than stable litter, only a small proportion of this latter being used to get up the heat in the mixture. Cleared out first division of Melon house, washed lights, and lime-washed walls; made good the drainage of Melon bed, which is over a cemented tank, through which a hot-water pipe runs for bottom heat—the tank being supplied with water, or not, as may be thought best for the plants at the various stages of growth. The soil for the bed will be put in as early as can be managed, so as to get all well consolidated and heated through by



Ightham. The house, from the moat. (See p. 19)

is therefore large, and all have to be had from spring-struck cuttings, as autumn-struck stock does not fill out till late in the season; consequently the plants have been placed in warmth and cuttings will be inserted soon as procurable, after which the old plants will be thrown away, as their tendency is to flower and seed rather than the production of growth—a consequence, I suppose, of their getting stunted in growth during the winter season.

JANUARY 2.

The thermometer did not register more than 2° of frost, yet, the ice from the 12° of yesterday being a good thickness, our house has been completely filled with very good ice, which perhaps would have been better had it been a little thicker, though possibly the extra pounding it has got owing to being so thin will, as it were, solder it more compactly together, that it will keep just as well as if it had been thicker. Ice "harvesting"

the time that the plants are ready to put out. Oak slabs are used for the principal supports over the tank, and earthenware tiles for the roofing, the foundation of the bed being thick pieces of turfy loam. A 4½-inch brick wall runs through the centre of the bed, and thus we get two divisions over the one tank, the farther one of which is used for Melons, and the front one for propagation of bedding plants. The main wall next the path of the house and the division wall of the bed form ledges on which to place glass over the propagating bed, and which enables us to get up a stock of soft-wooded plants conveniently and quickly. Sowed a box of Brussels Sprouts and of Early London Cauliflowers; plants from the latter, if pricked out in a frame as soon as they are large enough to handle and grown on without check, are generally as early as autumn-sown plants; in any case they make an early succession, and for this reason alone it is worth while to sow thus early.

JANUARY 6.

Digging and stacking turf. Pruning Rhododendrons and Laurels. There being another edition of frost, Broccoli now ready for use were covered with their own leaves, and the earliest dug up and taken to the vegetable shed, where they will keep fresh for ten days or a fortnight. Lettuces and Endive under the fruit tree walls have been thickly covered with straw. Supplies of Parsnips, Celery, Horseradish, and Jerusalem Artichokes have been housed in anticipation of severe frost setting in, and cold frames containing bedding plants have been thickly surrounded with litter. Cut late Muscat Grapes and put them in bottles, also all Black Alicantes, and as many of Lady Downes as there is room for; the remainder will have to hang on the Vines till space can be had. The firing needed, by reason of the sharp frosts of last week, has started the sap in motion in one or two of the Vines; consequently firing must be reduced to the lowest point consistent with the exclusion of frost. Pruned late Muscat Vines; sufficient warmth to keep out frost whilst the cuts are fresh will be given, but a few days hence the glass protection alone will be ample for the sharpest weather.

HANTS.

HORTICULTURAL ARTISTS.

TO THE EDITOR OF "THE GARDEN."

SIR,—It is said that even the humble worm will "turn again"—if trodden upon too often. There cannot be a more humble and inoffensive individual than the horticultural artist. I, alas, am one. I have no pretensions to independence of thought or hand; I am a mere nurseryman's drudge. I am not benefited when I pourtray a dingy dwarf as a gorgeous giant. I merely do what my kind employer tells me; he pays me my humble pittance, rubs my name off my work, and publishes my picture. Sir, I am so well acquainted with nurserymen's requirements, that I have in constant use a "nurseryman's proportional compass" (devised by myself); there is a movable screw in the middle, so that one end may be made to open twice, thrice, four, or even five or six times more than the other. If I have a plant from Mr. Swaggs, I move the screw to Mr. Swaggs's mark, and I measure with the small end and draw with the big one. If Mr. Pelter sends me a plant, I move the screw to Mr. Pelter's mark, and I always give satisfaction. I call my compass a "horticultural florometer." When young I did not like these exaggerations, and I trembled for my reputation and honesty, but my chief nurseryman told me it was all right, as "he always rubbed the artist's name off."

I was also not long in learning that nurserymen not only hold the poor draughtsmen in slavery, but that they "had" the publishers as well. For instance, Mr. Topper writes to his publisher, "Dear Mr. Sycophant,—If you will send your artist to paint my new magnificent Mimulus, I will take 500 copies of your monthly magazine." When the submissive artist goes to the rich nurseryman he is told that all the best Mimuluses have "gone off"; that a

few poor blooms are left, but they are not one-quarter the size of those just "gone off." If the inoffensive artist will draw these small flowers exactly four times the size of nature, they will well represent the missing blooms. Should the poor drudge remonstrate, a threat is held out that the 500 copies will be cancelled, and Mr. Sycophant, the publisher, will come down on the draughtsman "like a thousand of bricks." Well, sir, I made a mistake once, and I did quietly enjoy it (behind my master's back). There was a plant race: two nurserymen were each madly eager to get a "new plant" out first. Mr. Swiggers sent the blooms on to me by post in hot haste, with a request that I should get his out first at all risk and an extra half-crown would be my reward. Sir, I got out my compass (Mr. Swiggers's stretches more than any other man's); I polished the plant off like lightning and got it out first. On the day of its publication I received a letter from Mr. Swiggers's under-secretary summoning me immediately to the plant emporium. Of course I went (instantly). Mr. Swiggers was there with dilated eyes, hair on end, and his tongue cleaving to the roof of his mouth—speechless. At last he said, "Oh! Mr. Stagers, I tremble under the blow you have put upon me; the plant my young man sent was a dwarf variety, and ought to have been shrunk in size at least three times; whereas you have enlarged it with your peculiar compass six times. I am ruined! I am ruined! You artists are a bad lot; you have got no sense." Mr. Swiggers took good care never again to employ the inoffensive

STAGGERS.

PARKS & PUBLIC GARDENS.

LORD BRABAZON'S annual report of the Metropolitan Public Garden and Playground Association is so interesting, that we have devoted to it more space than we usually do to matters not purely horticultural. It shows what ought to be done for the people as well as what has been done. It seems extraordinary that so many open spaces in the very heart of London should until two years ago have remained useless for purposes of health and recreation. Lord Brabazon's association has taken thirty of these in hand, laid them out in gardens and playgrounds, fitted them with gymnasia and seats, and given them over to the local or metropolitan authorities to keep up and take care of. The association is still struggling with some forty-eight more open spaces, and with every prospect of success. All classes are benefited by these open spaces—the poor, who want room; the rich, who want the air of London kept pure, and so are directly interested in keeping open the lungs of London, which are its disused burial-grounds, its waste places, and its squares, as well as the parks.

BURIAL GROUNDS AS PUBLIC GARDENS.

EASTERN DIVISION.	
Name of Ground.	Acreage (about).
St. Mary's, Haggerston	1
St. Bartholomew's, Bethnal Green	1 1/2
St. Dunstan's, Stepney	7
St. James's, Ratcliff	1/4
St. Peter's, Bethnal Green	219 feet by 52 ft.
St. Mary's, Whitechapel	1
Baker's Row Disused Burial Ground	2
All Saints', Buxton Street, Mile End	Front, 115 feet by 20 feet; back, 70 feet by 25 feet
St. George's-in-the-East	1
St. Philip, Stepney	1/2
Burial Ground at Well Street, in connection with St. John's, Hackney	3
St. Leonard's, Shoreditch	3
EAST CENTRAL DIVISION.	
St. Luke's, Old Street	3 to 4
Bushill Fields	7
St. Botolph, Aldersgate Street	1 1/2
Benjamin Street	1/2
St. Dunstan's-in-the-West, Bream's Buildings	500 square yards
SOUTH-EASTERN DIVISION.	
St. George the Martyr, Southwark	Less than 2
Bermondsey Churchyard	1 1/2
St. John's, Horleydown	2
St. Mary's, Newington Butts	2
St. John's, Waterloo Bridge Road	1
Lambeth	2

Name of Ground.		Acreage (about).	
St. Nicholas, Deptford	150 yards by 40 yards		
St. Paul's, Deptford	3		
St. Margaret's, Lee	1		
Old Ground, Lee	1		
WEST CENTRAL DIVISION.			
The Chapel Royal, Savoy	82 feet by 97 feet		
St. George's, Wakefield Street	1 1/2		
Holy Trinity, Gray's Inn Road	2		
WESTERN DIVISION.			
St. George's, Hanover Square	6		
St. Mary's, Fiddington	3		
NORTH WESTERN DIVISION.			
St. John's Wood Chapel	7		
Old St. Pancras	7		
NORTHERN DIVISION.			
St. John's, Hoxton	1		
Islington Chapel of Ease	2		
St. Mary's, Upper Street, Islington	1 1/2		
SOUTH WESTERN DIVISION.			
St. Margaret's, Westminster	1		
All Saint's Churchyard, Fulham	2		
OPEN SPACES LAID OUT AS GARDENS.			
EASTERN DIVISION.			
Carlton Square, Mile End Old Town	A. R. P.		
Victoria Park	0 2 0		
Well Street Common	300 0 0		
Waste Land at Dalston Lane and Grove Street, Hackney	30 0 0		
North Mill Field	1 0 0		
South Mill Field	29 0 0		
Clapton Common	28 0 0		
London Fields	9 1 0		
Hackney Downs	27 0 0		
Epping Forest	54 0 0		
St. Luke's Parish Playground, Wentworth Street, Whitechapel	5348 0 0		
Brewer's Garden, London Hospital, Stepney	100 feet by 49 feet		
Poplar Recreation Ground	A little more than half an acre		
Playground, Silver Street, London Docks	2 3 4		
Shacklewell Green, Hackney	3 0 0		
Small triangular piece at Shacklewell	176 1/2 square yds.		
Slip at Stamford Hill, Hackney	58 1/2		
Triangle, Mare Street, Hackney	2770		
Stonebridge Common, Dalston	145		
Slip at Lea Bridge Road	1050		
West Ham Park	4500		
Wastead Park	80 0 0		
	182 0 0		
EAST CENTRAL DIVISION.			
Long Lane, Smithfield Market	1 1/2 0 0		
SOUTH-EASTERN DIVISION.			
Horsefonger Lane Gaoi (half the site of)	1 1/2 0 0		
Greenwich Park	174 0 0		
Southwark Park	63 0 0		
Blackheath	267 0 0		
Bostall Heath	55 0 0		
Plumstead Common	110 0 0		
Croydon and Caterham	347 0 0		
Sydenham and Forest Hill Recreation Ground	17 2 0		
Camberwell Green	2 2 0		
Goose Green	6 1 0		
Nunhead Green	1 2 0		
Peckham Rye	64 0 0		
Shoulder of Mutton Green	4 0 0		
Dulwich Park	72 0 0		
WEST CENTRAL DIVISION.			
Thames Embankment Garden	13 0 0		
Leicester Square	1 0 0		
WESTERN DIVISION.			
Hyde Park	390 0 0		
Kensington Gardens	310 0 0		
Wormwood Scrubs	194 0 0		
Brook Green	6 0 0		
Shepherd's Bush Common	8 0 0		
Fiddington Green	1 1/2 0 0		
NORTH WESTERN DIVISION.			
Regent's Park and Primrose Hill	400 0 0		
Hampstead Heath	240 0 0		
NORTHERN DIVISION.			
Cannonbury Square, Islington	1 0 0		
Finsbury Park	115 0 0		
Stoke Newington Common	5 2 0		
The Green, Upper Street, Islington	1/2 0 0		
Hadley Common	250 0 0		
Stoke Newington Green	1 0 0		
SOUTH WESTERN DIVISION.			
Ebury Square, Finsbury	1 0 0		
St. James's Park	83 0 0		
Green Park	71 0 0		
Battersea Park	250 0 0		
Bushey Park	1100 0 0		
Kew Botanic and Pleasure Gardens	270 0 0		
Richmond Park	2355 0 0		
	144 0 0		
Tooting Beck Commons	63 0 0		
Eelbrook Common	18 0 0		
Parson's Green	4 0 0		
Clapham Common	220 0 0		
Wandsworth Common	161 0 0		
Wimbledon Common & Putney Common	1000 0 0		
Barnes Common	100 0 0		
Hammersmith Road, Fulham	1 0 0		
Wellington Place, Hyde Park Corner	1 0 0		

TREES THAT WILL LIVE IN LONDON:—

Thorns (Crataegus), numerous species and varieties
 Cherry (Cerasus), various kinds
 Mulberry (Morus)
 Judas Tree (Cercis)
 Laburnum (Cytisus), two species
 Alder (Alnus)
 Ash (Fraxinus), various kinds
 False Acacias (Robinia) of sorts
 Poplars (Populus) of sorts
 Tree of Heaven (Ailanthus glandulosa)
 Almond (Amygdalus) of sorts
 Birch (Betula) of sorts
 Catalpa of sorts

Beech (Fagus), Copper leaved Elm (Ulmus), various kinds
 Lime (Tilia), several kinds
 Spanish Chestnut (Castanea)
 Buck-eye (Pavia)
 Horse Chestnut (Æsculus)
 Maples (Acer)
 Maiden-hair Tree (Salisburia adiantifolia)
 Plane (Platanus) of sorts
 Tulip Tree (Liriodendron Tulipifera)
 Walnut Tree (Juglans regia)
 Willows (Salix), various kinds
 Oaks (Quercus), various kinds
 Hornbeam (Carpinus)
 Magnolia, several species and varieties

SHRUBS THAT WILL LIVE IN LONDON:—

Azalea pontica, hardy varieties
 Sumach (Rhus) of sorts
 St. John's Wort (Hypericum) of sorts
 Corchorus japonica
 Dentzia of sorts
 Dogwood (Cornus) of sorts
 Elder (Sambucus) of sorts
 Forsythia viridissima
 Guelder Rose (Viburnum Opulus sterile) and other sorts
 Bird Cherry (Prunus Padus)
 Leycesteria formosa

Spindle Tree (Euonymus europæus)
 Lilacs (Syringa) of sorts
 Flowering Currants (Ribes) of sorts
 Snowdrop Tree (Halesia tetraptera)
 Meadowsweet (Spiræa)
 Spiræa, numerous species
 Weigela of sorts
 Cytisus of sorts
 Fig Trees (Ficus)
 Genista of sorts
 Cotoneaster of sorts
 Philadelphus, various species

CLIMBING PLANTS SUITABLE FOR LONDON:—

Honeysuckle (Lonicera) of sorts
 Clematis of sorts
 Hardy Vines (Vitis) of sorts
 Ivy of sorts
 Crataegus Pyracantha, several varieties

Bramble (Rubus) of sorts
 Jasmine (Jasminum) of sorts
 Trumpet Flower (Tecoma radicans major)
 Virginian Creeper (Ampelopsis), two kinds
 Wistaria sinensis

EVERGREEN SHRUBS SUITABLE FOR LONDON:—

Ash Berberry (Mahonia)
 Strawberry Tree (Arbutus)
 Auncho japonica
 Holly (Ilex) of sorts
 Rhododendrons of sorts
 Skimmia japonica
 Spindle Tree (Euonymus japonicus) and other species and varieties
 Escallonia of sorts
 Privet (Ligustrum) of sorts
 Box (Buxus)
 Cotoneaster microphylla
 " rotundifolia
 Artemisia of sorts
 Pampas Grass (Gynerium argenteum)

Laurustinus (Viburnum Tinus)
 Iberis of sorts
 Hardy Fuchsias
 Hesperis of sorts
 Ruscus of sorts
 Arundo conspicua
 Euonymus radicans var.
 Fernetia of sorts
 Vines of sorts
 London Pride (Saxifraga umbrosa)
 Dianthus of sorts
 Arabis albidia and other sorts
 French Willow Herb (Epilobium angustifolium) and several other species.

Bomarea Carderi from seed.—This Bomarea, recently alluded to in THE GARDEN as a valuable winter-blooming plant, ripens seeds readily when strong and vigorous. If the seed is sown when ripe, and placed in an intermediate house temperature, it quickly germinates, and the young plants make rapid progress, but they need to be two or three years old before they are strong enough to flower, and when that takes place the chances are that, even when the seeds are gathered from the finest variety, many of the seedlings will be found to be greatly inferior to the parent in both size and markings, in which respects this Bomarea seems to vary a good deal. Even then, however, the poorer ones need not be at once discarded, for in some cases they improve, while others always remain flimsy and dull coloured under whatever conditions they may be grown.—T.

Diseased Pines.—If "H. K." is anxious to cultivate Pines on the planting-out system, a good bed of Beech or Oak leaves is preferable to hot-water pipes. It is, however, well to have a couple of hot-water pipes running under the bed, to turn off and on at will, in order to keep the heat of the leaves from diminishing, but the planting-out system in its best form is hazardous and no gain. If time, quantity, and quality are the object, pot culture is a long way in front of planting out. The cause of the stems shrivelling before the fruit is ripe is the absence of active roots, caused possibly by the heat under the bed drying them too much and the soil becoming exhausted, thus gradually destroying their vital powers. Under such circumstances the plants may look fairly well in foliage from being in a close moist atmosphere, but that is not sufficient when

the fruit comes to swell off and ripen. It is then, when all the parts of a plant are required to be healthy in order to bring forth fruit of any kind to perfection.—JAMES SMITH, *Waterdale, St. Helens.*

PLANTS IN FLOWER:

Narcissus monophyllus.—The first flowers of this charming little white Hoop-petticoat Daffodil that have reached us are from Mr. Hubert, of Guernsey, who says that it is finely in flower unprotected in his nursery. Later on he expects that the flowers will be finer. At Kew it is flowering beautifully in pots in the Cape plant house, the bulbs having been kept quite dry during the summer on a sunny shelf. This is, without doubt, the treatment to give this Narcissus in order to get it to flower well.

The double Epacris, a variety of the old *E. onosmodioides*, may be seen in flower at Kew in the Cape plant house. It is really a pretty flowering shrub, having tiny rosette-like flowers borne all along the upper parts of the slender shoots. Being pure white, the blossoms have an extremely pretty and chaste appearance, and the fact that they endure for weeks in good condition renders them all the more valuable. As a winter flowering plant for cutting from it is a great gain, and must undoubtedly become popular. Shortly the single-flowered typical plant will be flowering side by side with the double one.

Christmas Roses.—A most beautiful gathering of Christmas Roses reaches us from "St. Brigid," in whose garden on the Hill of Howth they are flowering quite unprotected. Comparing these blooms with some sent to us the same day by Mr. Brockbank, we find the two identically the same, the only slight difference being that Mr. Brockbank's specimens have the edges of the leaves somewhat toothed, whereas "St. Brigid's" leaves have almost smooth margins. No difference can be detected in the flowers, their size or colour, and the green of the stalks and leaves is of the same shade. Mr. Brockbank states that this is the *H. niger angustifolius*, but if so it is a misnomer, as the leaves are really broader than those of the type. Let its name be whatever it may, it is an indisputably beautiful plant, and one whose value as a winter flower cannot be over-estimated.

Helleborus niger angustifolius.—I send you a few blooms of our Christmas Rose (*H. niger angustifolius*), of which we have some hundreds now coming into flower. This is certainly the true Christmas Rose, as it blooms just at Christmastide and continues to supply us with its Eucharis-like blossoms during all our festivities. There is no more useful flower for ladies' wear than this Christmas Rose. It looks well in the hair, and lasts throughout an evening without flagging. For table decoration it is without a rival, and especially at this season, when it is doubly noticeable as the Christmas Rose. We have had severe frost for the last ten days, but our Christmas Roses are none the worse for it, and now that milder weather has returned the flowers are crowding out most plentifully.—WM. BROCKBANK, *Brockhurst, Didsbury.*

* * A very beautiful gathering of this, the purest white of all the Christmas Roses of the niger group. We agree with Mr. Brockbank that the variety which flowers at Christmastide habitually is the angustifolius variety. It is, moreover, very distinct from the type in other respects, the leaves being of a brighter green and the flowers opener and whiter.—ED.

Phalaenopsis Schilleriana.—I have to-day (January 7) inspected a magnificent specimen of this Orchid at Warwick Castle gardens. It has five leaves, two of which are 18 inches long and very substantial. It has thrown up a strong single spike over 3 feet high, with wide-spreading branches, the diameter at the widest point being 3 feet. There are no fewer than a hundred fully expanded blooms, and there would have been about 140 but that the plant received a little chill at one

stage. Altogether it is a remarkably fine specimen, and does much credit to Mr. A. D. Christie, the head gardener. I was also much pleased with the Calanthes in the same house. Three bulbs were planted in a 9-inch pot in April, and each bulb threw out two others, from which sprang seven spikes, six of which were 2 feet high, and contained thirty-six expanded blooms upon each of the larger ones. Mr. Christie has been very successful with his Orchids every year, although he has no special facilities for growing them.—LLOYD EVANS, *Warwick.*

Sale of Orchids.—On Tuesday last the third portion of the Fallowfield collection of Orchids was sold by Messrs. Protheroe & Morria. Amongst other flowering plants sold at the same time were the following: *Irelia anceps*, white variety from St. Albans, fetched 24 guineas; an *Odontoglossum Pescatorei* with a large dark spot on the lip went for 20 guineas; another fine white variety fetched 10 guineas; an unusually fine variety of *Cattleya chocoensis* realised 11 guineas. Amongst other plants, a fine *Cypripedium selligerum majus* realised 20 guineas. The remaining portion of the Fallowfield plants will be sold on Tuesday, February 3.

National Chrysanthemum Society.—From a circular just issued we learn that arrangements have been made by the committee of this society by which local and provincial Chrysanthemum societies may become affiliated to the National Society by conforming to a few conditions. By this arrangement affiliated societies may take part in the management of the National Society through a deputy, and the medals of the National Society may be competed for by the members of the affiliated societies. This movement shows that the National Society means to make itself useful and important.

National Carnation and Picotee Society.—I regret to see, from your last issue, that this society has fixed its next show for the unusually late date of July 28. For my own part, have generally found my flowers on the wane fully a week before the day usually fixed for the show, and I know others who say the same. I think it a pity, therefore, that the show should be thrown still later into the season, as I am sure it must have the effect of preventing many amateur growers like myself from exhibiting who might otherwise be enabled to do so.—E. R. N., *South Lambeth.*

LATE NOTES.

The rainfall in the Leeds district for 1884 was 23 14 inches, and for 1883 32 39 inches.

Boilers (J. C.).—A plain wrought iron saddle boiler 48 inches by 18 inches by 18 inches properly set will do all that you require.

Camellias (Belfast).—After they had begun to grow, they look as if they had received a check, possibly from cold and damp, the result being the shedding of the buds.

MESSRS. IRELAND & THOMSON have purchased the new Golden Acre Nursery, Edinburgh, from the Lawson Company—a very compact and prettily-arranged nursery, with excellent hothouses, in which they propose to grow stove, greenhouse, and other plants to supplement the stock in their other nurseries.

New Orleans International Exhibition.—Messrs. Cheal & Son, Lowfield Nurseries, Crawley, have been awarded a gold medal at this exhibition for their collection of Apples, consisting of 100 varieties; also five silver medals, besides money prizes, for other collections and classes of Apples and specimens of fruit trees. The whole collection consisted of about 2000 fruits in 200 varieties.

Marguerites (L. G. H.).—Your Marguerites are attacked by the grubs of a small fly. The best means of getting rid of this pest is to pinch the leaves at the parts where the grubs are sufficiently hard to kill them; any leaves which are so badly attacked as to be of no further use to the plant should be picked off and burnt; by destroying as many of the grubs as possible the number of flies in the next brood will be much diminished.—G. S. S.

Names of fruit.—M. E. Edwards.—Pear, Ne Plus Meuris.—J. C. Rushton.—Pear, Josephine de Malines; Apples, 1 and 2 same variety, probably Beauty of Kent.—G. S. Thompson.—Cannot name.—J. H. E.—1, Manington's Pearmain; 2, Golden Reimette.—C. Bray.—2 and 3, not known; 5, White Buckland; 6, probably Egg or Paradise.

Names of plants.—H. M. White.—*Helleborus niger altifolius*.—J. S. S.—*Echmea fasciata*.—R. Young.—1, *Odontoglossum cariniferum*; 2, *Epidendrum* species; 3, *Odontoglossum tripudians*. The box came safely through the post, but, owing to the absence of any packing material, the flowers were bruised. We advise you to use dampish Sphagnum Moss or tissue paper next time. Your boxes are cheap and fairly well adapted for the purpose.

"This is an Art

Which does mend Nature : change it rather ; but
THE ART ITSELF IS NATURE."—*Shakespeare*.

GRAPES AND FLOWERS TOGETHER.

SOME notes of mine on Grape and flower culture in the same house having been inserted in THE GARDEN last spring, I am tempted to state a few of the results of my last year's amateur efforts. The quality of Mrs. Pince's Black Muscat is often discussed, and constant complaints of its not colouring and setting well are made. I grow two Vines in a lean-to house of south aspect, full of plants, and with a back wall covered with *Plumbago capensis* and *Ficus repens*. This house is very moderately heated in cold weather, and yet my bunches are still (January 12) hanging as black as Sloes and covered with a wax-like bloom. Overheating and want of air must therefore, I imagine, be the culprits wherever complaints are made. My Dr. Hogg of which I spoke bore largely, but the berries are not satisfactory and soon go. This wants heat, moisture, and inside rooting, I suppose, and I am going to pull it out. That splendid brilliant violet flower, *Lasiandra floribunda*, cannot surely be understood, for I see it in my neighbour's stove (though it grows in Peru at an altitude of 8000 feet; see *Botanical Magazine*, t. 5629, under the title *Pleroma*) weak and straggly, and blooming poorly; whereas I have had three plants each as large as a small Gooseberry bush in bloom from last October until now, averaging 200 to 300 blooms on each; and why? Because, when June comes the pots, which must not be too large, are with me put on the ground in my orchard in the open air, and kept there until September or October, when they are removed into a cold house for a week or two, then changed into the warmest house I have, which is not very warm at the best, and put in an earthenware saucer, filled sometimes for a day or two with water. Half-a-teaspoonful of Standen's manure on the top now and then is all the care they get. In a warm corner of the same house I have in a pot trained against the north end (glass) one of the old thorny *Euphorbias*. No plant I possess likes Standen's mixture as well as this, and with its vermilion flowers it is always in bloom—now covered. Many an acceptable bouquet do I make of it tied up with a sprig or two of the evergreen *Tradescantia*, which trails all over my houses, growing out of slag cinders fixed with Roman cement on the back walls, or wherever it can find a handful of sand or peat to support it. Tied round with a little wet paper and wrapped with thin copper wire, the bouquet will last for two days, and looks just as well by lamplight as in daylight. In the same house the white and dark red *Abutilons* are always in flower and handy. I have now, in addition, my winter *Pelargoniums* (just going out), white Roman *Hycinchins*, *Cyclamens*, *Primulas*, *Begonias*, *Daphnes*, white *Arum Lilies* (planted out in summer), *Solanums*, and *Rivina*, so that neither table nor button-hole need go short. My wife has had *Chrysanthemums* for church decoration to the present time, and there is a pot of *Chrysanthemum Golden Thread* even now with about 200 blooms on it

brought into moderate warmth from a cold house early in December. In my little propagating house there is a *Cypripedium* in bloom, three *Gesneras*, which have done duty for a month, *Calanthes*, a couple of pots of *Eucharis*, one about to bloom (planted in mud from the bottom of an old tree-shaded pond mixed with silver sand), and a trailing mass of variegated *Tradescantia*, which with the green *Tradescantia* makes garnishing much more useful than *Medeola asparagoides* for flowers or dessert dishes, and will remain green in water for weeks. The great point is not to have too much of any one thing in an amateur's garden. One large pot of *Stephanotis* and another of *Bougainvillea* at the warm ends of the houses give all we want of these. Soon there will be *Jonquils* in pots, *Hyacinths*, most useful little flowers of *Tri-teleia uniflora*, *Deutzias* showing white already, *Cytisuses*, the double-flowered *Peach*, *Narcissi* of all kinds, *Cinerarias*, *Calceolarias*, and so on. I grow *Tuberose*s most successfully. Keep the bulbs in a dry place, not cold; plant in moist ordinary potting material rather stiff (one in a pot is best); plunge in the *Cocoa* fibre in the propagating house or stove, if you are lucky enough to have one and give no water until the shoot rises an inch or so, then water, and give a pinch or two of Standen's mixture occasionally, removing the pots as soon as you are satisfied that there is a flowering spike, and not forgetting that a stick is necessary and a greenhouse, near the glass if convenient. *Tuberose*s want water, and where there is no great staff to be always going round with the watering-can, earthenware saucers, shifted about from pot to pot, may be put under each bulb and be filled with water for perhaps a couple of days at a time now and then. No plants will stand alternate baking and drowning. Out of three dozen bulbs about thirty bloomed with me last year, some giving me nearly thirty blooms. In my experience the *Pearl* variety fails much oftener than the *African*. Begin planting about now. Another splendid white pot plant is the *Bride Gladiolus*. The handsomest thing in my garden last summer was a mass of *Zinnias*, sown in spring and pricked out in a round bed. *Zinnias* did well also, as I observed during the drought, at Kew. On my bleak hillside I want something that the wind will not play havoc with, as it does with *Petunias*, *Tropaeolums*, and other weak-stemmed plants. NORTH-WEST CHESHIRE.

CUT FLOWERS AND THEIR PRESERVATION.

At this season, when so many flowers are required for table and other decorative purposes, it is difficult to keep up a constant supply in all but the largest establishments. As if to make matters worse, too, how often do the flowers on the dinner-table look quite faded, even before the guests have risen from the table. Hard forcing is sometimes the cause of much of this annoyance, but in that case it is to the gardener we must look for the remedy, or rather prevention of this failure; but more often, as many will agree, flowers will flag, spite of all our efforts. Hot rooms, especially where much gas is burnt and an extra dry atmosphere maintained, are the most speedily fatal to many flowers, and no remedy has ever been suggested that is sufficiently powerful to counteract this evil. It is well, therefore, resolutely to face the difficulty and avoid such flowers and Ferns as cannot be induced to last for twenty-four hours at least. It is surprising how many very effective bouquets or graceful combinations can be managed with a comparatively small variety of flowers and greens. No one who lives in a town will cut *Maiden-hair Fern* to mix with his cut blooms unless he is prepared to renew it daily, but this most re-

fractory of beauties will last much longer (sometimes for days) if it is plunged in water, so as to cover it entirely, and allowed to soak for a day before being used.

Another most simple rule is never to cram your vases with flowers; many will last if only they have a large mass of water in the vase and not too many stalks to feed on the water and pollute it. The importance of this simple rule is really very great, and it is one of the healthy signs of the improved tastes and perceptions of the day to find vases that hold a large quantity of water now preferred to the spindle-shaped trumpets that lately were all the rage. Flat dishes, filled with wet sand, are also useful for economically using up short-stalked or heavy-headed flowers; even partially withered blooms will revive when placed on this cool moist substance. Moss, though far prettier than sand, is to be avoided, as it so soon smells disagreeably, and always interferes with the scent of the flowers placed in it. When flowers in winter are brought out of warm houses into the dry air of a house after being exposed, on their way for a shorter or longer time to the cold outer air, and are put into ice-cold water, no wonder many poor victims succumb to such ill treatment at once. If, on the other hand, they were popped at once into a good large basin of blood-warm water (or even still hotter) till they could be arranged properly, and the water in which they are finally placed be also warm, many people would be surprised to see how great a saving in trouble would result.

With regard to plants whose juice or sap is milky, this precaution is invaluable, for this thick milky sap readily coagulates in the tissues, and prevents the flower drawing up the necessary supplies of water. It is needful, therefore, to prevent this by thinning the sap as much as possible, till it becomes so thin that it can no longer clot and choke up the passages in the tissues; this can be done by slitting the stem, pulling off the leaves, and then putting the flower in hot water, when so much sap escapes as to render it free from all chance of thus clogging the tissues, and the flower in consequence will not flag. *Poinsettias*, with their showy heads of bracts, are a good example of this class of plant, and when treated in the manner described will last for weeks in an ordinary room without becoming unsightly, and without any such preparation they fade the first evening. *Stephanotis* also is much benefited by the same means, and with the further help of a drop or two of water in the throat of each flower will last delightfully.

With some subjects another course of treatment must be adopted—for instance, in the case of flowers that only grow in a cool temperature, and suffer when they get into warm and dry air. In this instance all that we can do is to lessen evaporation as much as possible, and when such flowers have hairy stems and leaves to dip them overhead for a minute, so that by capillary attraction they may continue to keep themselves moist and cool; but this is dangerous to table-cloths or polished surfaces, unless care be taken that the points of the leaves do not hang down. Another means of preventing such delicate and sweet-scented flowers as the now well-known *Luculia gratissima* from flagging is to cut it with several leaves on the stem, and when the flower-head is placed in water to allow only the flower-head to remain above the water, while the leaves are entirely submerged; by this means the leaves seem to help to support the flower, which will then last for three days in a fairly cool room. Perhaps no hardy flower succumbs sooner to heat than the *Christmas Rose*—just now in welcome beauty; in this instance it seems that frequent cutting of the stem is of greater use than any other precaution, but with all such subjects by far the best plan is to put them outside, exposed to dew or rain during the night, when they will regain strength enough to last on for days. All New Holland plants, and particularly flowering *Acacias*, benefit wonderfully by this apparent cruelty, and will even stand a slight frost far better than a hot room at night indoors.

Among forced flowers none are more useful than Tulips on every score, and as yet they have not been used for cutting as freely as they might be; they are, however, so cheap as well as lasting, that there is nothing to compare with them at this early season. The other day one of the most telling table decorations I ever saw was made with heads of *Pointsettia* bracts, with a white Tulip in the centre of each to fill up the vacuum caused by the little flowers that had dropped, and a couple of spikes of Roman Hyacinths to back each head. The big creamy white Tulips reminded everyone of *Magnolia* buds, and caused quite a murmur of admiration. The series of vases were all linked one to the other by sprays of *Cissus discolor*, an old favourite stove trailer, which will last longer both in and out of water than any other fine-leaved climber, and in the centre stood a fine plant of variegated *Cyperus*. Such an arrangement will last for days even at this season, and is far more useful than wasting energy and flowers in more fanciful fashions that need renewing every day.

Those who live in the country have such an infinity of Evergreens at their disposal, unless the garden be quite recently made, that a much smaller quantity of flowers is needed than in towns, where outdoor Evergreens are too precious (and too dirty) for general use. Where there is a good-sized cool house or conservatory it is well worth while to plant in a border the exquisite and very free-growing *Acacia dealbata*, if only for the sake of cutting its lovely sprays of silvery green foliage. All who have wintered in Australia or basked in the winter sun on the shores of the Mediterranean know well the beauty of this tree, both in leaf and flower, but if it never flowered at all, it should be grown for its foliage. Yellow *Chrysanthemums* in big bunches with bold sprays of this delicate blue-green make a most effective and lasting winter decoration. Another most lasting trailer is the comparatively new *Asparagus plumosus*, which, when planted out and not restricted to pots, makes such vigorous and continuous growth, as to supply more sprays of its Fern-like green, if needed for cutting, than any other plant I ever saw. How handsome, also, a big vase looks draped with a *Calla*, whose white spathe is contrasted with *Pointsettia* bracts, backed by the firm fronds of *Polypodium aureum*, another useful winter green, and with the fresh green sprays of *Asparagus plumosus* to lighten and soften the whole.

Primulas, when placed in a flat dish where their blooms will not readily drop off, are of course much used, and where a large quantity is grown can be used very effectively for table decoration by placing single pips on the cloth where such arrangements are liked. *Camellias*, while very lasting, unless bruised, are of all flowers the most difficult to arrange gracefully. No surer test of taste could be contrived than by proposing an exhibition of table decorations made with specified materials—all thus starting as fairly as possible in the matter of material, and that material to be the *Camellia*, so neatly folded, so bright in colour, but, oh, so stiff!

In private gardens, if well managed, there is now no longer the need for cut blooms of early forced Azaleas, Spireas, or Roses, which can never be really satisfactory till days are longer and sunshine stronger, and so they can be kept in reserve by utilising flowers more truly winter flowering, among which various *Geraniums* and winter-flowering *Orchids*, such as *Calanthes* and *Cypripediums*, should not be forgotten.

EDWARD H. WOODALL.

Round-leaved Rest Harrow.—Unlike *Ononis spinosa* and *O. fruticosa* so common in gardens, *O. rotundifolia* is deciduous, a fault which may be easily overlooked when its profuse habit of flowering during the summer months is taken into account. On rockeries or in mixed borders it is always desirable to have a few plants of a permanent character, whether shrubby or herbaceous, and amongst dwarf shrubs this Rest Harrow takes a first place, both on account of its neat globular habit and the fresh green appearance which its foliage always presents, quite apart

from the beauty of its flowers. Being of lowly habit, to be seen to the best advantage it should be planted as near the path as circumstances will permit. It is, however, very impatient of wet, and in damp heavy soil rarely lives more than two or three years. Our plan is to specially drain the spot in which it is to be planted; by such means its life is prolonged indefinitely. Its flowers, which are pea-shaped, are bright rosy pink, and produced three together on longish petioles from the axils of all the upper leaves. It is easily increased from cuttings put in in autumn or from seed, which it ripens freely.—K.

PLANTS IN FLOWER:

Early promise.—We have nice bright sunny weather here. I saw the first Snowdrop (*Elwesii*) to-day, and a *Narcissus* from Florence, of which Mr. Wolley Dod sent roots, is throwing up buds, and will, I think, beat Barr's *N. pallidus* *præcox* here with us.—F. W. E.

Guernsey Freesias.—A charming bouquet of *Freesia* flowers has reached us from Messrs. Smith's Caledonia Nursery at Guernsey. Than these no flowers could be lovelier. They are elegant in form, of snowy whiteness, and emit a delightful fragrance akin to that of the sweetest Violets. Messrs. Smith observe that they last a long time in good condition when cut and placed in water, a fact which greatly enhances their value. Are these fine specimens the result of cool treatment or of warm?

Strelitzia Regina.—The striking beauty of the flowers of this South African plant is never more conspicuous than at midwinter when flower-tide is at its lowest ebb. The colours of the flowers of this plant are surpassed by few from the Cape, and the fact that it is almost a perpetual flowerer and easy to grow in any warm greenhouse or conservatory bed renders it most desirable. Even when not in flower its large bold foliage is handsome, and each flower-spike that it sends up bears numerous blossoms, which unfold in succession, weeks elapsing during the process. The showy part of the flower is the large bright orange bracts, some 4 inches long and pointed, which stand erect above the long horizontally poised tongue-like flower which carries the pollen and stigmatic apparatus. There is a singular quaintness about this flower which attracts all who see it. This plant may be seen in flower at Kew, and it is also particularly fine just now in Mr. Whitbourne's garden at Great Gearies, Ilford, where, Mr. Douglas informs us, it blooms for months at a time.

A hybrid Hellebore.—I send you blooms and a leaf of a Hellebore which I have grown here for about twenty-five years, and which I believe was given to me about that time out of a private garden in Kilkenny. It has been very much admired, and from time to time I have distributed portions of it to friends. My attention having been called to this family by recent articles in *THE GARDEN* and other periodicals, I mentioned the fact of having what I called a good variety or form of Christmas Rose with large pure white blooms, which was neither *maximus* (*altifolius*) nor yet *angustifolius*. I have submitted blooms and a leaf of it to several growers of Hellebores, and from one I have received the following remarks: Mr. Brockbank writes, "The examples you sent me a second time confirm my previously expressed opinion, and I think you may view your Riverston Hellebore as an interesting hybrid variety. I hope you will ascertain as nearly as you can its history, and send a note to *THE GARDEN* about it." I shall endeavour to find out more about its earlier history, but I do not expect to unravel much respecting its origin. I hope to send a plant as soon as it can be moved to Mr. Brockbank to grow for comparison alongside those species and forms which he already possesses. The peculiarity of this form now sent is that the leaf-stalk is green, thus following the colouring of *H. angustifolius*, while the flower-stem is heavily marbled with red like that of *H. maximus*; the extremities of the pistils, too, are tinted with pink, which remains still visible on the blooms when old. Some blooms which I sent to Mr. Brockbank, after being fourteen days in water, still bore traces of colour on the stigma. In this respect, too, it resembles *H. maximus*, while the blooms are equal in size to those of *H. angustifolius*, and are

not of quite so greenish a shade. The exterior at times is slightly tinted with pink, interior pure white. It blooms, I should say, a little earlier than *H. angustifolius*, coming in soon after *H. maximus*.—J. T. Poë, Riverston.

* * We do not recognise Mr. Poë's Hellebore; it seems distinct from *H. altifolius*, though it possesses some of the characteristics of that variety. Possibly it may be the true *H. niger major*. We cannot regard it as a hybrid.—Ed.

Freesia refracta alba.—I send you blooms of this most beautiful *Freesia* to show what they can come to under generous, warm treatment. They were grown in the garden of Mr. Gibson Black, near Dublin, and I am informed were potted early, put into a propagating stove, and afterwards moved to an intermediate house. My correspondent says, "I can safely say they are all as good as the one sent." There is an old saying, that "seeing is believing," and I think you will readily agree with me that in this case the much-written-against warm treatment has produced a result eminently satisfactory. Though *Freesias* will grow and flower late in the spring under very cool treatment, as I have myself proved, you will see how desirable it is to have blooms of such quality, so purely white and deliciously sweet-scented, early in this the first month of the year. The flower-stem measures 18 inches, and, besides, the main truss has five other branching flower-stems. Such vigour and freedom of bloom I have not seen before. I have given all my *Freesias* warmer treatment this year than hitherto, and shall, after such a good example as the one sent, be inclined to treat them for the future in a similar manner.—J. T. Poë, Riverston.

* * * Uncommonly fine spikes, as large as any we have ever seen. Such lovely delicate flowers are indeed welcome at this season.—Ed.

FILLING ICEHOUSES.

THE best icehouses I have seen are those which are round or elliptical in form, built principally below the level of the ground, and domed over with an entrance level with the ground, having a covered passage leading to it; let the bottom be cement with drainage at the lowest part. The construction should be of the strongest kind, brick-work in cement, in order that no air or water should percolate from without, both tending to dissolve the ice in the warmer seasons, when of course it is most necessary. Two doors, one to the icehouse and another at the outer end of the passage leading to it, should also be tight-fitting to prevent the ingress of air, the passage being filled up with bundles of straw or similar material to make it the more perfectly air-tight, and the drain should be trapped for the same reason. Straw or reeds should be placed in an upright position against the walls in filling to carry away any water which may be formed by the dissolving ice, provision being made at the bottom of the house to enable it to reach the drain. Dry, frosty weather is the proper time to fill the house; certainly not during a thaw. The drier the ice the quicker the house is filled and the greater will be the success. I may repeat that the greatest elements of success are perfect drainage and a steady atmosphere. The ice should be carted on to a platform near the entrance of the passage and pounded with mallets as fine as possible, shovelled into the icehouse, and rammed firmly down, closing all up when finished. Treated in this way I have never known it to fail. I may say that it is very necessary to leave the ice somewhat highest in the centre, so that no water can accumulate, a form which it will retain to the end if proper care is taken in cutting it out for use, at which time the outer door should always be closed before opening the inner one. Some years ago I gave a plan with section of a suitable icehouse, and also the method of filling it, which would probably serve "R. D.'s" purpose. It was figured and the account printed in *THE GARDEN*, Vol. XV., page 59. I may add that the best position for an icehouse is in a shady place well sheltered by trees from winds, and the soil should be moderately dry. C. D.

TREES AND SHRUBS.

THE BHOTAN CYPRESS.

(CUPRESSUS TORULOSA)

THIS Cypress, apart from its elegant growth, is interesting as being the only species of Cupressus indigenous to India. It is a native of the Himalayas in the Bhotan district, and it also occurs on the borders of Chinese Tartary. It forms, therefore, a connecting link, as it were, between the true Cypresses of the extreme east and those that are natives of Europe. It is singular to note that this genus of Conifers extends throughout the entire breadth of the northern hemisphere, Cupressus funebris representing the extreme east in China, and C. macrocarpa the extreme west on the Californian seacoast. The northerly and southerly limits, it is interesting to mark, are, on the contrary, singularly restricted, the most southerly being found in Mexico, the most northerly (C. nutkaensis) in Nootka Sound, and the subject of these remarks (C. torulosa) in Bhotan. The whole of the regions intervening between these extreme lateral points have their Cypresses. The European species are C. lusitanica (the Cedar of Goa), which inhabits Spain and Portugal; C. sempervirens (the Roman Cypress), which is centred chiefly in the south-easterly parts of Europe, extending into Asia Minor. Farther eastwards C. torulosa is met with, and the chain is extended eastwards by C. funebris, also known as C. pendula. The headquarters of the Cypresses are undoubtedly in the extreme west, for here may be found some four or five distinct species, including the well-known C. Lawsoniana, probably the most popular of all Coniferae in gardens, C. Goveniana, C. Macnabiana, C. macrocarpa, and C. nutkaensis (spelt C. Nutkaensis by the Californian botanists). The eastern representative of the Cypresses in the United States of North America is C. thyoides, popularly known as the White Cedar. In Mexico three or four species occur, so that the genus in round numbers only contains about a dozen species. The Californian botanist, Mr. Sereno Watson, takes away Lawson's Cypress from Cupressus and puts it in the genus Chamæcyparis, the chief points of distinction being the flattened two-ranked branchlets and the small globose cones maturing the first year.

All the Cypresses are undoubtedly valuable from a garden point of view, but the various species vary in degree as regards their utility as ornamental subjects. I should rank them in the following order in point of merit: C. Lawsoniana, C. nutkaensis, C. macrocarpa, C. sempervirens, C. thyoides, C. Macnabiana, and C. Goveniana; then would follow C. torulosa, C. funebris, C. Knightiana, and other Mexican species. These are placed last, not because they are less elegant than the others, but on account of their tenderness, all being liable to succumb to our damp and cold winters. The species which concerns us at present, C. torulosa, is an old introduction, seeds of it having been sent to this country by Wallich so long back as 1824, and previous to this date it was found by Royle on the Himalayas, growing at elevations at some 11,500 feet above sea level. Coming from such a height, one would suppose it to be harder than it really is, but its tenderness may probably be accounted for by the wood not getting thoroughly ripened during our summers. It is a very handsome tree, said to reach from 20 feet to 125 feet in height in its native habitat. It has a perfectly straight stem; the growth is pyramidal or rather conical, and the old wood is of a warm purplish brown. The foliage is a glaucous grey-green, and the branches have a twisted and tufted appearance.

There are several varieties of it which are, or have been, in cultivation. Of these one of the best is Corneyana, which Gordon ranked as a distinct species. It was supposed to be Chinese, and

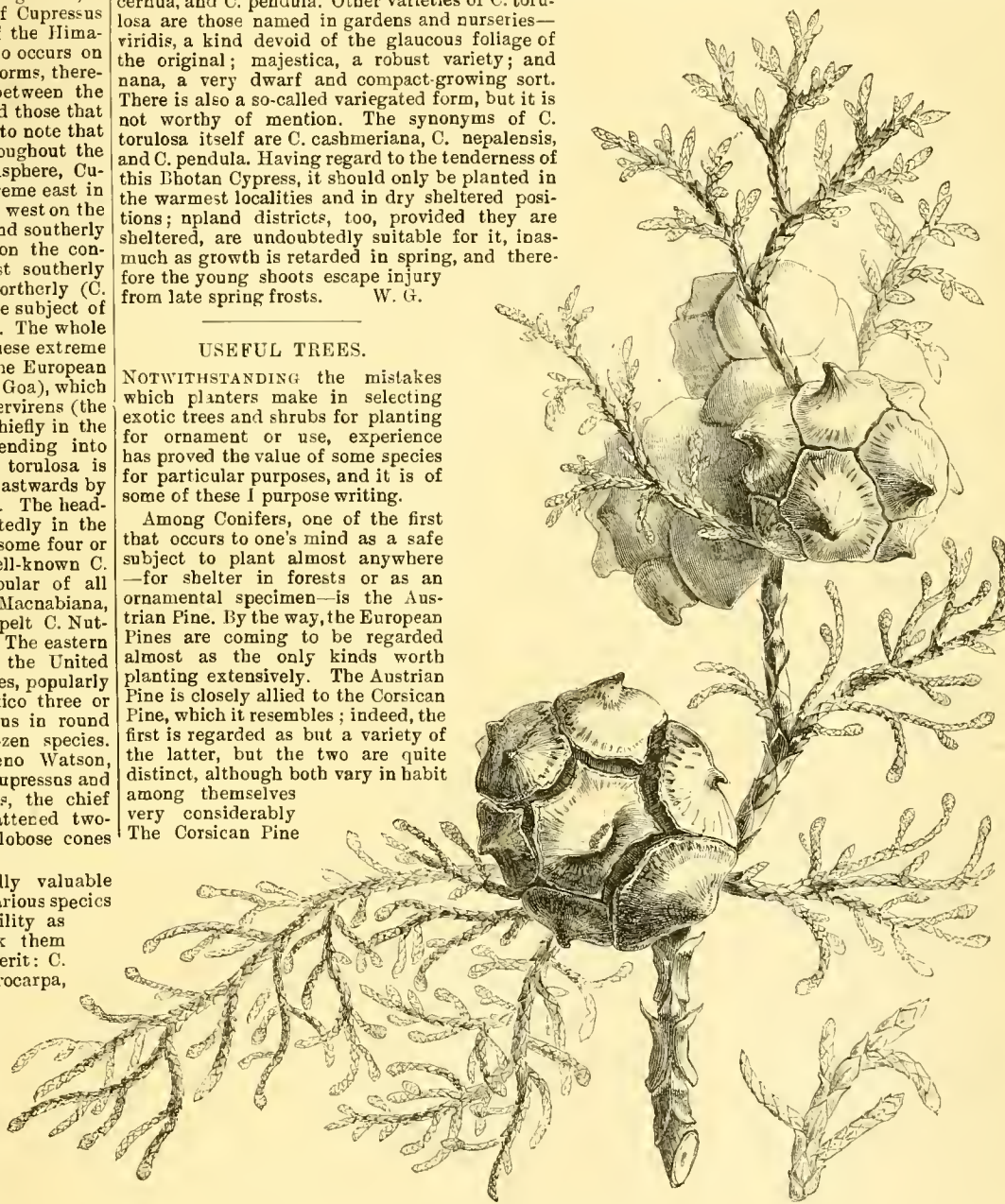
was introduced to cultivation by Messrs. Knight and Perry, the predecessors of Messrs. Veitch at the Chelsea Nurseries. It differs from C. torulosa proper, its habit being of low stature, and has slender pendulous branches; hence it has been known in gardens by the names of C. gracilis, C. cernua, and C. pendula. Other varieties of C. torulosa are those named in gardens and nurseries—viridis, a kind devoid of the glaucous foliage of the original; majestica, a robust variety; and nana, a very dwarf and compact-growing sort. There is also a so-called variegated form, but it is not worthy of mention. The synonyms of C. torulosa itself are C. cashmeriana, C. nepalensis, and C. pendula. Having regard to the tenderness of this Bhotan Cypress, it should only be planted in the warmest localities and in dry sheltered positions; upland districts, too, provided they are sheltered, are undoubtedly suitable for it, inasmuch as growth is retarded in spring, and therefore the young shoots escape injury from late spring frosts. W. G.

USEFUL TREES.

NOTWITHSTANDING the mistakes which planters make in selecting exotic trees and shrubs for planting for ornament or use, experience has proved the value of some species for particular purposes, and it is of some of these I purpose writing.

Among Conifers, one of the first that occurs to one's mind as a safe subject to plant almost anywhere—for shelter in forests or as an ornamental specimen—is the Austrian Pine. By the way, the European Pines are coming to be regarded almost as the only kinds worth planting extensively. The Austrian Pine is closely allied to the Corsican Pine, which it resembles; indeed, the first is regarded as but a variety of the latter, but the two are quite distinct, although both vary in habit among themselves very considerably. The Corsican Pine

ago the Austrian Pine was practically unknown as a forest tree, but since then it has become so popular, that all nurserymen now quote it by the hundred and thousand at special prices. Its great value as a sure grower, whether at high or low levels, and its handsome appearance as an Ever-



Cones of Cupressus torulosa (natural size)

is by far the fastest grower and the least dense in habit. It makes long annual leaders, and soon grows up; whereas the Austrian is unusually dense and bushy and a far surer grower and transplanter than the Corsican, which makes few roots. The last has a bad reputation on that score among all planters. The Austrian, on the other hand, may be transplanted at almost any season of the year, from one up to twenty or even thirty years of age, and it will rarely fail to retain all its foliage and do well. We have had it transplanted here during hard frosts in years past and without ill effects. As a shelter tree it beats the Scotch Fir far and away. Here, in the most upland and exposed situations in Yorkshire, it makes by far the best shelter, because of its bushy habit and long spines, which are two or three times as long as those of the Scotch Fir. About twenty-five years

green tree, render it popular for planting either as an ornamental or forest tree.

CORSICAN PINE.—I have just said that this Pine resembles the Austrian, except that it is of slenderer growth. It forms a graceful-looking tree, making long leaders annually, and the timber is good, but it is a comparatively bad subject to transplant, not a few usually going off the summer following. My opinion of the two varieties is that as a timber tree the Corsican is the best, as it grows faster than the Austrian and has a more slender trunk, but for purposes of shelter or density of growth the Austrian is by far the better of the two.

WELLINGTONIA, DEODAR, AND ARAUCARIA.—These three are all popular kinds, but they are mentioned here as untrustworthy subjects to rely

upon in exposed inland situations. The Wellingtonia is especially to be avoided in all exposed windy positions, as it becomes a complete scare-crow in a few years from the effects of gales. The other two do well in lowland and sheltered situations—that is to say, they make good, well-branched specimens, but when they rear their tops above the line of shelter, they, too, soon become poor leafless examples.

THE GOLDEN YEW.—These have become popular ornamental subjects, and they deserve a good place among variegated trees where they rank, although they have none of that paltriness about them which characterises so many variegated plants and trees. All who buy Golden Yews must, however, be sure that they get plants from seed or plants grafted with leaders, otherwise disappointment will be the result. Plants raised from side branches are commonly sold, and although they grow, they never become trees or handsome specimens. The elegantissima variety of the Golden Yew is the best for ornamental planting.

THREE PURPLE BEECHES.—There are several very distinct kinds of this tree, the weeping, erect, spreading. The weeping variety is very pretty, but the ordinary free-growing variety, in all ways resembling the common Beech, is the best. The erect-growing sort has very dark foliage in the mature state, while the young growths are of a more delicate hue, but the habit is stiff and formal and not well suited for ornamental grounds, and the tree is not valuable on any other account. The Purple Beech always looks best when in good health and growing freely; hence trees of it should always be planted in good soil, in order to procure fine specimens quickly.

SHEPHERD'S HOLLY.—Where a tall thick hedge is desired to grow up quickly this is the Holly to plant. It is the quickest growing, broadest leaved, and bushiest Holly in cultivation, and makes a grand specimen by itself. Planted 3 feet or 4 feet asunder, it will soon fill up and stand thinning, and the thinnings can be used elsewhere.

S. W.

CONIFERS AT BORROWASH.

THIS village, on the banks of the Derwent, a few miles north-west of its junction with the Trent, and within five of Derby, is famous as being the residence of Mr. William Barron, of Conifer celebrity. Were his nurseries but a little way westward, he would be within sound of the rustling of the glorious trees which he planted at Elvaston. Indeed, when speaking of this veteran arborist, it would be but an idle tale that did not revert more or less to the scene of his former labours. But many of the trees at Elvaston, either from too thick planting or from violent gales, and in instances from both these causes, have been crippled or killed outright. A notable instance of the first of these evils is a narrow avenue-like walk. In the foreground on both sides is a row of *Juniperus chinensis* and *virginiana* shut out in the rear by a dense growth of Pines and Hemlock Spruces. On the one side the Junipers are healthy, but on the other, sad to view and palpably pining for fresh air and sunlight. The amount of improvident planting that one witnesses everywhere is very great, and surely the first outlay is heavy enough without the expense of as many trees again as are necessary. Verily, the trees grow while we are sleeping; but to imagine that the after-management may be casual and thinning procrastinated, because the trees look healthy and show up magnificently as a mass, is a common and fatal error. Suppose an October gale causes the fall of some of the "nurses," or mows down, as it were, a lane through the pinetum, how many are involved in the fall of one. How many become brown and sere because formerly they were allowed to grow up in comparative warmth and were not gradually inured to bear cold. Frequent renovation and attention are required after a lapse of twenty years, for in most sites trees that have been thriving for that time require fresh soil or other helps.

Among the Pines that have been a success at Elvaston are *Laricio*, *Romana*, *Lambertiana*, and *monticola*. The first mentioned in a sheltered spot has, contrary to its general habit, formed a thick, warm-looking tree, which would do excellently well for a single lawn specimen. *Ponderosa*, *macrocarpa*, and *Coulteri* are not very vigorous; indeed, the best specimens of the latter are dead. The needles of *macrocarpa* are shorter and not so stiff as those of *Coulteri*. The *Araucarias* and *Deodars*, on the whole, have stood the gales and winters well. *Picea nobilis* has suffered much, and one or two of the trees in the magnificent avenue of it here have been blown down; others, although injured, are rapidly recovering. Another evil to be contended against at Elvaston is the dense growth of Elders and Raspberries sown by the birds under the trees. In many instances the bottom branches of the Conifers have been completely spoilt. But, notwithstanding the mischief that the late gales have done, what a glorious place Elvaston is! Anything grander in the way of landscape gardening than the magnificent lake, with its floating umbrage from trees planted on the banks and islands, would be, one would think, impossible. How striking, too, are the avenues and the masses of golden Yews! Here the clipped hedges and the various devices in Yew and Box have no puny appearance. And what more pretty in its way than the magnificent avenue of Junipers, surmounted at the close by spire-like Lombardy Poplars? One little islet opposite the mouth of a watercourse, whose banks were fringed with *Lastreas* and *Hart's* tongues, was very bright in mid-winter. The centre foliage is that of the parti-coloured and rare *Juniperus hispanica*; all the rest of the soil is covered with various kinds of Ivy and Mediterranean Heather. It was one of the most effective pieces of planting in the whole grounds.

Mr. Barron's idea at the Borrowash Nurseries is thoroughly to test and find out what coniferous trees are perfectly hardy and most suitable for universal as well as ornamental planting. Amongst the

ABIES, *Sieboldi nana* is a very dwarf and graceful variety, the foliage of which is very bright and effective, somewhat after the type of the Hemlock. *Douglas glauca* is an exceedingly robust and beautiful variety of Douglas Fir. As it comes from a very high altitude in Colorado, it ought to be hardy in almost any position, and, in fact, it has proved itself to succeed where the common Douglas Fir will not. *Parryana glauca* is one of the hardiest known Pines, and is destined to become a great favourite. *Polita* grows very fast, and is distinct and perfectly hardy. *Alcoquiana* is a pretty Japanese species, which will be valuable for lawns; the reverse of the foliage is of a deep glaucous hue, which is exposed by very slight breezes.

PICEA CONCOLOR is quite distinct from *P. Parsoniana*; so much so, as to cause wonder that they ever were confounded. This is one of the most valuable Firs which we have, and it is hardy almost everywhere. *Firma tardiva*, as the name indicates, does not get cut by spring frosts. It is also longer leaved than the old form, and grows into a compact and regular specimen tree. *Numidica* is another very good and hardy species, which will succeed well in shallow soil.

PINUS BOLANDERI in colour and growth resembles *insignis*, but is far hardier, and therefore most valuable. *Pyrenaica* is very elegant, both as a small and large specimen. *Murrayana* is a little known, but very hardy Pine, which also takes after *insignis* in its shade of green. It grows fast, but generally maintains a well-furnished appearance. *Parviflora* is a Japanese variety of very changeable tint. When waving about in the breeze, showing alternately the lower and the upper part of the branches, which are of different colours, or when glistening with silvery sheen in the sunlight, it is a very handsome and interesting object.

CUPRESSUS NUTKAENSIS NANA COMPACTA and **LAWSONIANA GRACILIS PENDULA** may be classed together as being two of the prettiest, and at the

same time healthiest dwarf shrubs for villa gardens or for planting in the foreground of shrubberies. They are every whit as desirable as the more common *argentea* and *erecta viridis*. This pendulous variety of Lawson's Cypress always maintains its habit.

VARIEGATED CONIFERS.—Mr. Barron has been at great pains with the golden class of ornamental Conifers, and the one that assumes the deepest yellow is undoubtedly the golden Scotch Fir (*Sylvestris aurea*). It is green in summer, but in winter becomes a bright guinea-gold, with no suspicion of greenness, as in *Laricio nana aurea*. It is also more brilliant in colour than *Cupressus Lawsoniana lutea*, which, however, maintains its colour throughout the year. This Cypress also appears to stand without injury in cold and exposed positions and grows freely. I did not see a golden Scotch Fir more than 2 feet high, but it is a fact, I believe, that it keeps its colour just as brilliantly when taller. Young's Golden Juniper was quite pale beside it. *Taxus Barroni foemina aurea*, the berry-bearing golden Yew, has a perfect pyramidal habit; and one tree in the nurseries, which has never been trained, was a picture of elegant formation. *Dovastoni aurea variegata* is another fine golden Yew. Of Conifers of other colours, *Sequoia sempervirens alba spica* is one of the most parti-coloured Conifers in existence. The tops of the shoots are yellow and the older parts of a bluish hue. It is most effective whether by itself or in a group. *Abies canadensis alba spica*, although perhaps not so free in growth as the *Sequoia*, is also very pretty with its white-tipped shoots. *Cupressus Lawsoniana alba spica* is altogether put out of court by the variety *pyramidalis alba spica*, which is perhaps the most valuable of this class. Another tree of which Mr. Barron has a good stock, and which ought by no means to be neglected by planters, is *Torreya myristica*.

C. A. M. C.

ROSE GARDEN.

THE ROSARIAN'S YEAR BOOK FOR 1885.*

THIS has just reached us; it contains much valuable matter on pruning Roses, the result of experience collected from various parts of the country. The following somewhat lengthy extract, taken from Mr. Geo. Baker's paper on the subject, relates to Rose growing at Reigate:—

"The question of early or late pruning," he says, "must, after all, be to a great extent an open matter, and dependent on several collateral circumstances, such as the nature of the soil, position of the garden, whether sheltered by trees or open to the changing elements of our fitful climate; whether situated on high ground or valley, and all its surroundings; and lastly, though far from least, the mode of cultivation to which the Rose trees have been subjected. Let us first, then, consider

"**THE SOIL.**—There is one character of soil which will be universally admitted as best suited to a successful culture of our cherished flower. A deep stiff rich yellow loam, on a well drained subsoil, is to be desired: but it must be well worked and generously enriched with old rotten manure. In districts where the soil consists of heavy clay I have advised friends to place a good covering of chalk at the bottom, and then upon this some of the clay burned and well mixed and worked with strong fibrous loam. Good drainage, under all conditions of soil, is of the utmost importance, but most especially in heavy clay lands. The natural soil of my own garden is of a light loam, having the green sandstone for the subsoil. When I reconstructed my rosery some few years ago, I enclosed a portion of a meadow which adjoins my garden, and commenced to mark out my beds, forming them 6 feet in width and 30 feet in length, leaving intervening Grass spaces of 4 feet wide as a path. By this arrangement I am able easily to get round the beds, and give attention to

* Remrose & Sons, 23, Old Bailey, and the Editor, Westwell Vicarage, Ashford, Kent.

the plants individually when necessary. In preparing the beds, we measured a space of 4 feet for the first trench, all subsequent trenches being of the same width. This affords plenty of space for getting sods, manure, &c., in evenly. The top spit, which consists of good old fibrous turf, was then wheeled to the farther end of the bed, and kept separate on one side, also the next spit below, so as to be at hand for filling up at the finish. The bottom spit was taken away as useless, leaving a trench 2 feet 6 inches deep. This was filled in the following manner: At the bottom was placed a layer of yellow clay, some 6 inches thick, firmly trodden to retain moisture. On this a light covering of small chalk, and then about half the sods which constituted the first spit of the next trench, placed turf downwards, and loosely broken up. A thick layer of rotten cow manure was then put in, on which was added a coating of chalk coarsely triturated. The remainder of the top of the succeeding trench was now used, broken up smaller than the first sods, covered with cow manure and fine chalk as before, and finally filled up with the second spit of the following trench, the bottom draw of every trench being dispensed with, to allow room for clay, chalk, sods, and manure, as I have described. When the beds were thus prepared and finished, I gave them a good dressing of well rotted cow manure, thoroughly incorporating it with the top soil; this supplies the roots with immediate nourishment and gives them a good start. These beds were made early in September, and left dormant until the end of October, when I furnished them with plants.

“WINTER PROTECTION.—My plants are always earthed up in winter. This affords a very efficient protection from severe frosts—of course much of this is opened from around the plant at the time of pruning; it will then be seen that the buds at the base have remained dormant and uninjured during the winter, though some eyes in the upper portion of the stems may have suffered from the severity of winter's cold. It must not be supposed that I depend solely on this earthing up around the plants, even of the most hardy Hybrid Perpetuals. I further guard them with a mulching of long stable straw manure, or with the fallen leaves of autumn, collected for this purpose, or Bracken. I also fix on the borders throughout the length of the beds most exposed to the north and east strong laced wood hurdles, such as are used for folding sheep on farm lands; these are most serviceable, and afford good shelter against the stormy winds and hard frosts of winter. According to the Ordnance map, my garden stands at 264 feet above the level of the sea, but one portion lies more open than I could wish to the east; I consequently feel it necessary to provide against sudden alternations of temperature. The winter of last year (1883) was an unusually mild one. My plants had made excellent wood, and for the most part well ripened, many having retained most of their old leaves. These circumstances decided me to commence

“PRUNING at my usual time, but, owing to an attack of bronchitis, I was obliged to keep to my room; consequently my gardener did not begin the work until a few days later, when I was able to superintend his operations. Notwithstanding the delay, he got through his work well by the end of the first week in March. As the spring advanced all went on satisfactorily—the buds started well and made good growths; I anticipated a good early season of flowers, but my expectations were disappointed by the cruel and severe frosts that occurred on the nights of April 21 and 23, when the thermometer in Stevenson's screen, placed in my grounds, went down so low, registering 18° of cold. I could at once see how unhappy my plants were after receiving such damaging shocks; and well remembering the evil consequences we experienced from the direful frost and cold in the winter of 1879, after carefully examining my plants, I resolved to cut them down quite low; fortunately, I found good dormant buds near the base, where they had been securely protected by the earthing up, which gave me confidence in their future growth. Several friends told me I

had made a great mistake, and had entirely shut myself out of the chance of any bloom in time for our Reigate exhibition, which had been appointed rather early (June 28). Some advised me to leave more wood, and thought the buds, although injured, would start again from their sides; but I never knew such growth yield good and perfect blooms, and was satisfied with the course I had adopted, feeling sure I should have a long continuance of bloom during the summer, and further secure sound wood for the summer growth to start from—and this certainly has been the case. Never in my long life had I such glorious blooms, or so lengthened a continuance of bright, charming flowers. It is true, at the time of our exhibition not one-third of my plants were in bloom, yet I cut sufficient good flowers to send a box of twenty-four, which gained the second prize, and contributed a fair portion to the box of seventy-two, in the class in which we unsuccessfully competed with some of our leading nurserymen; in fact, it has been the most enjoyable summer I have ever had amongst the Roses. Believing that the early growth we get in ordinary years from early pruning is the better able to resist the vernal frosts we are almost sure to encounter some time or other during the month of May, with its sunny days and cold nights, I strongly advocate early pruning. Many, no doubt, will still cling to the preference of a later period than I have fixed. Yes, it is with our judgment, as with our watches, none go just alike, yet each believes his own.

“PLANTING.—Another important consideration connected with this subject of pruning is the time when the trees were planted, and the mode of cultivation that has been observed and will be followed out until the time of flower. Some advocate planting in spring, others the old and, I believe, most generally adopted time of autumn, say October or November. Excellent authorities have written their experiences, and given their advice with good argumentative reasoning. One especially, from whose judgment we should hesitate to differ, expresses himself with confident earnestness in favour of delaying planting until the month of February, assigning as his reason that from the month of November the ground gradually becomes cooler, while in March it gradually becomes warmer. He further thinks the sap is quiescent, and as spring advances all is in motion. Another objection to autumn is the great difficulty and uncertainty of getting your plants, though long ordered, from the nurserymen, their engagements being so increasingly multiplied at that season. I most willingly admit the deep importance of planting your trees as soon after they have been lifted as possible, and the serious injury to which the rootlets are liable, should they get too dry or be touched by frost, as I fear is often the case; yet, with all my high appreciation and sincere respect for my good friend's long and practical experience, my own practice has led me to quite opposite results. I believe generally during the months of October and November the ground will be found of a higher temperature than in either February or March, particularly in the lighter soils, if not in all soils, that have been well worked and prepared for growing Roses. That trees and plants derive a large portion of their nourishment from the soil will not be questioned. All writers admit that the crude sap ascends from the roots to the upper side of the leaves, where it is elaborated by coming into contact with the air, exhaling the superfluous water and oxygen, and inhaling carbonic acid gas; it then passes into the veins on the under side of the leaves, to be conducted into the chlorophyll vessels, where it is digested and assimilated on its way into the cambium, where it forms the protoplasm or life principle, which circulates to every part of the plant. But I must proceed to give my reasons for choosing the autumn, and not the spring, for planting our Rose trees. I hold it to be a great advantage to have your plants well established before much growth commences. It is a mistake to suppose there is merely a sluggish action in the roots at this period of the year; this can be proved re-

peatedly. These little rootlets are never quite at rest; doubtless they are far more active at one season than at another. Plants sleep, we know, and so do we; but the circulation and other vital powers are carried on as when awake. It is to my mind very certain that the more studiously we investigate the growth of plants, the more evident will it become that there is a continual action and motion of some kind going on, and that a state of life is, in fact, a state of motion. I have frequently removed plants that had not been in the ground a month in the autumn, and in all cases found active root action had been set up and the little root hairs full of life, bearing on their delicate capillary filaments and prolongations the white globular spongioles, fulfilling the work of absorbing from the soil. Beyond this, I believe that plants thus early established must start with fuller vigour in the spring than those that were only planted in spring. But however you may decide as to the season for planting,

“A FEW GENERAL DIRECTIONS should in all cases be observed. It will become your first duty to see that your ground is in a proper state to receive your plants. The soil should be neither wet nor dry, and the earth should divide well and intermingle with the fibres of the roots readily. We must be careful in treading in the plants; it is evidently injudicious to plant on a retentive soil at a time of rain, though on lighter grounds the work may be done safely, even though you have gentle showers. I question whether sufficient care and time are given to the mode of planting and arranging the roots in the ground; this is often carried out in too hurried a manner. Before placing the plants in their position they should be carefully handled and the roots well looked over, and all broken or injured portions removed; then spread out in a radiating direction as far as possible, so that the rootlets may take up the aqueous and other fluids readily. It must be remembered that it is not the thick substances of the roots that gather up the food for the support of plant life—they serve an important end in firmly fixing the tree in the soil—but it is the minute root fibres to which the plant owes its nourishment. The roots, therefore, should be well spread out, and never packed up together, and planted down in a straight direction. Caution must be further observed, that you do not plant too deeply in the soil. I suspect mistakes of this kind often occur. Mr. G. Prince, of Oxford, I remember, once found fault with me in this respect, and advised on the seedling Brier that the union should be just above the ground line, but he emphatically called our attention to regard the same depth at which the plants had been previously grown. This latter part of his advice is in like manner urged by most of our practical nurserymen, though some of them are in favour of placing the points of junction beneath the soil, which they think will give the plants a double chance. No doubt, with the Manetti stock, you may plant deeper than with others. As the winter days draw near, I look my plants well over and satisfy myself that they are firmly fixed, then earth them up and otherwise protect them, as previously mentioned. Thus far I have been referring to the class of dwarf Hybrid Perpetual Roses. Teas and Noisettes require less cutting back, but the suggestions I have otherwise made may be observed, except that the work of pruning should ordinarily be delayed until the latter end of April. I have but few standards; but some pillar Roses—such as Cheshunt Hybrid, a most valuable Rose for this purpose; Glory of Cheshunt, also very good and attractive; Blaire No. 2, Chénédole, Madame Plantier, Coupé d'Hébé, Longworth Rambler, Charles Lawson, Gloire de Dijon, Reine Marie Henriette, Reine Maria Pia, Madame Berard, Bouquet d'Or, Madame Trifle—the hardy sorts of Hybrid Perpetuals, hybrid China, and hybrid Bourbons I prune at the same time as my dwarf plants, and begin by thinning out from the bottom the most vigorous shoots, leaving such only as are necessary to fill the base; then I go on thinning throughout the whole length of the growth, selecting the strongest and best ripened shoots, and

having previously cut back the small side shoots to about two or three eyes, secure them to the pillar. The lateral branches of well-ripened growth are, of course, from time to time looked after and tied up, giving the plant a neat and well-arranged appearance; it is from these we may look for our good blooms. Those I have enumerated of Tea or Noisette origin are necessarily watched more closely and pruned later, according to their known constitutional power of resisting the changes of temperature we meet with in spring. I have also a few plants against the wall—Maréchal Niel, Climbing Devoniensis, Belle Lyonnaise, Rêve d'Or, Gloire de Dijon, Émile Dupuy, and my collection altogether consists of about 2500 plants. As soon after pruning as I find the buds have well started into growth, I encourage their onward progress by giving them a good dressing of cow manure; this is allowed to remain on the beds during the summer."

With this season's "Year Book" is given a photographic likeness of Mr. Geo. Paul, and also the following articles, in addition to four on pruning, viz.: "Roses in the Azores," by Mr. Hill Grey; "The Rose and the National Rose Society in 1885," by the Editor; "How I Grew Roses on a Cliff," by the Rev. H. B. Biron; "Tea Roses as Bedding Plants," &c., by Mr. George Paul; and "The Rose Weather of 1884," by Mr. E. Mawley, F.M.S. Altogether, a good shilling's worth.

YELLOW ROSES.

It is to be regretted that Cloth of Gold should have so quickly gone out of favour after the advent of Maréchal Niel, but that it did so is a well-known fact, and I think to some extent our gardens have sustained a loss; there is not a doubt that Cloth of Gold will thrive on open walls where the Maréchal will not, for although neither is perfectly hardy in all positions, yet, of the two, Cloth of Gold is undoubtedly the hardier, and for that reason I should advise those who cannot succeed with the Maréchal to try the other. In a few instances Cloth of Gold may be met with still thriving and enjoying the favour of its owner. The fact of the matter is that, when once planted in a deep, yet dry warm soil against a south wall, if it takes kindly to the situation, it will last in a prosperous condition for a lifetime. Such examples may, perhaps, be rather scarce, but they are to be found. Only in the autumn of last year I learned from a gardening friend who resides at the extreme end of the south coast that a fine plant of this Rose, which I knew more than 20 years ago, was still in luxuriant health and producing flowers in abundance every year. There is at the present time at The Grange, Kingston, a fine plant growing on the lawn and trained to a single pole. It is budded on the Brier, and, although the severe winter of 1881 very much injured its growth, it has quite recovered, and made growth last autumn from 6 feet to 8 feet long, and on the point of every shoot was a glorious bunch of buds and expanded Roses. I have always found that this Rose does better when budded on the Brier than on the Manetti. I have never seen a vigorous-growing plant of it on its own roots. It may be useful to mention that severe pruning must be avoided. All the young wood made in the summer should be carefully preserved, especially the strongest, for it is such shoots that produce flowers the following year. What pruning is done should take place in February, and then only to the extent of cutting out any dead or exhausted branches and carefully replacing them with young wood. Solfaterre is another Rose that has many features in common with Cloth of Gold, but it is, perhaps, a rather more vigorous grower. I have a plant of it now on my cottage which in all probability has been planted nearly 30 years, and yet it has branches which extend to nearly 50 feet, and it flowers every year in the most profuse manner. The way in which I manage it is to cut hard back, to near the old stem, one or two large branches, about once in three years. This causes young shoots to spring from the bottom, which frequently

grow to a length of 15 feet in one year; but the way in which latent buds break away from the most unlikely places on the old stems and branches is very remarkable. Early the following spring I shorten these long shoots back to about 6 feet, an operation which causes them to break back at nearly every bud, so that the space is filled up again.—C., in *Field*.

FLOWER GARDEN.

NOTES ON HELLEBORES.

In your editorial remarks (p. 36) upon the Christmas Roses sent to you last week simultaneously by "St. Brigid" and myself, you say "Mr. Brockbank states that this is the *Helleborus niger angustifolius*, but if so, it is a misnomer, as the leaves are really broader than the type." It is an ugly black-looking name to apply to a beautiful white Christmas Rose, but there it is, and we must perforce adopt it. So far as I have been able to trace its origin, it goes back to old Robert Sweet, who used it in his "*Hortus Britannicus*," published in 1826, wherein *H. niger* is divided into two classes, viz., *latifolius* and *angustifolius*, the broad-leaved and the narrow-leaved. Unless, therefore, we start afresh, we have but these two classes to work in. The first is clearly occupied by *H. niger altifolius* = *maximus* and other broad-leaved varieties in the major and minor group not at present carrying particular names. The term *angustifolius* does not therefore belong exclusively to our variety, but it is one of Sweet's narrow-leaved *angustifolius*. I endeavoured to deal with this question fully last season, and your readers who wish for the information will find it in the *Gardeners' Chronicle* for January 19, 1884, in which number there is also a very good plate of *H. n. angustifolius*, which is a correct representation of the plant, figured from an actual specimen. It should, however, be kept in view that the term *angustifolius* applies to the leaf-stalks and digits as a whole, and no one could look over a large bed of this particular Hellebore without being struck by the appropriateness of the name. It is especially so just now at the blooming season, when the petioles assume a curvilinear snake-like form, and the digits are very narrow indeed. The leaf as a whole is narrow, and its parts are so likewise. This is never the case with *H. n. altifolius*, which is always broad-leaved throughout.

In young leaves of *angustifolius* the digits are proportionally broader, and it was such that were sent with our flowers. I have frequently noticed that the Irish variety has its leaves generally with smoother edges than ours, and they are also of more substance. This I attribute to the kindlier influences of the Irish climate. Such smooth-edged leaves are, however, very frequent with us—in fact they abound, but the notched leaves are about as frequent. Some plants are smooth-leaved and some have all the leaves notched, and yet there is but one variety. This, therefore, cannot be considered a distinctive quality, as it is but an accident, due to situation and climate. If any of your readers who take an interest in Christmas Roses will visit Brockhurst during the next fortnight, they will find a large number of plants in bloom, and every variety of foliage in this very interesting class of *H. niger*.

The notes on *H. n. altifolius* in yours of the 27th have brought me a good many letters, and two contained very interesting information which may be worth the notice of your readers. A Scotch gardener says, "I had a pit of two lights planted with *H. altifolius* three years ago. I thinned out from time to time till about six plants remained to each light. For the past two seasons they bloomed but sparingly, but from the last autumn they have been all I could wish, as I have cut from them every week since November 10 fully fifty perfect blossoms weekly, and I expect them to continue two or three weeks yet. To give room to the foliage the sashes are tilted about 4 inches above the framework, and in some severe frosts I covered up with wooden sashes above the glass, and by so doing I could uncover and cut any day." The other

communication will show the necessity for frame culture in the north on something like the above plan. My correspondent says, "I mentioned to you a very fine plant a friend of mine had last season showing over sixty expanded flowers at one time. This plant showed equally well this season till the evening of the 29th November. On that night we had a great frost, which cut down the whole of his blooms and stalks to the ground. They will not recover this season." Now is the best time for planting *H. n. altifolius*. It is at rest, and will bear removal better now than later, when its roots will be active again.

Brockhurst, Didsbury. WM. BROCKBANK.

PENTSTEMON GLABER.

PENTSTEMONS are gradually becoming of more and more importance, a circumstance which may be accounted for both by the ease with which fair success with them may be attained in ordinary borders, and also on account of their profuse flowering habit and usefulness in a cut state. They are said to develop their flowers in water in a remarkable way, and to continue fresh and beautiful for a considerable time. The variety in form and colour to be found amongst them is almost endless, the latter being of every shade between white and crimson, violet and purple. In the species of *Pentstemon* the colours are more



Pentstemon glaber.

or less of a fixed character, whether perpetuated by seeds or cuttings, but in the varieties the same form is rarely if ever reproduced from seed. *P. glaber*, represented in the annexed illustration, is one of the most useful of the whole group for mixed border or rockery decoration. It is an extremely free flowerer, neat and bushy in habit and compact in appearance. It grows generally from 1 foot to 2 feet in height, and has oblong lanceolate leaves, slightly glaucous and destitute of hairs. The stems are many-flowered; the corolla is about 2 inches long and varies from bright blue—the form generally in cultivation—to violet-purple. The variety *alpinus*, an extreme form, grows only from 9 inches to a foot high, and is sparse or few-flowered. It is confined to the Rocky Mountains. *Cyananthus* is of a handsome light blue colour, but is tall and rather ungainly in appearance. *Utahensis*, also considered to be a variety, is very slender-habited and has very narrow leaves. *Speciosus*, also a form of *glaber*, has narrow leaves and is very handsome, often attaining 3 feet in height. It bears bright dense blue flowers, which are later than any of the others in making their appearance. A light rich soil suits them best, as they are liable to rot or damp off in winter if the soil is too stiff. *Pentstemons* are natives of North America. K.

GREENHOUSE PLANTS OUT OF DOORS.

I would advise Mr. Carmichael's correspondents from Pembrokeshire and Torquay to try *Polygala Dalmaisia* and *Sparmannia africana* out of doors. Let them take established plants with well-ripened wood, plants that may have been in pots several years and got too large for greenhouse culture; select a place for them sheltered from winds, but not shaded from the sun (the more they get of the latter the better), and plant them out early in April before they make young wood. Use some fresh loam only, and if possible plant away from the roots of forest trees and plants of stronger growth. Under such conditions I feel assured that in the generality of winters in Pembrokeshire, and Torquay is much the same, they will be safe, but occasionally severe winters will occur, and they will then require protection. I recollect the havoc made in the severe winter of 1837-1838 in the gardens of Stackpool Court, Pembroke, where I was then an apprentice; a very fine Lemon tree trained against the terrace wall that had withstood many a winter, and borne an abundance of fruit, succumbed to the severity of that hard season, when the thermometer stood at from 12° to 16° below the freezing point for weeks together in that usually mild climate. Shelter must therefore be afforded in severe winters. Gather the plants together by means of string or bands of strong matting, place a few light poles round them, and cover them up with single or double mats as may be required on the approach of frost, which generally gives ample warning before it becomes severe, but by no means shelter them unless the weather is severe; they will be better without it. What would be better still would be to train them against a wall with a southern aspect. They could then be more easily protected and would ripen their wood better. The *Sparmannia* spoken of by Mr. Carmichael is just now finely in flower, and truly beautiful. The *Polygala* we find useful for cutting, being in flower all the year round. It was for this object that I planted "the snatch of hedge" named some seven years ago. Many hard-wooded New Holland plants would succeed well in Pembrokeshire, the west of England, and on the south coast, provided precaution was taken to shelter them during occasional hard winters. But one thing should always be borne in mind, and that is not to stimulate them with rich soils so as to induce them to make much wood or tender growth; on the contrary, rather aim at encouraging them to make firm and well-ripened wood. The beautiful *Clianthus puniceus* should by all means be tried; here it is just coming into full flower, and covering, as it does, a space of wall 12 feet high and 16 feet wide, is a grand sight.

GEO. D. VALLANCE.

Tresco Abbey, Isles of Scilly.

Alstroemerias and Narcissi.—Two or three species of *Alstroemeria* which "D. K." thinks are not in cultivation are flourishing here. As might be supposed, I got them from Herr Max Leichtlin; my garden is greatly indebted to him. *Alstroemeria Diazii* is already several inches above the ground, and *A. revoluta* will soon make its appearance. Some of M. Dammann's new Italian Narcissi are in full bloom now and have turned winter into spring. In a day or two I shall know what Umberto I. is like, but it will be hardly fair to pass judgment on it till it has acquired more strength in the ground.—H. E., *St. John's, Ryde.*

Hunnemannia fumarifolia.—This is a plant seldom met with, though by no means uninteresting. In some localities, owing probably to the soil being damp and clayey, it may not succeed, but wherever Romneya Coulteri is at home this *Hunnemannia* will flourish, and as it is also a perennial, the attention which it requires when once firmly established is but small. It may be treated as an annual or biennial; the seeds may be sown in autumn in pots and the young plants put out in spring, when they will flower earlier and attain greater strength than if sown early in the year, but this will only need to be resorted to in adverse localities. It grows from 2

feet to 3 feet high, and is upright in habit, though not so in foliage. The colour of the flowers somewhat resembles that of those of the *Eschscholtzia*. With us it seldom ripens seeds, and all attempts to increase it by either cuttings or division signify fail; seeds of it are, however, plentiful—imported, we believe, from the Continent.—K.

ALEXANDRIAN LAUREL.

(RUSCUS RACEMOSUS.)

ONE of the most desirable of garden plants, from the extreme grace and beauty of its foliage and whole manner of its growth. The branch-like stems are renewed annually, coming to maturity about September, and enduring in their perfect state

Spray of the Alexandrian Laurel (*Ruscus racemosus*).

throughout the winter until March; then they slightly lose their deep colouring. When the new growth is matured it is best to cut out the old, or the plant looks too much crowded, especially in the case of well-established clumps. It does not like to be often divided. It shows to best advantage in distinct groups by itself in some quiet place half shaded, such as a shrubby recess or thin wood, or if grouped with flowers, perhaps the best are Christmas Roses and the common blue Hepatica, these blooming at a time when the foliage of the Alexandrian Laurel is in full beauty. For cutting purposes it is invaluable, whole sprays, cut 3 feet to 4 feet long, grouping gracefully with the largest flowers, such as Lilies and Gladioli, while the side sprays are of the greatest use in small arrangements. It has great powers of endurance in a cut state, lasting, even in

London, in good order for something like a month. Few plants have so graceful a manner of growth. It should have a place in every garden however small.

G. J.

LATE CHRYSANTHEMUMS.

EVEN now that the days are lengthening come that dreary winter of a gardener's discontent—a dearth of good showy flowers for cutting. Chrysanthemums, as a rule, are over and gone just by the time that flowers are most in demand. Popular as the Chrysanthemum now is, it would become ten times more valuable to us if we could obtain a race of late-blooming kinds, which, commencing to flower late in December, would continue the supply of flowers through January and part of February. True, we have varieties like Princess of Teck and grandiflorum, which are now only just at their best, but our range of form and colour is too limited, and, after all, the late-blooming varieties we have now are by no means so floriferous as could be desired. What we want are varieties like Elaine or Sœur Melanie, which would flower for the next six weeks, and if raisers and growers will combine in this matter the result wished for will surely be gained. By adopting a special course of culture with such sorts as Peter the Great, Julie Lagravère, Snowdrop, Fair Maid of Guernsey, or Mrs. Charles Carey, it is possible to have them now in bloom, but a race of really late-blooming kinds would be of still greater advantage to us, as requiring no more than ordinary skill in their cultivation. By adopting the cutting-down system now becoming pretty general, it is quite possible, as we have said, to extend and vary the flowering season of the ordinary kinds, and the experience of those who have in recent years adopted this plan would be of especial interest just now. Some have tried late-rooted cuttings as a means of obtaining late flowers, but better results in all ways follow the cutting-down plan. That the Chrysanthemum is very elastic in its nature is proved by the summer-blooming race, which, however, come into flower when we have other and finer outdoor blossoms in quantity. If some trade grower would make a speciality of really late-blooming kinds, they would assuredly become popular and most useful in all ways.

BRISTE DU MATIN.

Top-dressing rockeries.—Digging and top-dressing, where these operations are held to be of any benefit to plants in permanent situations, should be pushed forward whenever the weather permits, and not postponed indefinitely, as is too often the case. It is often urged that alpine and herbaceous plants do well for years without being disturbed and without artificial feeding, and this may be so in the case of slow-growing plants under favourable conditions, but there are many that like a little help in the way of manure. In their natural habitats they do not require it; there their dead leaves and old stems are allowed to fall, decompose, and assist in giving the plants renewed vigour for the ensuing year. Many writers, in recording their experience as regards the cultivation of certain plants, use the expression, "do not disturb the roots," and growers in many cases give this a literal interpretation, and refrain from either digging or top-dressing; this is, however, often not the intention of the adviser, who merely objected to rough and careless work. Light forking amongst plants may be safely practised without injuring the roots, and its beneficial effects will soon become apparent both in the case of rockeries and borders. A mixture of leaf-soil and good fresh loam will suit slow-growing plants, but for stronger kinds a little manure may be added.—K.

Herbaceous Pyrethrums as annuals

—If seed of these be sown in January, and the plants cared for, grown on into size, and planted out as early as possible in good soil, many, if not all, will flower in August and September. There is this great advantage, that, presuming it is intended to make a permanent plantation, the grower is enabled to select all the best flowers and reject the inferior ones. But the seed must

be sown early; that is an indispensable condition; and when the seedlings are raised they must not be neglected. Consequently the plants, as soon as they can be handled, should be pricked off into pots of good, light, free soil, and in every way encouraged to grow into size. But how often it is that pots of seedlings are sadly neglected, and suffered to become long, lank, and weakly; and when planting comes, and plants of this character are placed in the open ground, they take so much time to recover themselves that the season is well nigh over before they are in form to flower. Many seedling plants are unfortunately much neglected when in a young state, and not a few are destroyed in consequence.—R. D.

FRUIT GARDEN.

PHYLLOXERA AND TANK BORDERS.

"A. W. N." asks in last year's volume (p. 532) "whether it will be safe, after a lapse of about two years, to replant Vines in a border from which Vines infested with Phylloxera had been previously removed." Could "A. W. N." feel quite assured that in taking out the Vines he had removed every particle of Vine root from the soil, he might with perfect safety, after thoroughly disinfecting, cleansing, and painting the house, plant again seven days afterwards, because the insect cannot exist off the Vine more than four days, but so long as there is a morsel of root in the border containing sap or moisture the insect can live. The difficulty of removing every particle of root is very great, because roots will enter even the smallest crevice amongst rubble or foundations of the house or border, and, as it is well known, pieces of Vine root will continue comparatively fresh for a length of time in the soil, it would therefore be running a risk to plant in the same border. Eight years ago I cut down some old Vine stems close under the surface of the soil, and as it was not convenient to clear out the border at the time, the roots were allowed to remain, although no top growth was afterwards made, except that a shoot would peep through the soil occasionally, and was immediately removed. This border was cleared out last year, and in a few instances the roots had penetrated through the rubble underneath the flue, under the foundation of the front wall of the house, to a depth of 9 feet, at which depth, growing in pure chalk, they were literally covered with Phylloxera. I merely mention this fact to show how necessary it is not to be satisfied with half measures when dealing with this formidable foe. That the root form of this insect cannot live over four days off the Vine I have proved in numerous instances, but allow me to warn your correspondent, and also every cultivator of the Vine, that even if he has destroyed every insect in his border, he must not therefore feel himself in the least degree safe from another attack, because the winged form may again be wafted into his viney from even a distant part of the district he is in any day in the early summer months, and a new colony of insects formed almost before his Vines have become established in their new quarters. I am aware there are many who disbelieve this part of the economy of the insect simply because they have not troubled themselves to learn its habits and nature. Having hitherto, fortunately, escaped its attack, they feel secure from such an unwelcome visitor. May they never be annoyed by its sudden appearance. In the meantime permit me to recommend "A. W. N." and all those who contemplate making new borders to first form shallow water-proof tanks in which to make them with sufficient outlets for drainage at the base, and so arranged as to be easily stopped at pleasure. Let these borders be perfectly submerged with pure water or weak liquid manure for four days every spring and autumn; the cultivator may then contemplate the future without doubt or fear of evil results.

The tank Vine border is the simplest, cheapest, and most effective method of guarding against the attacks of this dreadful pest, and the sooner it is generally adopted the sooner shall we be secure

from this plague; for although the Vines may even then be liable to an occasional attack of the gall form of the insect on the foliage, this, being visible, can be dealt with more easily, and as it must return to the roots in the autumn for subsistence, it will be effectually and totally destroyed at the next submersion of the border. With what ecstasy (the Humane Society may call it fiendish revenge) does the possessor of the tank Vine border contemplate the destruction of these almost invisible sand-like legions, which have hitherto baffled his most strenuous exertions and destroyed his peace of mind, by this simple and comparatively inexpensive process. To anyone who has not tried this submersion process it will at first be a matter of surprise to witness the enormous quantity and varied species of insects that are found to inhabit a Vine border of even moderate dimensions; so great are they, that his ocular and olfactory nerves will be sensibly affected, and perhaps offended, thereby for a few days after the water has subsided by their decomposition, but this quickly passes off, or may be easily counteracted by spreading a small quantity of dry or burnt earth over the surface. These tank borders are in many other respects very convenient and commandable, and may by judicious management be made to assimilate the Vine border in its natural state, in respect to temperature, composition, and moisture, at different seasons more easily than can be secured by the usual method of making such borders; and since there is now, and has been for some time past, a more rational desire to prepare more solid, less rich, somewhat shallower, and more natural borders than previously, it follows that they may be reasonably somewhat more limited without any prejudicial results accruing. For these reasons the tank borders are particularly commendable, especially as they can be so easily deluged with clear water or liquid manure at any desired period, and in other respects be so easily managed as to save much labour and expense. In these days of cement concrete they can be so easily made and at such a trifling cost, that, compared with the advantages which they give and the security which they afford against this dreadful pest, the small first cost of construction is not sufficient to deter anyone from adopting them.—W. C. T.

— I should think "A. W. N." would be quite safe in replanting his viney two years after the last Vines were there. I should recommend that the beds should remain empty, so that there should be no chance of any Phylloxera remaining in them feeding on pieces of roots which may still be alive. The walls should be washed with a thin coating of Portland cement of the consistency of paint; this will effectually kill any insects which may be in the cracks, &c.—G. S. S.

JUDGING GRAPES.

It would be a relief to those who act as judges at fruit shows if some definite rules were fixed by some competent body for their guidance, especially with regard to Grapes. As matters now stand, opinions as to what constitutes good Grapes are so widely different in different judges, that visitors at shows must be sadly puzzled to know what guides the judges in awarding the prizes. I attended a fruit show lately where, for the best two bunches of Black Grapes, Alicantes and Mrs. Pince's Black Muscat were staged in competition. I grant that for size of bunch and colour Alicante was many points ahead of Mrs. Pince, but the latter was so exceptionally fine compared with what is generally seen, that in my opinion, as a first-class flavoured Grape, it left nothing to be desired. Nevertheless, Alicante was awarded the first prize and Mrs. Pince the second. It was quite evident that the judges were led away by the fine appearance of Alicante, and that they considered flavour to be only of secondary importance, and that appearance was everything. Seeing what an easy Grape Alicante is to grow, and looking at the care required in finishing off Mrs. Pince's Muscat in a satisfactory manner, I do not think the award was a just one.

Two days later I attended another show. In this instance Alicante and Black Hamburgh were shown in competition; here again, as regards appearance, Alicante had everything in its favour, but the first prize was awarded to the Hamburgh, although considerably smaller in bunch than the Alicante. With this award I quite agreed. It should always be recollected that Grapes are grown to eat and not to look at, and that in awarding prizes this fact should carry more weight than it sometimes does. These two instances show how judgments vary, and also the want of some recognised rule by which judges may be assisted in arriving at something like uniformity in their awards. In this country judges are left to do pretty much as they like in such matters—not certainly without some misgivings as to their infallibility, but because the position is often forced upon them through want of some proper tribunal; but where are we to look for such a public body, even for one that will frame a code of rules to guide judges in matters such as those just alluded to? The Royal Horticultural Society is little better than a myth, and the leading members of the gardening profession have business enough of their own to attend to. I suppose, therefore, that judges must still continue to award prizes in their own way, as they hitherto have been doing. J. C. C.

APPLES AND APPLE FAIRS.

If evidence were required that sufficient attention is not paid to selecting Apples that are grown for sale, it may be readily obtained in any of the local markets in the west of England between the middle of September and the middle of October. It will then be seen that not only is the supply far in excess of the demand, but that the majority of the sorts offered for sale are of indifferent quality and very poor keepers. Now we maintain that it is useless to complain of bad times and poor prices unless some effort is made by cultivators to remedy this state of things. If the best use is to be made of the land and of the time and labour bestowed upon it, a better class of fruit must be selected. Landowners and others have long since seen the necessity of interesting themselves in promoting the introduction of a better class of live-stock, and for that purpose have formed associations to carry it out. There can, therefore, be no reason why a similar step should not be taken in the case of fruit. A few interested individuals in any district might, for a trifling outlay, distribute in the course of a few years a sufficient number of trees to stock all the land available, or that would be desirable to devote to fruit growing. But to make the undertaking a success, it must be begun and carried out by competent men. In the first place, existing varieties must be severely weeded out, and only such retained as have some special merit. It is not new sorts that are wanted; there is abundance of varieties suitable both for early use and late keeping. What is wanted is a wholesale destruction of the small and inferior sorts now grown, and fruit of better quality substituted. At present our orchards are encumbered with a lot of small and flavourless fruits that are not profitable, even to grow for cider.

When we have made a selection of the largest and best keeping Apples suitable for each district, it will then be necessary to strike out a fresh arrangement as regards planting. The present system of placing tall growing sorts indiscriminately amongst others of a dwarf habit is bad. It causes many trees to have more room than they require, which is waste of space, while on the other hand this mixing up of trees with wide-spreading branches with others that have naturally compact close heads causes not unfrequently over-crowding. This is bad for the trees, as some are more exposed than is good for the safety of the crop, while others do not get all the light and air that they would receive under a judicious system of grouping kinds of like growth together. Many of the Pippins and Pearmaines form trees of only medium height with thick-set branches; and as these are the most tender of all Apples, they ought to have a position assigned to them in the middle

of the orchard, where they would be benefited by the shelter of the surrounding trees. Such hardy sorts as Northern Greening, Alexander, Tower of Glamis, Stirling Castle, and Gloria Mundi should be planted so as to enclose those of dwarfer stature.

In the matter of storing Apples, there is no need for any elaborate preparations. The essential conditions are a dry, well-ventilated frost-proof building; there is no better place than a loft over some other structure from which the air is excluded in severe weather. We have seen many fruit rooms fitted with shelves, tier above tier, that must have cost a good deal of money, but we have never known them to keep Apples better than an ordinary loft. Costly fruit rooms may be necessary where numbers of sorts in small quantities are required to be kept separate, but for market purposes such expensive fittings are not needed. Bushels of fine fruit may often be seen in the markets in March; at the end of April these are succeeded by such late-keeping sorts as the Norfolk Beaufin and French Crab—all fruit kept to our knowledge in a loft under which several cows used to be housed at night during the winter. At one end was the door, and at the other end a window fitted with wooden shutters; the floor of the loft was of course boarded, the walls up to the eaves being bricks. The roof was tiled, and between the tiles and rafters was a layer of straw, to exclude frost. On the boarded floor were laid the Apples, but none were brought to this loft that would be ready for market before the end of January. The first to be used were laid at the door end; they were arranged in heaps on each side, with a passage down the centre. As they were brought to the store they were laid in heaps, with no covering over them. Both door and window were kept open in fine weather for two or three weeks, and after that the loft was kept closed. If hard frost set in, the fruit was covered with clean straw, but not otherwise. No fruit could possibly keep better than this did. Once laid in a heap, sometimes a foot or more in depth, it was left undisturbed until the time came for each sort to be ready for market. Then it was taken out and sorted, and packed in bushel baskets ready for sale. The idea of examining the fruit with a view to remove decaying samples was never entertained, because it was found in practice that one decaying fruit did not contaminate those near it, as is commonly supposed. A dry, equable temperature will do more in keeping fruit sound than anything else.

At the present time so much difficulty is experienced in disposing of Apples at a reasonable price, that very few care to embark in fruit growing; but we can see no valid reason why it should be so. If it pays to import Apples more than 3000 miles, surely a few miles from market should frighten no one. Some well-organised plan of bringing dealers and growers together is, however, wanted. Once let dealers know that there is fruit for sale in sufficient quantity to warrant their seeking it, and they will soon discover it; and there is no better plan of bringing growers and dealers together than by means of Apple fairs. Why should not every large village in fruit-growing districts have its Apple fair? Or, if a single village be too small, two or three might be grouped together and hold an annual fair, to which dealers and others who might wish to purchase fruit could repair. On such occasions small lots might be sold in bulk, and larger quantities by sample; in fact the details need only be of the most simple kind. When once these gatherings were established, their usefulness would extend to other fruits besides Apples.

The country, it is to be feared, will benefit nothing by an extension of fruit culture until better markets are opened up for the sale of the produce. Every year's experience proves this. We have seen good samples of the Blenheim Orange ground into cider because the owner had no room in which to store them, and, the local market being overstocked, it did not pay to convey them there. As a contrast to this, however, a case in Somerset may be mentioned where between £30 and £40 was made from an orchard one acre in extent during the past season; but then

this orchard has been skilfully managed for these past twenty years, and the occupier knows where to find a market for his produce. But much of his success must be attributed to his growing the very best sorts of Apples only, such as Cox's Orange Pippin, Newtown Pippin, Ribston Pippin, Northern Spy, Alfriston, Gravenstein, Sturmer Pippin, and a few others, all of which are noted for high-class quality. This shows that not only can Apple growing be made to pay, but it may be made a valuable industry when conducted by experienced men.—C., in *Field*.

Black Alicante.—I recently had an opportunity of inspecting some remarkable bunches of Grapes of the Black Alicante variety grown at Major-General Henning's, at Frome, Whitfield, Dorchester. Six of the bunches weighed over 19 lbs., and one scaled upwards of 6 lbs., whilst the average of the entire crop was over 2 lbs. per bunch. The berries were equally remarkable for their beauty of finish, particularly as regards colour. The Vines which produced them were planted in 1879, and the weight of the crop increases each year. Several other varieties, including Black Hamburgh, Madresfield Court, Foster's Seedling, and Muscat Hamburgh, have done equally well, the crops produced from each being unusually heavy. This will be understood when I state that the produce of two Vines, each of which bore fifteen bunches, weighed over 90 lbs., giving an average of upwards of 3 lbs. each for the whole of the thirty bunches.—C. L., *Dorchester*.

Two good Melons.—I have grown a considerable number of new and old varieties of Melons, but I find that there are very few of them that can be rightly termed generally profitable and good. Among the green-fleshed sorts I am inclined to give the preference to the Hero of Lockinge, this being well adapted for either house or frame culture; it is free setting, swells a good crop of medium-sized fruit, which net prettily, change to a rich golden colour, keep well, and are good in quality. Blenheim Orange I consider a good companion for it, and it is undoubtedly the best scarlet-fleshed variety we have. It is earlier than the Hero of Lockinge, is equally as accommodating in its habits, and the fruits attain a good size, net thickly, are surprisingly heavy, keep well, and for thickness of flesh and flavour hard to beat by any sort of either colour. If limited to two sorts, these two would be selected, and as it is, we shall principally rely upon them this season, especially for the early and late crops.—W. I.

Are sunny seasons best for colouring fruit?—According to my observation they are not. Probably no one will remember a brighter or sunnier year than 1884; but I am sure many will recollect seasons in which Grapes, Peaches, Apples, &c., were much higher in colour than last year. There are few better places in which to form a correct opinion on this point than at shows, where the best fruits from many parts are exhibited; but throughout all last year I did not, so far as I had an opportunity, see anything of extraordinary good colour. Indeed, if we look over the reports of shows, we will find in the majority of instances that the Grapes, especially Black Hamburghs and Muscats, were deficient in colour. In the orchard here, King of the Pippins Apple always does well. During the very bright weather in July and August we were looking forward to its being higher than usual in colour; but when we came to gather it in October we were surprised to find it much less red and bright than we have had it in what might be termed dull seasons, and this applied to many other varieties, and indeed to Apples in general in South Wales.—J. MUIR, *Margam, Glamorgan*.

Pinus sylvestris aurea.—If this golden form of the Scotch Fir keeps its character as well when a full-grown tree as it does when a small plant, it will be one of the most valuable of variegated trees for winter, as amongst dark green Conifers and other Evergreens its deep golden fol-

liage would be most effective. Small specimens of it were exhibited at the Forestry Exhibition by the Lawson Company; but as it becomes almost green in summer, the distinctive character of this variety could not be well shown. The golden tint returns late in autumn, and hardly a trace of green is to be seen through the winter (judging from a small plant here); it is, therefore, one of the most brilliant of Conifers and well worth growing, even when but 1 foot high.—C. M. OWEN, *Knockmullen, Gorey, Ireland*.

EARLY FORCED VEGETABLES AND FRUITS.

THE early months of the year are always the most important in gardening, as, apart from providing for immediate requirements, the work of preparing for the summer and following winter is concentrated in them, and on the proper performance of such work success or failure materially depends. Permanent fruit trees cultivated and forced under artificial conditions must have proper attention bestowed upon them from the very earliest stages of growth, in order to obtain a crop from them one season and at the same time preserve sufficient vigour for forming and ripening fruit-bearing wood for that immediately following. Encouragement rather than forcing should be the rule by means of a gradual application of heat—at least in the case of the inexperienced. Forcing has to be carried on largely in winter and early spring, when outside temperatures frequently reach extremes in a short period, and when but little sunshine or natural light is available. At such times an excess of fire-heat causes attenuated growth, which does not answer its purpose satisfactorily. It is much better to encourage slower growth in dull cold weather by reducing the temperature somewhat in proportion to that outside, meanwhile taking full advantage of raising it at all times under favourable conditions and on fine days. One of the most important points in connection with forcing is the previous preparation or selection of the plants or trees to be forced—work to be considered in many cases a long time beforehand. The buds of flowering plants must contain the embryo flowers so far advanced as to be ready to unfold when subjected to the proper and necessary treatment as regards heat and moisture, and a season of rest before introduction to the forcing department must be allowed. Fruit trees must be prepared by early and thorough ripening, conditions obtained by full exposure to sun and air in the latter part of summer and autumn. Any liable to bleed—Vines, for instance—should be pruned some time before starting, in order to allow the cuts to heal up. Forced vegetables are generally limited to such as are raised from seed sown in frames or houses, and afterwards cultivated according to their several requirements, so as to produce crops in advance of those outside. The exceptions are Asparagus, Seakale, Rhubarb, &c., the successful production of which depends mainly on the selection of the strongest and most mature crowns. Growing a quantity of these latter specially for forcing purposes should always be part of the summer routine of work outside, as a considerable stock is necessary to maintain a supply for three or more months, and if the permanent plantations are used up now, no crop can be obtained from them when the natural season comes round. Asparagus roots are useless after being forced; consequently their treatment in forcing matters little so long as a full crop is secured, and this is obtainable in a much stronger heat than that which most plants will bear when lifted from the open ground. Neither Rhubarb nor Seakale should be subjected to nearly so much warmth. In gardens where large quantities of plants are forced for cut flowers and for decorating, a good plan is to reserve if possible a house for the purpose, as by this means they can be properly treated, and when shifted into warmer quarters replaced by others for succession. This is not practicable in the majority of instances, but the same principle should be adopted so far as circumstances admit: a high temperature should be withheld until growth is somewhat advanced. It is much easier

in the case of most plants to start into active growth leaf-buds than flower-buds; hence the frequent failure of flowering plants when transferred from outdoors to a stove without previous preparation; the sap is immediately excited, leaf-buds grow, and once these have the precedence the flowers remain as they were, or at best become but imperfectly developed. All flowering shrubs intended for forcing should be either grown in pots or lifted and placed in them early in autumn. The lifting tends to check growth and to encourage the formation of flowers, *i.e.*, if practised at the proper time, and potting up early in autumn allows the roots to become partially established by winter. Hardy flowering plants are invariably so much injured by forcing as to be unfit for the same purpose the following year. This may be avoided by keeping two or more sets of plants, so that while one is doing service others may be resting in the ground outside. These remarks apply to Deutzias, Spiræas, Lillies of the Valley, &c., as well as to flowering shrubs, such as Rhododendrons, hardy Azaleas, Kalmias, and Lilacs.

The failure of any one of these in forcing is, however, only of minor importance compared with that of a crop in the case of Vines, Peaches or Nectarines, Figs, or Strawberries. These must all be carefully managed in several respects, especially as regards temperature. The principle previously laid down applies here with renewed vigour. Speaking briefly, forced Vines should be started in an equable temperature artificially of from 50° to 55°, the rise above this by sunshine in winter being as much as can be obtained. An additional rise of 5° may be allowed when growth commences, and this latter may be taken as a minimum for the flowering stage. Peaches and Nectarines must have the least possible fire-heat applied until the fruits are well set, as there is always danger of causing the flowers to drop. A temperature of from 40° to 45°, with an additional rise by sun heat, will be sufficient to start with. If the flowers are likely to open in dull weather, they should be retarded as much as possible until a change takes place. Figs will bear more heat at starting than either Vines or Peach trees, a minimum of from 55° to 60° not being too much. The fruits of the first crop of Figs come from the ripened wood made at the latter part of the previous year, and considerable heat and moisture are necessary to induce them to push. Strawberry plants start very well along with Vines, but they should be removed to a light and more airy position soon afterwards, where they should remain to flower. After the fruits are set the plants may be subjected to the heat of almost any plant structure, provided sufficient moisture is maintained.

J. G. K.

KEEPING SEEDS.

WE hear a good deal now and then concerning the vitality of seeds, and the case mentioned by Mr. Bond (p. 4) is interesting. Putting aside the question of age of the seeds which he found in an Egyptian vase nearly three thousand years old, it will be interesting to learn in good time if the Pea seeds vegetate after being kept in an envelope fifty-five years, as vouched for. I predict that they will not grow. It seems certain that seeds retain their vitality for incredibly long periods when buried in the soil at a certain depth, but my experience of seeds kept in paper packets in cupboards is not favourable to the preservation theory, and those who advocate the passing of the Adulteration Act seemed to have the same doubts. A good many seeds will keep for a few years, but the less dependence gardeners put upon them after that the better. Peas, Beans, Carrots, Lettuce, Beet, and Cauliflower are not good keepers. Marrow Peas, and Kidney Beans are particularly untrustworthy after the first year or two, and although it is an economical practice to mix seeds left of the last year's stock in garden supplies, it is not safe to carry it very far. If the weather is the least unfavourable, old seeds rot instead of growing. We prefer to order too small to too large stocks for kitchen garden crops for that reason, as deficiencies can easily be made up

afterwards. There is one crop, however, the seed of which it is advisable to mix—new and old together—and that is Turnip seed. It is well known that farmers prefer it mixed in this way, as the seed vegetates at different dates, according to age, and some plants escape the fly. Last year a regular crop of Turnips came up in July after the first crop had been got from seed out of the same packet, so that I concluded it had been mixed.

With regard to buried seeds, we have noticed crops of plants and weeds come up under circumstances that drove one to the conclusion that the seed must have laid there from time immemorial. If the subsoil be turned up deeply anywhere in the woods here, Foxgloves, which naturally abound, are almost sure to cover the surface the first season, and that rather scarce native, the tall Shepherd's Club, seldom appears anywhere else than in places where the subsoil has been removed for foundations and the like. As for the kitchen garden, no matter how long it is since the ground was trenched, a crop of weeds is sure to put in an appearance after the soil has been turned up again. These facts seem to prove that seeds are best preserved in their natural receptacle—the soil—provided it is deeply enough buried, but what it is that prevents the seed germinating at a certain depth, where heat and moisture and air are all present in sufficient abundance to promote the healthy root-action of the same plant when growing, is a puzzle that has yet to be solved.

V.

ECONOMY IN THE GARDEN.

BUYING complete collections of seeds warranted to suit all parties is said to be economical, but, except people's tastes and gardens were all alike, I cannot see in what the economy lies. Such collections are made up on the supposition that in every garden a certain area will be allotted to, say, Peas, Beans, Potatoes, &c. But that is not so. Peas are liked in one place, but not Broad Beans, and so on through all classes of vegetables. Therefore, it is impossible to meet everybody's requirements, and I can confidently state that many of the packets in collections of vegetables, as *Salsafy*, *Scorzoner*, *Endive*, *Gourds*, *Maize*, &c., are never opened, but lie about until they ultimately find their way to the rubbish heap, and as they all have to be paid for, where is the economy? Why not order only what one requires to really use, and thus get rid of packets of inferior seed sent merely to make up the number. The greatest advance in general gardening of late years has consisted in selections—*i.e.*, using the best of everything, whether fruit, flowers, or vegetables, and in relegating collections to botanic gardens. Another case of mistaken economy is employing tools heavier than are required. If a workman uses a spade or any other implement that taxes his strength more than is necessary, he cannot be expected to do a full day's work; therefore in the case of tools, as in that of seeds, the best are the cheapest in the end, as they economise labour—a matter which ought to receive more attention than it generally does. When we hear of a garden not paying for the labour bestowed upon it, it is a proof that it is wrongly applied. In nothing that I know of is forethought more necessary than in properly directing garden labour, every change in the weather requiring to be taken into account. There is no need for either hurry or confusion if one starts fairly abreast of the work—no need for working out in a downpour of rain, as I have frequently seen done on the plea of economy, and yet doing harm to both men and the soil; far better have waited until circumstances were more favourable. Such is a sample of matters that pass current for economy, but it is of the wrong kind.

J. G.

Hints.

Veitch's Perfect Gem Cabbage Lettuce.—This is an excellent Lettuce—the best of the dark green-coloured kinds. It is very dwarf, grows most compactly, and forms heads of the finest possible description. It is much stronger in flavour than many of the brighter leaved sorts, but it is crisp and tender, and either for table or exhibition it would be difficult to name any kind that would be more desirable.—CAMBRIAN.

GARDEN FLORA.

PLATE 475.

ODONTOGLOSSUM CORDATUM.*

THE plant we now illustrate has long been an inmate of our gardens, having been discovered and imported from Mexico by the late Count Karwinski nearly fifty years ago. The late Mr. George Ure-Skinner also found this plant very abundantly in some parts of Guatemala, whence it has also been imported from time to time. The first figure I can find of this distinct species is in the "Floral Cabinet" of Knowles & Westcott, t. 100; there is also a good plate in "Pescatorea," t. 25. In the *Botanical Magazine*, t. 4878, our present plant is figured under the name of *O. maculatum*, an allied, but perfectly distinct plant from *O. cordatum*. Two distinct varieties are shown in our plate, the kind with dark brown-red markings being that most usually met with in collections. The pale yellow form here figured may possibly be a reversion to the species in its more primitive state before it had developed the high colouring which now is its characteristic hue. The plant grows well in an intermediate house; indeed, it enjoys more heat than the *O. Alexandræ* section from the cool misty uplands of Bogota. It grows well in a pot of well-drained fibrous peat and Sphagnum Moss, and, like almost all the species of its genus, enjoys a liberal supply of root moisture at all seasons. When well and strongly grown this plant is by no means unattractive, although it is not nearly so showy as many other species. The flowers open in succession on the erect spikes, and endure fresh and fair for several weeks in a suitable atmosphere.

F. W. B.

* To Mr. Peacock's gardener (Mr. Vicary), who grows this species admirably, we are indebted for the following remarks on its culture: "Its requirements," he states, "are similar to those of the majority of *Odontoglossums*, with this exception, viz., that as the largest quantity of roots are found pushing all over the pot, there let them remain, and on no account cover them up. We find that the best time to repot is when the young growths are about 4 inches long; it will then be seen, if examined, that fresh roots are pushing. We take a pot rather small than otherwise, fill it three parts full with broken crocks, over which we put a layer of Sphagnum, to keep the small particles of peat from working in amongst the crocks and thus stopping up the drainage. The compost which we use in potting consists of one-half good fibrous peat and one-half Sphagnum, with sufficient charcoal to keep the whole open. We work this mixture in amongst the roots, but do not bury many of them, as we find that they perish if interfered with in that way. Then we put a small quantity of live Sphagnum around the edge of the pot to give the whole a neat appearance. When finished, the plant should be well elevated above the top of the pot. The insects that infest this plant are scale and green fly. The former is found on the leaves, and may be got rid of by sponging; green fly is usually found on the flower-spikes, and should be brushed off with a soft brush. I would recommend that the plant be not fumigated, as the leaves might get burnt and much injury be the result. The temperature in which it seems to delight is that of the Mexican house or warm end of the cool house. Plenty of water may be given it in summer, but in winter only a moderate supply."

* Drawn in Mr. Peacock's garden, Sudbury House, Hammersmith, September 20.



KITCHEN GARDEN.

THE MOST PROFITABLE PEAS.

"W. I. M." (p. 7) is wrong when he says the rage for large-podded Peas is subsiding. This wants no contradiction from me. If "W. I. M." will look at the market value of the Peas which he condemns, he will discover his error. Now he can call a fine handsome pod full of Peas coarse, I am at a loss to understand. Surely a large pod will contain a greater weight of Peas than a small one. For instance, I myself weighed the produce of twenty-five pods of Culverwell's Giant Marrow and twenty-five pods of MacLean's Best of All Peas; the former weighed 9 ounces and the latter barely 6 ounces. Whether or not large Peas are the most profitable for market growers, I do not profess to know, but this I do know, that a neighbour of mine who was growing Culverwell's Giant Marrow and Telegraph for seed had such a big bid for them in a green state, that he was tempted to sell them, and being what I call a good grower of Peas, he cleared a large sum by them; while other Peas that "W. I. M." praises he could not sell for a third of the price—Day's Sunrise among the number. I can give "W. I. M." another instance that he is labouring under a delusion. A working man near me has a large garden, and, being very industrious, he makes his garden a source of profit by growing vegetables for exhibition, and nothing has brought him more money in the shape of prizes than two of Culverwell's Peas, viz, Telegraph and Giant Marrow. The wife of this man took some bushels of these large Peas to a thriving market town to which Peas are plentifully brought; she fixed her stand and baskets next to a seller of Peas, and as she displayed her produce, the man become uneasy—so much so, that at last he exclaimed, "By gum! missus, I must shift my quarters, or I shall never sell a Pea;" and he did so. The woman soon sold all she had. I am quite of opinion that soil and situation have a great deal to do with the growth of Peas. This is shown by the Giant, especially when grown on hot dry soils and not supplied with plenty of water. We grow our Peas on ground prepared just as is done for Celery. Any of Culverwell's Peas grown in this way produce enormous crops. "W. I. M." blows hot and cold in one breath. He first condemns large-podded Peas, and then has a good word to say for Evolution, while John Bull, which I think is one of Mr. Laxton's best productions, he says is quite a failure. Another correspondent writing in the last volume of THE GARDEN on Peas says Champion of England is his sheet anchor. It was mine, but not for these last ten years. Some of the early Peas that "W. I. M." recommends are little larger than buck-shot. I got some of them last year, but did not sow them; such small Peas are useless here. William I. is my main Pea for early work; it keeps on bearing in our good, rich soil, and gives us a great quantity of Peas for soup long after the Marrow Peas are in. I have no hesitation in saying that double the quantity can be grown on Telegraph and Telephone, Giant Marrow and Paragon, that can be grown on Champion of England or any of that breed.—A PEA GROWER.

— It is now seven or eight years since we introduced Telephone and Telegraph Peas to public notice, and it appears to have taken "W. I. M." all that time to discover their defects. These Peas stand in the foremost rank—a position which they have continued to hold against all comers. It has never been suggested by us that Stratagem and Telephone Peas were specially adapted for market work. Telephone and Stratagem are both high-class Peas fitted for culture in private gardens and for exhibition to an extent never reached by any other Peas. When, however, "W. I. M." attempts to disparage the value of Telegraph and Pride of the Market as field Peas, he must either have been unfortunate enough to have obtained his supplies of these varieties from some unreliable source, or he must have cultivated them in such a manner that the results would have been unsatisfactory whatever variety of Pea had

been put upon the land. We have yet to learn that any of the new Peas which we have sent out are thicker in the pod than any other variety named by "W. I. M.," who appears to have started with the determination to elevate into prominence certain Peas that had hitherto been in obscurity at the expense of four varieties that are admitted to be not only unequalled for exhibition, but described by such authorities as Mr. A. F. Barron, Mr. Gilbert, Mr. McDonald, and many others to be what we claim for them—the grandest Peas in existence.

With regard to the peculiar merits of Telegraph and Pride of the Market for field crops, we hope that some of our friends will speak of their value; perhaps Mr. Anthony Waterer will give us his experience with Pride of the Market as a field cropper, whilst we can vouch for the sale this year of hundreds of bushels of Telegraph for podding specially enquired for by market gardeners who do not usually try experiments on a large scale. We should think the experience of "W. I. M.'s" friend who, he informs us, is both a grower and salesman, must be somewhat singular, or he would never complain about the large size of the pods, because it is generally known that until these well-filled long-podded varieties came into prominence market growers were always enquiring for a Pea that would fill the measure. In Telegraph and Pride of the Market they have not only Peas that will fill the measure, but that will also fill the pocket of the grower and salesman and satisfy the public. "W. I. M.'s" experience will be found to be opposed to ninety-nine out of every hundred growers of Peas when he states that Culverwell's Giant Marrow seldom fills well; and as regards other sorts of Peas, we shall be quite as ready as "W. I. M." to welcome any introduction that will displace any of our four sorts. In addition to the English opinion of our Peas, it may be worth while to quote here also that of the editor of the American *Rural New Yorker*, an authority upon all matters relating to horticulture, and who makes annual tests of every variety of new Pea introduced either in America or Europe. He reports as follows: "Telephone and Telegraph are the best of the tall-growing intermediate Peas that I have tested. Carter's Stratagem is the most prolific and the best intermediate Pea we have ever tested in America." Public criticism we have always courted in regard to any novelties which we have introduced; and, notwithstanding "W. I. M.'s" disparaging remarks, if he lives long enough (and we heartily hope he may), he will find out that Stratagem, Telephone, Pride of the Market, and Telegraph Peas shall have secured a full hold on public favour when nine-tenths of the other varieties to which he has alluded have sunk into obscurity.—JAMES CARTER & CO., High Holborn.

— I cannot agree with all "W. I. M." says respecting profitable Peas, especially in reference to such Peas as Telephone, Stratagem, and Pride of the Market, which he says are only fit for exhibition. I should like to ask him to name three other Peas that would yield a greater quantity of pods and weight of Peas. I should like very much to show, not for exhibition, a given number of pods or shelled Peas of Telephone against a given number of any Pea that he may grow just to prove to him that Telephone, Stratagem, and Pride of the Market are very profitable for use as well as for exhibition; in fact, I do not know of any three Peas that could possibly beat them for profit, letting alone their good qualities for exhibition. I may add, too, that market gardeners in my neighbourhood like them very much because they get quite as good a yield from these Peas as from others, and they fetch from 3d. to 6d. per peck more money than any other kind; therefore, I may safely say, taking Telephone, Stratagem, and Pride of the Market all round, either for exhibition or ordinary use, that they cannot be beaten. For my earliest crop of Peas I grow William I. and Earliest of All, and for the second earliest Telephone, Stratagem, and Pride of the Market. Wordsley Wonder is also good in every way, and so are Webbs' Triumph, Laxton's Evolution, Dr

McLean, House's Perfect Marrow, and G. F. Wilson. Of late varieties I grow Laxton's Omega and Ne Plus Ultra, and I think this selection cannot be beaten, either for profit or exhibition.—HENRY MARRIOTT, *Prospect House, Skirbeck, Lincolnshire*.

— I am surprised that "W. I. M." does not include Omega in his excellent list of Peas. I have grown it ever since it was sent out, and although I have grown every reputed late variety, new and old, I have not yet found Omega's equal for supplying Peas during the latter end of September and on through October. It is dwarf, fills well, and above all is of excellent flavour. In short, it is the very best late Pea which we possess. On our light soil the following twelve varieties give us a plentiful supply of first-class quality for a constant and heavy demand from June to October inclusive—viz., William I., Criterion, Champion of England, Duke of Albany, Telephone, Marvel, Dr. McLean, Gladiator, G. F. Wilson, Walker's Perpetual Bearer, Ne Plus Ultra, and Omega.—JOHN ROBERTS, *Tan-y-Bwlch, Merionethshire*.

NEW VARIETIES OF POTATOES.

If there are too many novelties in Potatoes, as "W. I. M." says there are, why not in Peas, Melons, Onions, Cucumbers; nay, in many things? for what vegetable, fruit, or plant is there in common cultivation which is not being increased as rapidly as Potatoes are, and against which it would be not merely folly, but positively mischievous to protest? The very life of horticulture, no matter how trivial or how great the subjects, is found in constant variation and progress, and although with the good grain there may prove to be some chaff, which must be winnowed out, yet we have gained immensely in the end. Did the opinion of "W. I. M." prevail, we should stand stock still. If there are many new Potatoes put into commerce each year, surely that is a matter for the raisers or tradesmen who offer them for sale. Neither "W. I. M." nor anyone else is compelled to purchase them. On the other hand, if there are many hundreds of persons who take special pleasure in the cultivation of Potatoes (gardeners included) who will buy new sorts, surely they may do so. If "W. I. M.'s" rule had always prevailed, not only Magnum Bonum, but Reading Russet, two kinds of which he speaks well, would never have got into commerce. Those who know anything about new Potatoes, and I may include the opinion of such a distinguished horticulturist as M. Henri Vilmorin, hold that during the past few years great strides have been made in the improvement of Potatoes, and that we have now finer and altogether superior sorts to any that previously existed. The attack upon the committee of the International Potato show is amusing. What that body is endeavouring to do in the interest not only of the Potato, but also of raisers on the one hand and of growers on the other, is just what societies of various kinds are doing in many ways for other things, and doing it not less well. Of none of its work has the committee more reason to be proud than of its patient efforts to decide upon the merits of new kinds of Potatoes, and it finds, with exceeding satisfaction, that many truly first-class kinds are submitted to a crucial test. So good, indeed, have Potatoes become, that it is almost impossible out of scores to find an indifferent one. Perhaps the committee are fortunate in having those to grow Potatoes who can do so. Just what this committee is doing the Royal Horticultural Society's fruit committee is doing also, and with excellent results.

A. D.

Broccoli insects (*W. N. N.*).—The insects infesting your Broccoli roots are members of the family Poduridae, or springtails (although this species does not jump), and are probably *Lipura fime-taria*. Insects at the roots of plants are very difficult to destroy; insecticides applied sufficiently strong to kill them would probably injure the plants. The best thing to do is to burn all the infested plants and dress the ground thoroughly with gaslime or soot, and let it remain further

for some months, during which time it should be kept as clean as possible, so as to starve any of the insects which may survive the dressing.—G. S. S.

5304.—**Mossy lawns.**—Draining will remove Moss from lawns. The next best cure consists in frequently dusting with wood ashes, than which no better antidote to mossy growths, whether upon land or tree branches, exists. In country places where woodlands abound this is easily manufactured by burning up all clippings and prunings in one common heap. Indeed, the ash from a general garden burnt rubbish heap will be found excellent for such a purpose, owing to the fact that whilst it destroys Moss it also greatly aids by its fertilising properties the growth of the more weakly Grasses. Another aid in the same direction is road sand with occasional dressings of soot. A thin layer of finely-chopped decayed manure applied at this time, raked in, and the remains swept off in a month's time, will also be beneficial.—W. EARLEY.

WORK DONE IN WEEK ENDING JAN. 13, 1885.

JANUARY 7.

A fine dry, frosty morning, the perfection of weather for wheeling manure on to vacant plots of ground in kitchen garden, which we did, and also mulched Apricot borders with good manure, the preparation for the same having been made a few days ago by clearing away prunings, weeds, and the old mulching. A 5-foot space from the walls is held sacred to the roots, digging or forking never being done after the trees are first planted; but root pruning at the 5-foot distance we find it necessary to do every alternate year, and the mulching is renewed twice a year—now, or in autumn, and again at midsummer. The borders are 14 feet wide, the spare 9 feet being devoted to early vegetables, such as Peas, Potatoes, Carrots, Radishes, Lettuce, and Cauliflowers. Soil carting, and gravel ditto for walks and roads. Watered late Muscat (inside) Vine border; this would have been done long ago, but we feared injury to the Grapes by cracking or decay from a wet atmosphere, hence it was deferred till the Grapes were bottled. The soil was full of cracks or fissures, and these were filled in with a stout potting stick as watering was being done. Another supply will be given two or three days hence, and after that the border will have its annual top-dressing of fresh material. Put in Vine eyes, each one separately in a 3-inch pot, and plunged them in a Pine bed, where there is a bottom-heat of 75°. Potted off Fuchsias. The cuttings were put in late in autumn, and will be kept growing on, the plants being intended for bedding out. Part of the old plants of last year, that have wintered in a cellar, have also been potted off, as they are required large for vases and basket beds. Seeds of *Solanum marginatum* and *S. robustum* take so long to germinate, and it is always desirable to have all kinds of sub-tropicals large and strong before they are planted out, that these two kinds have been sown to-day in boxes, over which we place glass till the seeds are up. They are stood on the bed of leaves that we have in the early vinery, the bottom-heat being about 70°.

JANUARY 8.

More soil and gravel carting, digging and trenching in kitchen garden, mulched cordon Pears thickly with the best manure we had got, and covered old Asparagus beds with spare soil from fruit tree borders that have been re-made with new soil. Rain coming on early in the afternoon, Potato stores were overhauled and boxes repaired and made for bedding plants. Put in the first batch of cuttings of *Iresine*, *Coleus*, *Ageratum*, and *Heliotrope* in the Melon pit, as alluded to last week. The old plants of the former will still be kept in the strongest heat we have, so as to get more cuttings early as possible. Soiled up Melon plants; we sow in 3-inch pots, use but one crock, and half fill the pot with turfy loam, and earth up with the same kind of soil, which is put into warmth overnight. Soon as the roots well fill the

pot they are planted out with the balls complete. Made another sowing; also of Cucumber; thinned out the weakest blossoms in our second batch of Strawberry plants; they set all the better for this attention. Our first lot are making good progress, and to hasten them they now occupy the shelf in the fruiting Pine pit, the warmest place we have, the temperature ranging from 70° to 80°. A successional batch of plants has been put into the Strawberry house, the temperature of which ranges from 60° to 65°, according to the weather. The plants are syringed overhead when the house is closed up at about two o'clock. This being the best way to keep free of spider, it is continued through all the stages of growth, except when in flower or when the fruit is ripening off.

JANUARY 9.

Sharp frost again this morning made it convenient for more manure wheeling; mulched Gooseberry plot and Raspberries, carted manure from stables, and mixed it with twice its bulk of leaves for hotbed purposes. Trenching in kitchen garden. This latter work we always strive to get done by the beginning of the new year, but sundry extra jobs have this season hindered the completion of this kind of work, but which now we mean to finish before another extra job is begun. Put more Seakale into force, and sowed Mustard and Cress in boxes; potted Mint and Tarragon, and placed in forcing pit; cut all Lady Downes Grapes and placed in bottles—a temporary shelf on the floor of the house being improvised, as the permanent ones were all filled. The cutting of the Grapes would have been deferred till space was to be had on the fixed shelves, but some of the Vines seemed disposed to bleed, and, therefore, it was decided to cut them all, prune the Vines, and throw the house open, and then stop the bleeding. The borders are entirely inside, but we can, as it were, by removing the lights, turn them outside, and this will be done soon as there are indications that the weather is not likely to be very severe; meanwhile, the heat will be turned quite off and air left full on except during sharp frosts. The borders being dry, water will be given them at once. The temperature of Grape room is kept as near 45° as may be, and this is maintained without fire-heat unless the frost is exceptionally severe; then we find it necessary to turn on the heat for a couple of hours in the evening. In damp weather the heat is turned on during the day, the ventilators and doors being wide open the while.

JANUARY 10.

High wind and heavy rain all day long; nothing whatever has been done outside. Root stores, Carrots, Beet, Onions, and Potatoes, have all been examined, and decaying ones picked out. Apples and Pears are getting into a small compass now, so that looking over these is not a formidable job. They have all been put close together and the spare shelves utilised for seed Potatoes, which we like to lay singly to sprout, the said sprouts being eventually reduced to a couple on each set. Washing pots, making labels and boxes for bedding plants, and cleaning out tool and potting sheds were other jobs done by outside hands. Work in the houses has been as usual on Saturdays, namely, cleaning of every place well out, and making all look their best by picking off bad leaves and flowers, and rearranging plants that are likely to look or be the better for this attention. *Eucharis* Lilies are now in fine blossom, and the foliage was sponged to heighten their beauty. Our plants of these always remain in heat, the only rest they get being the partial withholding of water for about three weeks after they have done flowering, and by such treatment they always flower at least four times in the twelve months. Hitherto we have managed to escape the disease peculiar to this Lily that so sorely perplexes many gardeners, to whom it is but poor consolation to have to write that apparently there is no remedy. Sponged *Dracenas* and *Crotons*, and picked over Ferns, and re-arranged plant stove. *Primulas*, *Cinerarias*, Tree *Carnations*, *Bouvardias*, and winter-flowering *Begonias* have been arranged on Peach house border, the Strawberry house, which

hitherto they have occupied, being required for its own special purpose. Picked over bedding *Pelargoniums*; nearly all of them are in the latest vinery, which must be kept cool for the Vines to rest; consequently the more tender kinds look anything but vigorous, and must be moved soon as room can be found in a warm house; meanwhile, they are kept on the dry side as regards moisture, but the more sturdy stock have been well watered to-day, and so have Pines, with water at a temperature of 90°.

JANUARY 12.

A bitterly cold day and a slight fall of snow towards evening put us on the alert as to protecting frames containing bedding plants, also to cover up Lettuce, Endive, and Cauliflower plants and to take indoors all Broccoli that were ready. Supplies of Parsley, Spinach, and Brussels Sprouts were also got in, the remainder of our outdoor work being wheeling manure and trenching. Completed the pruning of Lady Downes Vines; they are spurred right into the buds nearest the main stem. Years ago we used to prune to the best bud, whether the said bud was close to the main stem or a foot from it, but the plan had no advantage other than the production of a large bunch here and there, which by no means compensated the ugly appearance of the long spurs; consequently we returned to close pruning, and results are generally satisfactory. Put in cuttings of succulents; all kinds strike very successfully on shelves in Pine pits; sandy soil and the cuttings fixed firmly in it are the conditions of success. Prepared soil for potting and propagating purposes. We have fortunately an abundant supply of leaf-soil, which for purposes of propagation is sifted through a quarter-inch sieve, half-inch mesh being used for potting composts.

JANUARY 13.

Sharp frost, wheeling soil and manure all day long. The whole of the ground in kitchen garden being now supplied with dressing, the completion of digging or trenching is all that remains to be done to make every bit of vacant ground ready for spring cropping. Made up a fresh fire to burn up prunings, hedge-clippings, and other refuse, the ashes from previous fires having been used with the mulching applied to fruit tree borders and to Gooseberry and Currant plots. Potted more Seakale and put in another lot. Turned over fermenting material in early vinery; this will be the last time, as the buds will soon be unfolding, and less atmospheric moisture will then be desirable. During the prevalence of the present cold weather high temperatures will not be attempted, but will be allowed to fall proportionately with the outside temperature; that is, supposing the latter sinks to 20°, we shall be satisfied if the vinery thermometer registers 50° or even 45°. This, we take it, is the most natural plan of forcing; at any rate, we have found the plan so successful, that a code of "cut and dried" temperatures will never find acceptance here. Grapes in bottles when first cut absorb a good deal of water, so that it is necessary to look them over about twice a week for the first fortnight, after which absorption is very little. Ours have been done to-day, the bottles filled up, and the bunches examined to remove bad berries. A dry atmosphere and an equable temperature about 45° are the essentials to good keeping.

HANTS.

Black Walnut culture—Mr. Graves, of Texas, ten years ago planted, says the *Gardener's Monthly*, ten acres with Walnut trees by hand, 200 to the acre, in all 2000 trees. The trees are now 9 inches through, and grow at the rate of an inch a-year, and when twenty years old they will be worth £5 a tree, making the forest worth at that time £10,000. But this is not all. Last year the trees bore 400 bushels of Walnuts, which brought 10s. per bushel, making £200 for the ten acres of land—good interest for land worth £3 per acre. If at the age of twenty years half of the trees are cut and sold for £5 a tree, or £5000, the nuts per year from the remaining 1000 trees will be worth £500 a year.

INDOOR GARDEN.

COVERINGS FOR GLASS HOUSES.

EVERY observant cultivator of flowers or fruit under glass must have noticed how little attention has been given to the subject of outside protection for glass houses; whole lifetimes, and no inconsiderable sums of money, have been devoted to inventing boilers of all sorts and forms for heating horticultural buildings, and all kinds of expensive and sometimes not very serviceable fittings to the same have been from time to time brought forward for the production of warmth inside the house, but very little has been done in the way of outside covering to prevent undue waste of heat. How is it that this point has been so long neglected, seeing that cultivators are more interested in it than the engineer? One would have thought that, for one's own convenience, some effort would have been made to prevent this waste of heat, as by retaining it in a more uniform manner we should have secured two important conditions, that would exercise considerable influence for good in cultivating all kinds of tender plants. One of these conditions would be a more regular temperature, and the other a more genial atmosphere, consequent on a reduction of dry heated air given off from the heating medium. All the arguments that can be cited point clearly to the benefits that must accrue to a proper system of outside protection.

Setting aside for the moment the question of saving in fuel and the attention required in stoking, I maintain that the improved conditions which we should secure for our plants are alone sufficient to impress every interested person with the importance of this matter. The sudden fluctuations of temperature to which the inmates of glass houses are exposed, and, worse still, the dry atmosphere which surrounds them in severe weather, resulting from the highly heated medium which is necessary in order to keep up the temperature, might in a great measure be avoided if the outside of the roof was covered with some portable non-conducting material, in the form of roller blinds or some equally convenient simple means of placing such protection on the glass. Of course, I am quite aware that there are many houses, such as large conservatories and others, not conveniently constructed to admit of their being so dealt with, and, fortunately, this kind of houses do not require it. It is our pineries, vineries, cucumber, and other forcing houses that demand attention in this matter. A very little experience and observation are sufficient to show the advantages of such protection. Most of us know what amount of frost a single Russian mat will exclude when spread over the light of a pit or frame; therefore, it is only necessary to extend the same principle to our houses to reap still greater benefits.

As I have before incidentally remarked, there is not only a direct saving in the fuel consumed, but the internal air is more agreeable to the occupants, and, what is equally important, there is far less anxiety in maintaining the temperature at any particular point when the outside of the roof is covered with blinds. Whether anything better than blinds can be substituted is, however, an open question. What I maintain is, that the few cases in which blinds have been used thoroughly establish the fact that the principle of outside covering is right, and therefore deserving of extended adoption. Wishing to practically test this matter, I had our pinery fitted with stout Hessian blinds at the commencement of the winter. This structure is span-roofed, 38 feet long and 18 feet wide internally. The result is a wonderful saving of fuel. To such an extent, in fact, is fuel saved, that we have either to let the fire burn out early in the evening, or else not pull down the blinds on mild nights, and, even with 6° or 7° of frost, a small fire and the blinds down, we can command a temperature of from 65° to 70° without any attention after 9 p.m., and then find the internal temperature has not varied more than a degree or two during the night. With a good bottom heat obtained from leaves, I feel certain, with the

aid of blinds, that there will be a very considerable saving of fuel through the year. The introduction of a suitable non-conducting material is, however, a question that should first have attention. Up to the present I am not aware of anything more suitable than frigi domo canvas, which, being chiefly composed of wool and hair, is fairly suitable; but, to my mind, it hardly meets the case as a non-conductor, pure and simple. What is required is an article with more consistency, without adding to its bulk or weight.—J. C. C.

MUSA COCCINEA.

THE usefulness of this dwarf-habited, brilliant-flowered *Musa* has already been the subject of a note in THE GARDEN. Plants of it have been in flower all through the present winter at Kew, where at the present time the most attractive flower in the Palm house, eclipsing even the bright bracts of the *Poinsettias*, is that of a plant of *M. coccinea*. In addition to the plants of true *M. coccinea*, there have also flowered at Kew lately a few plants of a second species of *Musa*, not unlike the other in habit and general appearance, nor in the characters of its inflorescence, but by the side of the true *M. coccinea* a very inferior plant. As these two distinct species of *Musa* have been under the one name at Kew, and as there is a not uncommon opinion that *M. coccinea* is not quite so good a plant as some make it out to be, it seems not unlikely that the spurious plant is made to pass for the true *M. coccinea* at more places besides Kew, and that the doubts as to its merits as a garden plant are the result of this mixing of the two species. To prevent this mistake from spreading further, it may be worth while here describing the distinctive characters of the two plants, so that anyone may be able to recognise the one or the other amongst his plants without any difficulty.

M. COCCINEA is cultivated at Chatsworth, was shown at the Manchester exhibition of 1881, and is now in flower in the Palm house at Kew. The stem is erect, 3 feet or 4 feet high, as thick as a man's wrist at the base; leaves as in other *Musas*, but distinguished by a very close arrangement of nerves, which run parallel with each other from midrib to edge, and only a quarter of an inch apart. The flowers are borne on an erect terminal spadix, which is clothed with boat-shaped, pointed, erect bracts of the brightest scarlet colour. Inside each bract the flowers are arranged, one female or two abortive flowers to each bract; the lower bracts contain the female or fertile flowers. Of course the flowers of all *Musas* are hermaphrodite, but some of them have the stamens abortive, some the pistils. There is never more than one fertile flower to each bract in this species, and by this character and that of leaf nervation it is easily separable from

M. SANGUINEA. In characters of the stem, form, and size of leaf, and in habit of the whole plant this species is a repetition of *M. coccinea*, but differs in the following points: The nerves of the leaves are nearly an inch apart, the texture of the leaf is slightly thicker, and the green a little glaucous. In its flower characters we find the bracts of *M. sanguinea* a dull red inclined to lilac, less erect, and becoming recurved with age, and each bract contains three flowers, never less. In colour of bracts *M. sanguinea* is much less brilliant than *M. coccinea*. A figure in the *Botanical Magazine* (t. 5957) of *M. sanguinea* either represents a variety of unusual brilliant flower hues, or the artist has exaggerated the colours to an unpardonable extent. According to this figure, *M. sanguinea* is a deep crimson-red, whereas in the plants flowered at Kew the colour was as just described. *M. coccinea* is a native of China, and is an old English garden plant. *M. sanguinea* appears to have been introduced about fourteen years ago. A third species of *Musa*, quite as dwarf in habit and equally beautiful with *M. coccinea*, is *M. ornata*, of which nothing can be learnt now-a-days, though it was once cultivated in England. It is found wild in Chittagong. The characters of its stem, foliage, and inflorescence

are similar to those of the above, but the bracts are a lovely light purple, large, smooth, shining like porcelain. The flowers are bright orange. If we did not possess *M. coccinea*, the second species, *M. sanguinea*, would be a commendable plant, but being but a poor imitation of that plant, it is, at least for garden purposes, not of much value. *M. ornata* is worth re-introducing. W. W.

POT-BOUND LILIES.

ALLOW me to inform Mr. Murphy that my object in writing upon this matter was simply to show that obtaining good specimens of Lilies in pots is an easier matter than is commonly supposed. I distinctly stated that plants which had not been disturbed grew stronger than those which had been repotted, a fact which I candidly own surprised me as much as it appears to have done Mr. Murphy. A plant consisting of twenty flower-stems averaging 5 feet in height and carrying over 150 well developed blooms is surely a fair specimen of Lily growth in pots, and large enough for almost any purpose; therefore if such can be grown without the trouble of repotting, a step forward in Lily culture will have been made. I expect that Mr. Murphy has quite as much experience in keeping root-bound plants in health and vigour by means of constant supplies of liquid as I have, and will have seen that with judicious feeding from the time a plant starts into growth the necessity for fresh soil is often obviated. Why should not this be the case with Lilies? It is simply a question of giving enough food, and Mr. Murphy acknowledges that even after having had the trouble of repotting he is obliged to feed with liquid manure to bring the flowers to their proper size. One thing is certain, viz., that in any case root-disturbance is an evil to be avoided as much as possible, and no matter how carefully one goes to work, some of the feeders are certain to suffer or get broken off. Therefore, in one sense, non-shifted Lily bulbs stand under the most favourable conditions, as the root action, which with them never ceases, does not receive any check. I do not lay it down as a rule that Lilies should not be shifted, but I am convinced that in many cases it would be better to allow them to remain the second year in the same pots. Sometimes a plant does not make a very strong growth, and when it has died down in autumn and is turned out of the pot, the roots have only just traversed the soil in various directions, but have not formed a network of fibres. Now a plant in this condition has quite enough soil for another year, and will by the following spring, if not disturbed, have quite filled the pot with roots. I have an impression that some of our more delicate rooted Lilies would be better grown if potting were made a biennial instead of an annual affair. Growers, I feel sure, will gladly welcome a means of reducing labour, and if experience is to count for anything, the repotting of Lilies is 'not absolutely necessary. Where Lilies are much grown the matter can be easily determined, and with some it may not be too late to do so this year. I only grow a few pots of Lilies, but this year I have left half of them undisturbed, some in 8-inch, others in 12-inch pots. BYFLEET.

VIOLETS IN AUTUMN AND WINTER.

I HAVE often experienced considerable difficulty in getting Violets to bloom freely in autumn and winter until I adopted the following plan, viz., in April the young runners for next season's supply were selected from plants that had ceased flowering; only sturdy single crowns were used, as long wiry runners never make good plants. These we planted on good rich soil in a partially shaded border, and kept them well watered when the weather was dry, and the soil frequently stirred to keep down weeds and prevent it from getting crusted and impervious to air; after bright days a damping overhead with a syringe or garden engine was found to be of great benefit as regards promoting healthy growth and keeping down red spider. The greatest of all aids to early

flowering, however, is to concentrate the energy of the plant in one single crown by cutting off all runners as fast as they appear with a pair of sharp-pointed scissors, such as are used for thinning Grapes. This must be frequently attended to, or the plants soon get exhausted, but if rigidly carried out the crowns will become plump and full of flower-buds. About the middle of September the plants should be transferred to their flowering quarters. Cucumber frames answer well for this purpose; they should be set on a hard foundation in a sheltered position facing the south. The frames should be raised well up at the back, so as to catch every ray of sunlight; fill them half full of manure, treading it in quite hard, so as to give a gentle lasting warmth to the roots; on this put a layer of fine soil, such as could be got from an old Cucumber or Melon bed; then lift the plants with a good ball of earth and set them on the bed, filling in between them with the same kind of soil as that just named. Finish off by giving a good soaking of water, and when the plants are dry, mulch with Cocoa fibre. The frame lights should be tilted up at the back to allow a free circulation of air both night and day, except when frost sets in; then cover thickly with mats and long litter or straw, *i.e.*, if very severe, but remove such coverings directly the sun is up and give a little air, for if shut up closely the foliage soon suffers. Look over the frames frequently and remove decaying leaves. Fully expanded blooms will be ready for picking during November, December, and January, and very plentifully in February and March. As regards sorts, I find Marie Louise superior to the Neapolitan for early winter flowering; in fact, it is the best I have yet tried. I do not think Belle de Chateray is well adapted for early work; it takes too long to expand. Of single blues, Czar is as good as any I have yet tried. A good bunch of Marie Louise garnished with leaves of the single kinds makes a choice floral gift during the dark days of winter.

Gosport.

J. GROOM.

Scented Chinese Primulas.— Might I suggest to the raisers of new sorts of these the advisability of turning attention to the raising of sweet-scented varieties? All we now have are more or less scented, but the scent is not pleasing to many. For the past three seasons I have observed that some of the commoner red sorts are sweetly scented, and the scent of some we now have much resembles the Indian Daphne, only not so powerful. I also find the variety Princess Louise to be more sweetly scented than any other new or named sort in our collection. This convinces me it is quite possible to transmit this most desirable quality to other strains, and thus add another attraction to an already popular class of plants.—W. I.

Vallota purpurea.—In a late note "Veronica" says: "A white Vallota would be a useful plant for decorative purposes, and may not be an impossibility after all." All will agree that a white Vallota is a great desideratum, and that if introduced it would be very popular. Quite accidentally this same subject was discussed by the writer with M. Ant. Roozen, Junr., a few years ago, and he stated that his firm had had a fine white variety offered them that season, and that they intended to put it in commerce as soon as sufficient stock could be got up. Most unfortunately, however, it has since died in the raiser's hands, otherwise its introduction would have been an accomplished fact ere this. Better luck may attend future attempts. I cannot say whether it was a seedling or an imported variety.—RUBY.

Winter Chrysanthemums.—Mr. E. Woodall says, in THE GARDEN (p. 4), that to have plenty of Chrysanthemums at Christmas would be a boon to all. I saw a fine display of them the last day of the old year at Idsworth Park, Horndean. They were producing plenty of flowers for cutting, and looked as if they would still furnish many more. The most noticeable sorts were Meg Merrilies, Bronze Dragon, Yellow Dragon, and a reflexed variety named Primrose.—GEO. CARPENTER, Rydens, Walton-on-Thames.

Luculia gratissima.—I find that in order to have this plant in good health and always plenty of bloom, planting out is the best system. I tried it in pots every way, but never was satisfied with the results until it was planted in a small border 18 inches wide, close to the back wall of ainery, on which it was trained on wires. Here it has done well, and annually gives us a large amount of fine heads of bloom. It is growing in nothing but pure loam, which is very light and sandy in this district. The growths are not long and weak, as would be expected, being so far from the glass, but short and stiff, with a truss on every point. It always gets liberal waterings when the vines get them in the growing season. There is not a plant that gets less attention, and still it gives us a great amount of bloom.—A. H. T.

Gladolus Ville de Versailles.—My first experiment with this lovely flower out of doors was in 1879, and resulted in failure. It came into bloom so very late that it got destroyed by frost and wet. I would say to readers of THE GARDEN, procure the bulbs now, keep them over until April, use pots 7 inches in diameter, and place three bulbs in each. Put them in a cold frame for a month or so, then stand them out of doors with Azaleas or Camellias, giving a dressing of Clay's Fertiliser three times during the summer, and do not allow the pots to get dry. My reason for recommending them to be placed with Camellias, &c., is to insure them proper attention. About October remove them to a cold house, and in November to an intermediate one, and they will bloom to the end of January.—WM. BAYLOR HARTLAND, Temple Hill, Cork.

Primula Sieboldi.—One of the most beautiful and free-flowering of Primulas is the lovely P. Sieboldi and its varieties, which comprise all shades of colour. Most of these are very effective. I have seen plants of them in 4-inch pots, with trusses from 5 inches to 6 inches in diameter, supported by slender stems and most graceful in appearance. A few of the most distinct in form and colour in addition to Sieboldi are: Grandiflora alba, lilacina marginata, rosea striata, vineiflora, rosea alba, violacea, lacinata, and Magenta Queen. Nearly all the varieties of Sieboldi can be successfully grown out-of-doors, provided they have a sheltered position and a light sandy soil, but in order to grow them to perfection it is advisable to keep them in pots in a cold frame or greenhouse, where the bloom is finer and of purer colour than that developed out-of-doors. They like a light rich soil, and during the growing period waterings with liquid manure.—C. SONNTAG, 2, Chestnut Terrace, Tottenham.

Brugmansias planted out.—Not only are these very effective when planted out in the conservatory, as stated by "J. G. H." (p. 498), but they are equally so when grown in the same way out of doors, where they make highly ornamental objects for the centres of beds or for standing in isolated positions on lawns, purposes for which they are specially adapted, but when used in these positions it is necessary to train them as standards, as then other dwarf things can be grouped or planted beneath them and their long trumpet-shaped blooms show off to the greatest advantage. B. sanguinea I have had standing out for years; when winter approaches we pack a lot of dry leaves well up around its stems, and to keep them in place we lay on them some Bracken, which prevents the wind carrying the leaves away and gives the mound a more tidy appearance. The frost kills the young tender branches of this Brugmansia that project beyond the covering, but the ripe and hard ones underneath remain safe and sound. Standards may be dug up and housed, which will do them but little harm, as by potting them in soil and keeping them dry, they may be wintered in any cellar or shed, and when spring comes round all that is necessary is to prune them back and start them ready for planting again, or they may be turned out at the beginning of June and allowed to break naturally out in the open. Being gross-feeders, the soil should be well manured and deeply dug or trenched, so as to give them free root room, and if this is done

and plenty of water given during the summer, the plants will make rapid growth and flower profusely. Those who wish to propagate may do so easily by taking off any of the young shoots with a heel, when they are about 6 inches long, as then they strike readily, the only thing needful to induce them to do so being a little heat and just sufficient moisture to keep them from flagging. To train them as standards they must be potted on, and the leading growth tied up to a straight stick, and all side shoots rubbed out till the plants reach the required height, when by stopping the points they will soon start and form symmetrical heads.—S. D.

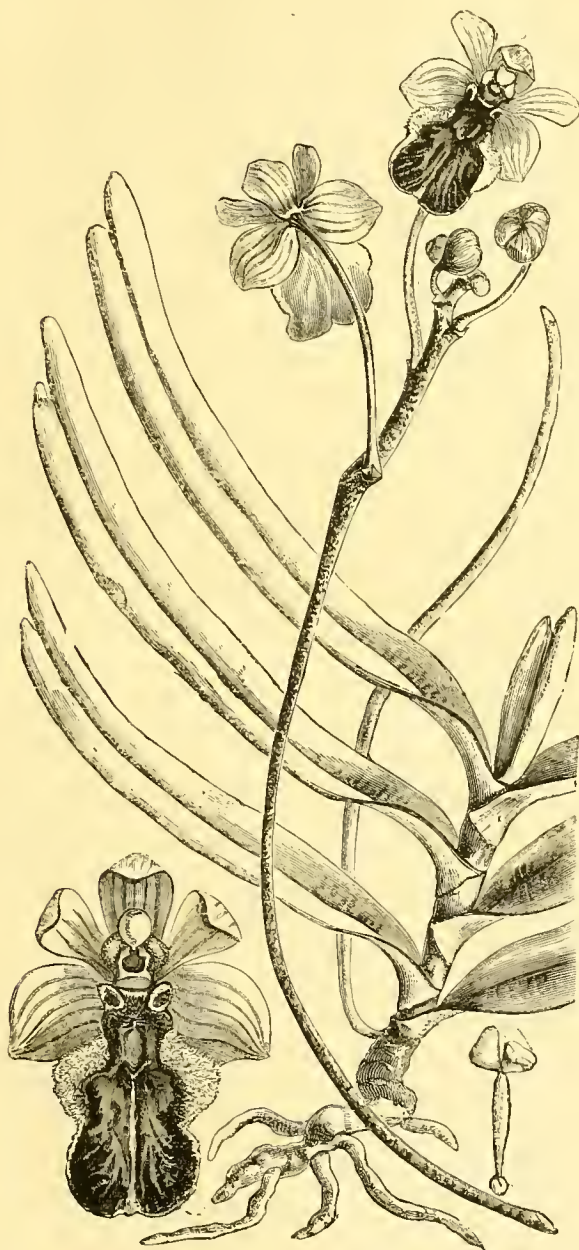
Bougainvillea glabra.—The specimen of this planted in the conservatory at Powderham Castle is worth going a long journey to see, for when in flower it is a grand sight. It is fortunate in having just the position that suits it; it is growing against the back wall with its roots in a good border, and the temperature is slightly higher than that of an ordinary greenhouse. In winter the root moisture is reduced, but not so much that the soil gets dust dry. In pruning, which is done in winter, all the small growths are cut back to a spur, the strongest branches being allowed to extend gradually every year. It covers a back wall 10 feet high, and extends on each side of the stem about 15 feet. The strongest shoots reach a considerable way up the roof beyond the height of the wall. When I saw it it had flowering shoots 5 feet long, and as the branches had been allowed to grow pretty much in their own way, the effect was a sort of happy freedom that still further enhanced its beauty. Plants so grown are very different from trained specimens; the most skilfully managed pot plant is poor and insignificant compared with this one. I was also much struck with the depth of colour in the bracts; they were certainly deeper and larger than usual. Doubtless the fine colour was due to the large body of light diffused throughout the house, for although the roof was shaded, owing to the house being a large one, there was ample light for most plants.—J. C. C.

Neja gracilis and falcata.—Plants that flower nearly the whole year round without intermission might almost be counted on the fingers, but, nevertheless, in this category must be placed the two plants here mentioned. After flowering in the open border all through the summer and autumn months we lifted and potted them carefully, and they have ever since been flowering freely in a cool frame. They are natives of Mexico, and, therefore, not fitted to stand outside during severe winters, except, perhaps, in dry, well-sheltered situations, or, perhaps, under a slight covering, which would serve the double purpose of warding off damp and yet admitting a free circulation of air, for, although of a shrubby character, they succumb readily to damp than to cold. As cool greenhouse plants they would prove most useful, for although their flowers are not bright in colour, they are produced in such quantities at all times that they could not fail to be welcome. N. gracilis grows about a foot in height and is neat and graceful in habit, the slender stems rising from the crown being thickly beset with long, round, upright, wiry leaves, densely covered with hairs. The flowers are three quarters of an inch broad, yellow, and produced in abundance. N. falcata is rather taller and stronger than gracilis, much woodier, and quite devoid of hairs; the flowers are also larger, measuring an inch in diameter. They are of the same colour as those of gracilis. Both plants are easily increased by means of cuttings.—K.

Early potted Lilies.—On examining the different Lilies repotted a couple of months ago I notice that the roots are now in active operation, great numbers of them in many cases having reached the sides of the pots, and in those of the longiflorum section some are even pushing up shoots. Notwithstanding the fact that the evils of late potting have been many times pointed out in THE GARDEN, there are still numbers who delay purchasing Lily bulbs till spring instead of obtaining them in the autumn, or, at all events, as

soon as possible, for in the case of imported Japanese kinds they do not, as a rule, reach this country before the middle of November. I obtained some bulbs of the first importation this season of *L. auratum*, and in most cases their roots are now active, thus showing that no time should

decay are removed, and they are either potted or planted out. As bulbs imported from Japan or from any considerable distance naturally receive a certain amount of knocking about before they are finally disposed of, symptoms of decay often make their appearance when first consigned to the



Vanda peduncularis.

be lost after receiving them in getting them put in growing order. Drying them after arrival, as is recommended by some to prevent decay, is a mistake. A better plan, and one that always succeeds well with me, is to lay the bulbs as soon as received on a sheltered piece of ground in the open air and cover them with Cocoa-nut refuse. In a fortnight or three weeks roots will issue from their bases; they are then gone over, all signs of

earth, and by laying them id by the heels, as it were, for a short time, an opportunity is thus given for removing any prominent decaying portions, which could not be done were they potted or planted the moment they arrive. In the case of all bulbs, and especially those of doubtful soundness, a liberal use of silver sand placed in immediate contact with them when planted will be of great service to them.—T.

ORCHIDS.

VANDA PEDUNCULARIS.

NONE of the popular works on Orchids, so far as I know, even mention the name of this peculiar plant. In Lindley's "Genera and Species of Orchidaceous Plants," p. 216, however, it is described from native specimens and a coloured drawing, both likely to be now found in the herbarium at Kew. Mr. Macrae discovered the plant many years ago in Ceylon growing as an epiphyte on trees, and Lindley's description is undoubtedly of the plant we now illustrate, since in size and general appearance the flowers reminded him of those of the common Bee Orchis (*Ophrys apifera*). Lindley's work was illustrated fifty years ago, so that the plant, albeit rare, even if it really does now exist at all in cultivation, is no novelty.

In "Walper's Annales," vol. vi., p. 880, this plant is described under the generic name of *Cottonia*, and the genus is said "to approach *Saccolabium* by habit, but differs from all the genera of that tribe in the total absence of even an approach to a spur, by the form of the column, and still more by the unusual form of the lip." It is the *Cottonia macrostachya* of Wright's "Icones" (v. i.), 1851, 1755, and really has been introduced alive to Europe, since Reichenbach includes it, under the name of *C. peduncularis*, in the catalogue of Consul Schiller's Orchids growing at Hamburg in 1857. There is a woodcut figure of this plant in Paxton's "Flower Garden," vol. iii., p. 43, and Jerdon, a collector, found the plant in Malabar, near Tollicherry, and made a coloured sketch of it.

The flowers are described as pale green or yellowish, with a deep purple fleshy lip, bordered with green and hairy at the edges, so as to resemble some *Ophrys*. They are also sweet-scented, and grow in racemes of six to twelve together at the thickened apices of very long peduncles. Now and then these peduncles are branched, and vary from 18 inches to 3 feet in length. In some respects this is not a true *Vanda*, and of this Lindley himself was doubtful, although it so stands in his greatest work on the family. Dr. Wight, who was responsible for the name *Cottonia*, dedicated this plant to Major F. Cotton, of the Madras Engineers, an indefatigable collector and cultivator of Orchids in India. Collectors in Ceylon should look out for this plant, the peculiarities of which are well shown in our engraving. F. W. B.

Orchids at Lythe Hill.—I saw here the other day some charming Orchids. *Vanda suavis* (Veitch's variety) was furnished with leaves down to the pot; I counted 25 pairs on it in good condition and very dark green. I also remarked a very handsome plant of *Cypripedium Sedeni* measuring over 3½ feet through and carrying 16 beautiful branched spikes of flower. Of *Calanthes*, which are grown here largely for dinner-table decoration, there was a really grand display; upwards of 250 spikes of flowers were to be seen. Some plants of *C. Veitchi* measured 4 feet high, and amongst them were some very dark varieties, which arranged amongst fine-foliaged plants had a very pretty effect. *C. vestita lutea oculata* and *C. Turneri* were just showing flower. Amongst plants of *Odontoglossum crispum* there was one variety with large flowers, the lip of which was broad, much fringed, and barred; one spike contained 14 fully-expanded flowers. There was also a narrow-lipped variety nearly white; these were part of an importation by Messrs. Veitch, which arrived some 15 years ago. *Masdevallia bella*, *M. towarensis* and *M. amabilis* were growing in a cool house along with the *Odontoglossums* and doing well; they will shortly make a grand display. Some fine panfuls of plants of *Cœlogyne cristata* will be open soon; *C. ocellata* and intermediate are just showing. I also noticed some good plants of the lovely *Sophranitis grandiflora* in bloom.—W. L.

Varieties of *Lælia anceps*.—Mr. R. P. Percival, of Birkdale, Southport, has sent us during the week the finest gathering of varieties

of *Lælia anceps* that we have seen, and which show how remarkably rich, as regards valuable plants, his Orchid collection must be. He tells us that he has had 250 spikes on *Lælia anceps* alone, which must have been a sight worth seeing. A large number of these spikes, too, have borne four flowers, and three spikes five flowers, one of which he has sent us. Of varieties there are eight in all. They include, besides the ordinary form, the very fine dark variety called *Barkeri*, a kind distinguished at once by its large flowers, dark sepals, and intensely deep lip. In direct contrast with this is the delicately beautiful *Percivaliana*, which has white sepals and a white lip, margined and tipped with amethyst. Then there a variety of *Barkeri* labelled as being from Sir Trevor Lawrence. This is remarkable for its very broad labellum and intensely deep colour. Similar to the latter form is another, about which Mr. Percival appears to have some doubt. It has the lip of true *Barkeri*, but the sepals are different. The other varieties are all distinct from one another, but Mr. Percival has not names for them. Some are delicate in tone, others very deep. The elegance of growth which this *Lælia* combines with richness and variety of colour places it in the front rank of winter Orchids, and the fact that it is easy to grow well increases its value.

GARDEN IN THE HOUSE.

THE TACSONIA AS A ROOM PLANT.

To those readers of THE GARDEN who are interested in the room culture of this plant a few more particulars as to its growth and training than were given by me in last year's volume may be acceptable. The name of the Tacsonia in question is *Van Volxemi*. I had it from a nursery in a 4-inch pot, the plant then being about 2 feet 6 inches long. During that summer it made good growth, and was potted on to a 6-inch pot. Next spring, the roots having thickly filled this, it was moved to a 9-inch pot, and by its quick absorption of water and good lateral growth showed that it liked it. Next year I hope to give it an 11-inch pot, in which it must stop or be planted out. It is, of course, quite possible that it could be well grown in smaller pots. It is trained to one wire, which is not fastened to the pot, but has the two ends hooked for fastening to eyes in the greenhouse, the plant having had to reach this wire from the stage, as a Vine does. It produces tendrils at every leaf along the stem, and these wherever wanted can be twisted round the wire. Lateral shoots can by the same means be fastened to other stronger ones in whatever way one fancies to give a pleasing and informal effect. If necessary to remove the plant from the wire, it can be untwisted and will do again. I should say that permanent wires had better be fixed to the window, and when the plant is brought in for the winter, wire and everything could be fastened to them in such a way, that taking it down for a wash once or twice need not be a great difficulty. I prefer one large plant to two smaller ones, for these reasons: firstly, more flowers; and secondly, I am rather chary about the blinds, and would rather not be racked when I hear them go up at six in the morning. In the matter of flowering it is decidedly free, for it produces a bud at nearly every other joint, and sometimes oftener, though it has not strength to bring them all to perfection, and the older shoots freely send out laterals, which bear flowers as they grow, the blooms being about 18 inches from the point of the shoots, and the space between having buds in various stages of progress.

W. J. CAPARY.

New flower-pot—The pot and saucer figured in THE GARDEN of December 27 (p. 548, Vol. XXVI.), said to be invented and patented by Mr. Knight, is no new invention; I have made them for years, in proof of which I can refer Mr. Knight to Mr. Z. Stevens, of Trentham, to whom I supplied a quantity of these saucers on June 27, 1881. I therefore contend that I have a perfect right to continue their manufacture without payment of a royalty to Mr. Knight.—J. MATTHEWS, *The Royal Pottery, Weston-super-Mare*.

BOOKS.

DICTIONARY OF ENGLISH NAMES OF PLANTS.*

PERHAPS the best way to give a fair idea of this book is to print a page from the English-Latin

English names of plants. The Latin-English part shows at a glance the plants which have received one or more English names. We believe Mr. Miller has done the work conscientiously and well, and that the book will prove very useful to garden lovers, and perhaps be a first step in the English

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English Names of Cultivated, Native,

Trillium. *American Wood-Lily, Three-leaved Night-shade*
cernuum. *Drooping Wake-robin or Drooping Wood-Lily, of N. America*
erectum. *Beth-root or Birth-root, Indian-Balm, Lamb's-Quarters, Purple-flowered Wood-Lily*
erythrocarpum. *Painted Wood-Lily*
grandiflorum. *Large White Wood-Lily, Wake-Robin of N. America*
latifolium. *Ground-Lily, Indian Shamrock, Rattle-snake-root*
nivale. *Dwarf White Wood-Lily*
pendulum. *Indian Balm*
Trinia vulgaris. *Hone-wort*
Triodia decumbens. *Heath-grass*
Triosteum. *Fever-wort, of N. America, Horse-Gentian*
perfoliatum. *Common Fever-root*
Triphasia trifoliata. *Lime-berry-tree, of Manilla*
Triplaris Bonplandiana. *Ant-tree*
Tripsacum dactyloides. *Buffalo-grass, Gama-grass, Sesame-grass*
Triptolomæa sp. *Violet-Wood, of Brazil (?)*
Tristania albicans and T. conferta. *Turpentine-tree, of Australia*
conferta (Lophostemon arborescens). *Queensland Box*
nerifolia. *Water Gum-tree*
Triteleia. *Triplet-Lily*
laxa. *Ituriet's Spear*
lilacina. *Lilac star-flower*
Murrayana. *Murray's Star-flower*
uniflora. *Spring Star-flower*
Triticum. *Wheat, Wheat-grass*
æstivum. *Spring or Summer Wheat*
amyleum. *Amel Corn, Starch Wheat*
caninum. *Awned Wheat-grass, Dog's-tooth-grass*
Cevallos. *Trigo Moro Wheat*
compositum. *Mummy Wheat, Pharaoh's Corn*
dicoccum. *Emmer Wheat, two-grained Wheat*
durum. *Hard-grained Wheat*
hybernium. *Winter or Lammus Wheat*
monococcum. *Single-grained Wheat, St. Peter's Corn*
polonicum. *Polish Wheat*
repens. *Couch, Couch-grass, Couch-wheat, Dog-grass, "Felt," Lagoon-grass, of N. America, Quack-grass, Scotch-grass, Shelly-grass, Shelly-grass, Squitch-grass*
sativum and vars. *Common or Soft-grained Wheat*
sativum var. compactum. *Square-eared Wheat*
Spelta. *Dinkel, or Spelt-, Wheat*
turgidum. *Plump-grained Wheat*
Tritoma. *Club-lily, Torch-lily*
Burchelli. *Burchell's Torch-lily*
grandis. *Tall Torch-lily*
media. *Intermediate Torch-lily*
pumila. *Dwarf Torch-lily*
Rooperi. *Rooper's Torch-lily*
Uvaria. *Common Torch-lily, Flame-flower, Red-hot-poker Plant*
Uvaria var. glaucescens. *Glaucous-leaved Torch-lily*

Tritoma Uvaria var. grandiflora. *Large-flowered Torch-lily*
Triumfetta. *Paroquet-Bur, of Jamaica, W. Indian Bur-weed*
Lappula. *Great-wort*
semitriloba. *Bur-bark-tree*
Trochocarpa (Decaspora) laurina. *Australian Beech-cherry or Brush-cherry*
thymifolia. *Tasmanian Wheel-seed*
Trollius. *Globe-flower, Globe Ranunculus, Troll-flower*
asiaticus. *Asiatic Globe-flower*
europæus. *Bolts, Common Globe-flower, Golden Ball, Lapper, Lopper, Lockin, or Luckin Gowen, Troll-flower*
Fortunei. *Fortune's Globe-flower*
japonicus. *Japanese Globe-flower*
japonicus fl.-pl. *Double Japanese Globe-flower*
laxus. *American Globe-flower, Spreading Globe-flower*
Loddigesi. *Giant Globe-flower*
napellifolius. *Napellus-leaved Globe-flower*
Tropæolum. *Garden Nasturtium, Indian Cress, Yellow Larkspur*
aduncum (T. peregrinum). *Canary-bird Nasturtium, Canary-creeper*
atrosanguineum. *Common Garden Nasturtium*
majus. *Tall Nasturtium*
minus. *Dwarf Nasturtium*
pentaphyllum. *Five-leaved Indian Cress*
polyphyllum. *Yellow Rock Indian Cress*
speciosum. *Flame-flowered Nasturtium or Indian Cress*
tuberosum. *Peruvian Nasturtium, Tuberos-rooted Nasturtium*
Trophis. *Bamoon-tree*
aspera. *Paper-tree, of Siam*
Tsuga (Abies) *Mertensiana and T. Pattoniana.* *Hemlock Spruce, of California*
Tuber æstivum. *English Truffle*
album (Choiromyces meandriformis). *White or False Truffle*
cibarium. *Earth-ball, Truffle (true)*
magnatum. *Piedmontese Truffle*
melanosporum. *French Truffle*
rufum (Melanogaster variegatus). *Red Truffle*
Tulipa. *Tulip, Dalmatian Cap*
biflora. *Two-flowered Tulip*
bithynica. *Bithynian Tulip*
Celsiana. *Cel's Tulip, Dwarf Yellow Tulip*
Clausiana. *Clausius's Tulip*
elegans. *Elegant-flowered Tulip*
erythronioides. *Dog's-tooth-Violet Tulip*
fragrans. *Sweet-scented Tulip*
fulgens. *Brilliant Tulip*
Gesneriana and vars. *Common Garden Tulip*
Gesneriana var. laciniata. *Parrot Tulip*
Greigi. *Greig's Tulip, Turkestan Tulip*
Hageri. *Hager's Tulip*
illiensis. *Cowslip-scented Tulip*
Kolpakowskyana. *Kolpakowsky's Tulip*
Oculus-solis. *Sun's-eye Tulip*
Orphanidesi. *Orphanides's Tulip*
persica. *Persian Tulip*
præcox. *Large Sun's-eye Tulip*
pulchella. *Dwarf Rosy-purple Tulip*

Dictionary of English Names of Plants.—Part I., Latin-English.

and one from the Latin-English parts. Its object is a book of reference to all interested in the

* "A Dictionary of English Names of Plants," applied in England and among English-speaking people to cultivated and wild plants, trees, and shrubs. By William Miller. In two parts, English-Latin and Latin-English. London: John Murray, Albemarle Street.

nomenclature of plants, which is sure some day to be attained. It is not likely that a people, whose tongue is now the master one of the civilised world, will for ever go on speaking, as they do at present, of familiar things in a dead language.

ÆCHMEAS.*

EVERYWHERE there are evidences that a growing interest is being taken in Bromeliaceous plants—an interest that should be encouraged, leading, as it inevitably must, to the introduction into English gardens of a large number of beautiful and

horticulture prevails has hitherto been practically without Bromeliads as ornamental indoor plants.

Next to Billbergias, the Æchmeas are the most useful among genera comprised in the Bromeliad Order, although there are several species of Tillandsia and of Vriesia which are of exceptional

cultivated species I am largely indebted to Mr. Baker's monograph, prepared from living specimens in the Kew collection, and, therefore, more easily understood by horticulturists than any account could be when based on only herbarium specimens. The habit of Æchmeas is generally vasiform (*i.e.*, the leaves clasp tightly by their bases, so as to form a deep cup or vase) with long, leathery, green, spine-margined leaves, and central flower-scapes. In most of the species the flower-scape is clothed with large, bright-coloured bract-leaves, which are often much more ornamental than the flowers themselves. These latter are much smaller than those of Billbergia, and are red-purple, blue, yellow, or nearly white. Like all the Bromeliads, Æchmeas are natives of distinctly tropical countries, where, either clothing tree trunks in exposed sunny places, or growing upon the ground, they are often met with in abundance. In the accompanying illustration a rare and interesting species, viz., *Æ. paniculata*, is shown growing on the ground in a rocky, moist situation. This species is not known to be in cultivation, nor has it been seen wild for many years. It is one of the handsomest of the genus, and should it be again found in the Peruvian Andes, where it was first discovered by Pavon in 1794, its introduction into English gardens would be most desirable.

Æ. BRACTEATA.—A common plant in the West Indies, growing upon trees in sunny positions. Leaves spiny, with broad, sheathing bases, lorate. Height of plant, 2 feet. Flower-scape $1\frac{1}{2}$ feet long, three parts of which are clothed with bright red sheathing bracts 3 inches to 4 inches long, the fourth and upper part bearing a branching panicle of numerous small yellow flowers. A large boat-shaped bract subtends and half envelops the lowermost flower-branches. A gorgeously coloured plant, owing its attractions chiefly to the brilliant red of the large bracts and the contrast between them and the green foliage and the bright yellow flowers. (Syn., *Billbergia exudans*) *Lodiges' Cabinet*, t. 801.

Æ. DISTICHANTHA.—A Brazilian species, with long ensiform foliage, the base of which is broad and sheathing, margins spiny, back of leaves striped with grey. Height of plant, $2\frac{1}{2}$ feet. Flowers in branching panicles about 3 feet long, much crowded, and subtended by bracts; the latter and Pea-like flower-buds bright crimson; flowers when open purplish, almost clear blue on first opening. The flowers are succeeded by berries of a bright red tipped with purple, which remain fresh and attractive for several weeks. (Syn., *Billbergia polystachya*.) *Botanical Magazine*, t. 5447.

Æ. VEITCHI.—A species from New Grenada, introduced by Messrs. Veitch in 1874, by whom it was distributed under the name of *Chevalliera Veitchi*. A small plant of erect vasiform habit, with dark green, channelled, spiny-edged foliage, 18 inches high. Flowers on a stout scape, which is about as tall as the foliage and erect, crowned by a compact head or cone of pointed bracts and small flowers, bright scarlet in colour. *Botanical Magazine*, t. 6329.

Æ. MARLE-REGINÆ.—One of the handsomest of the genus when in flower. In habit it resembles the last described species, differing in the leaves spreading more and in the flower-scape being clothed with bright red reflexing bract leaves, which are 4 inches long by 1 inch in width, margined with spines. The flowers are collected in a cone-like head, the calices being white and urn-shaped, through which the small egg-shaped violet-coloured corolla protrudes. It is a native of Costa Rica, where it is used at the feast of Corpus Christi for the decoration of the altars in the churches. Its local name is *Flor de Santa Maria*, from which the scientific name has been taken. Introduced by Messrs. B. S. Williams & Co. The richly coloured bracts, which spring from a scape covered with white tomentum and crowned with a cone of white and violet, are strikingly attractive, whilst in the purple-tinted foliage there is sufficient beauty to give this plant a charm even when not in flower. The flowers are usually borne in the spring, about April. *Botanical Magazine*, t. 6411.

and Foreign Plants, Trees, and Shrubs.

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Fog. A general term in the north of England for Moss; also applied to the second crop of Grass, or aftermath
Yorkshire. *Holcus lanatus*
Fog-fruit. *Lippia (Zapania) lanceolata*
Fold Meadow-grass. See Fowl-grass
Fool's-Cicely. *Æthusa Cynapium*
Fool's-Parsley, Common. *Æthusa Cynapium*
Fine-leaved. *Æthusa fatua*
Fool's-Watercress. *Helosciadium nodiflorum*
Forbidden Fruit. Small-sized Shadlocks (*Citrus decumana*)
Forcible Plant. An old name for Hare's-ear
Fore-bid, or Fore-bitten Merc. *Scabiosa succisa*
Forget-me-not. *Myosotis palustris* and, generally, the genus *Myosotis*. Also an old name for *Ajuga Chamæpitys*
Alpine. *Myosotis alpestris (M. rupicola)*
American. *Myosotis verna*
Azorean. *Myosotis azorica*
Cape. *Aechusa capensis*
Chatham Island. *Myosotidium nobile*
Colour-changing. *Myosotis versicolor*
Creeping. *Omphalodes verna* and *Myosotis repens*
Early. *Myosotis dissitiflora (M. montana)*
Early Hill. *Myosotis collina*
Field. *Myosotis arvensis*
Indian. *Quamoclit vulgaris*
Long-flowering. *Myosotis semperflorens*
Mountain. *Myosotis rupicola*
Rock. *Omphalodes Lucilia*
Tongue-leaved. *Myosotis lingulata*
Wood. *Myosotis sylvatica*
White-flowered Early. *Myosotis dissitiflora var. alba*
Fork-Moss. See Moss
Fountain-Plant. *Amarantus salicifolius*
Fountain-tree. *Cedrus Deodara*
Four-leaved grass. *Paris quadrifolia*
Four-o'clock flower. *Mirabilis dichotoma*
Californian. *Mirabilis californica, M. multiflora*, and *M. Greenei*
Fowl-grass, or Fold Meadow-grass. *Poa trivialis*
Fox-bane. *Aconitum Vulparia*
Fox-chop. *Mesembryanthemum vulpinum*
Fox-Geranium, or Fox-Grass. *Geranium Robertianum*
Fox-glove, Blue. *Campanula Trachelium*
Common. *Digitalis purpurea*
Cream-coloured. *Digitalis oenroleuca*
Downy False. *Gerardia flava*
False. The genera *Gerardia* and *Dasy-stoma*
Fern-leaved False. *Gerardia pedicularia*
Great Yellow. *Digitalis ambigua*
Ladies'. *Verbascum Thapsus*
Large-flowered. *Digitalis grandiflora*
Mullein. *Digitalis Thapsi* and *Seymeria macrophylla*
Sierra Morena. *Digitalis Mariana*
Smooth False. *Gerardia quercifolia*
W. Indian. The genus *Phytolacca*
Willow-leaved. *Digitalis obscura*

Fox-glove, Woolly. *Digitalis lanata*
Yellow. *Digitalis lutea*
Fox-grass. See Fox-Geranium
Fox Rose. *Rosa spinosissima*
Fox's Brush. *Centranthus ruber*
Fox's-brush Saxifrage. See Saxifrage
Fox-tail. *Lycopodium clavatum*
Fox-tail-grass. *Alopecurus pratensis*
Fox-tailed Asparagus. *Equisetum maximum*
Fraghan, Frocken, or Frughan. *Vaccinium Myrtillus*
Frail Rush. *Scirpus lacustris*
Framboise, or Framboys. *Rubus Idæus*
Franck. An old name for Milk-wort
Frangipani-shrub. *Plumeria alba* and *P. rubra*
Frankincense, Rosemary. *Cuchrys Libanotis*
Frankincense, or Olibanum, Tree. *Boswellia Carteri* and various other species
Frankincense-tree, Common, or Gum-Thus-tree. Various species of Pine-trees
Fraxinell. *Polygonatum multiflorum*
Fraxinella. *Dictamnus Fraxinella*
Caucasian. *Dictamnus caucasicus*
White-flowered. *Dictamnus Fraxinella var. albus*
Free-stone. A term applied to some varieties of Peaches and Nectarines, the flesh of which parts freely from the stone. (See Cling-stone.)
Freiser. An old name for the Strawberry-plant
French Asparagus. *Ornithogalum pyrenaicum*
French-Beans. *Phaseolus vulgaris*
French-Berries. The fruit of *Rhamnus infectorius* and *R. catharticus*
French-Cotton. *Calotropis procera*
French-Cowslip. *Primula Auricula*
French-Furze. *Ulex europæus*
French-Grass. *Onobrychis sativa* and *Phalaris arundinacea variegata*
French Honeysuckle. *Hedysarum coronarium*
French-Lavender. *Lavandula Stoechas*
French-Lungwort. *Hieracium murorum*
French-Nut. Another name for the Walnut
French-Peas. An old name for garden Peas
French-Sorrel. *Oxalis Acetosella*
French-Sparrowgrass. *Ornithogalum pyrenaicum*
French-Wheat. *Polygonum Fagopyrum*
French-weed. *Commelina caryenensis*
French-Willow. *Epilobium angustifolium*
Fresh-water-Soldier. *Stratiotes aloides*
Friar's-Caps. *Aconitum Napellus*
Friar's-Cowl. *Arum Arisarum* and *A. maculatum*
Friar's-Crown. *Carduus eriophorus*
Frijol-bean. *Phaseolus Hernandezii*
Fringe, Water. *Limnanthemum (Villarsia) nymphæoides*
Fringe-flower, Graham's. *Schizanthus Grahami*

Dictionary of English Names of Plants.—Part II., English-Latin.

eminently useful plants of easy cultivation. England alone among European countries where

beauty. Of the genus Æchmea nearly 60 species are described by Mr. Baker in his recent monograph of the genus, of which about a dozen are known in gardens both in England and in Continental countries. For the following descriptions of these

* For details regarding the cultivation of Æchmeas see article by Mr. Baines in THE GARDEN, Vol. IX., p. 51.



ECHMEAS AT HOME.

Æ. GLOMERATA.—A strong growing species, with leaves 2 feet long and 4 inches broad, channelled, with broad clasping bases and spine-clothed margins. Height of plant about 2 feet, with a spread of about a yard in diameter. Flowers on an erect branching spike 2½ feet long, the flowers crowded together on short branches of cone-like aspect; bracts long, spine-tipped, bright scarlet; flowers small, violet coloured. This species was in flower at Kew a few weeks ago. The habit of the plant is such as would preclude its cultivation where space is limited, but in large houses it is worth a place even when not in flower. *Botanical Magazine*, t. 5668.

Æ. CÆRULESCENS.—A plant well known in gardens by the names given below. It is a compact species of medium size, with leaves about 1½ feet long, 2 inches wide, and small prickles along the margins. Flower-scape as long as the leaves, erect, with a few pale sheathing bracts. The flowers are in a branching panicle, somewhat crowded, small, with very minute flower-bracts. The flowers are succeeded by deep blue and white berries, which remain in beauty for some weeks; in fact, the berry-bearing stage is the most attractive one in this plant. A native of South America. (Syns., *Æ. cœrulea*, *Lamprococcus cœrulescens*, *Hoplophytum cœrulescens*.) Regel's *Gartenflora*, 1871, t. 694.

Æ. MELINONI.—A species with bronzy foliage about 18 inches high, channelled, and prickly-margined. Flowers on an erect branching spike as long as the foliage, the branches bearing numerous small, crowded, deep red, rose-tipped flowers, which scarcely open more than sufficient to allow the style to protrude. A native of French Guiana. One of the best known amongst cultivated *Æchmeas*. *Botanical Magazine*, t. 5235.

Æ. CÆLESTIS.—In habit this resembles the species last described. It is distinguished by the numerous erect purple-tipped bract leaves which clothe the flower-scape, by the wholly red bracts subtending the flowers, by its white woolly calices, and by the rather large bright blue corolla, which is half an inch long. A distinct and beautiful species, and well known in cultivation for many years. Native of the Upper Amazon.

Æ. FASCIATA.—An erect vase-shaped plant, the upper portions of the foliage reflexed, the whole being banded with grey, as in some of the *Billbergias*. The scape is erect, whitish, mottled with red, and bearing a few pale red bract-leaves. The flowers are in a dense cone-like head about 4 inches long and broad, the flower-bracts, which are long, pointed, and serrated, being bright pink, and almost hiding the small pink flowers. Rio Janeiro. (Syns., *Æ. Leopoldi*, *Billbergia fasciata*, *B. rhodocyanca*.) *Botanical Magazine*, t. 4883.

Æ. CALYCVLATA.—Plant not more than a foot high, with green, recurved foliage, minutely toothed along the margins. Scape about 9 inches long, bractless, and bearing a cone-like head of numerous bright yellow flowers, very pretty and distinct, and lasting for about a month. Usually flowers in winter. There are several plants of it in flower at Kew at the present time. (Syns., *Hoplophytum calyculatum*, *Macrochordium luteum*.) Regel's *Gartenflora*, 1867, t. 514.

Æ. PINELIANA.—In habit this species resembles *Æ. fasciata* except that instead of the leaves being banded with grey they are banded with dark brown. The scape is erect, and clothed with large crimson sheathing bract-leaves; flowers in a compact head, small, round, bright yellow, their bases surrounded with a whitish wool. Rio Janeiro. (Syns., *Echinostachys Pineliana*, *Macrochordium Pinelianum*.) A plant well known in cultivation. *Botanical Magazine*, t. 5321.

Æ. LINDENI.—An erect vasiform species with channelled spine-margined green leaves, and a scape about 18 inches long. The flowers are borne in a dense head or cone, with lanceolate reddish bracts, the colour of the calyx being deep orange, that of the petals lemon-yellow. A native of Santa Catherina. Cultivated in 1864, and well known in gardens at the present time. (Syn.,

Hoplophytum Lindeni.) *Botanical Magazine*, t. 6565.

Other cultivated, though somewhat rare, species are *Æ. aurantiaca* (syn., *Canistrom*) with leaves a foot long, and orange-yellow flowers arranged in a dense head; *Æ. Legrelliana*, with bright red bracts and red-purple flowers; and *Æ. Ortgiesi*, with red-purple flowers in a dense oblong head. P.

SOCIETIES.

ROYAL HORTICULTURAL.

JANUARY 13.

OWING to the coldness of the weather there was but a scanty display of exhibits at this the first meeting of the year.

First-class certificates were awarded to

ODONTOGLOSSUM SCHROEDERIANUM, a very fine form of *O. crispum*, belonging to the guttatum section of varieties. The flowers are not so remarkable for size as for colour, the white sepals and petals together with the lip being profusely blotched with a bright maroon-chocolate tint, rendering the flowers extremely showy. The plant which Mr. Ballantine showed from Baron Schroeder's garden at The Dell, Egham, bore fourteen flowers thickly set in pairs on one spike.

BARKERIA ELEGANS.—One of the loveliest and rarest of the Mexican *Barkerias*, all of which test the skill of orchidists to cultivate successfully. The flowers of *B. elegans* are larger than those of any other; the sepals are mauve-pink and the broad flat lip is of a brilliant amethyst-purple edged with white. It was shown from Mr. Philbrick's garden, Oldfield, Bickley, by Mr. Heims.

AMARYLLIS COMTE DE GERMANY.—A new variety of the beautiful race of hybrid *Amaryllises*, obtained by intercrossing the evergreen *A. reticulata* with the deciduous varieties. It is even more beautiful than its congeners, Mrs. Garfield, Mrs. W. Lee, and others. This new variety has flowers of about the same size and shape as the others of the race, but the colour is richer and deeper, being of a rosy carmine flushed with purple. They have the same beautiful network of veining and each petal has a broad band of white. The perpetual flowering tendency of this race renders it very valuable. Mr. B. S. Williams, who has introduced these hybrids to cultivation, exhibited a fine plant bearing four flowers on one spike.

CYCLAMEN ALBERT VICTOR.—A variety remarkable for the deep crimson colour of its flowers—one of the darkest yet raised. There is a brilliancy even about the dark colour of this variety which is absent in the others. Shown by Mr. R. Clark, Twickenham.

CENTROPOGON LUCYANUS.—This old and well-known showy stove plant was shown beautifully by Messrs. Cannell and Son, to whom a certificate was awarded. Its value as a decorative plant during winter was admirably shown by these plants.

ORCHIDS comprised the chief exhibits, and some interesting kinds were shown. Sir Trevor Lawrence showed about a dozen flowering plants of a hybrid *Cypripedium* which he has raised between *C. Spicerianum* and *C. insignis punctatissimum*. This hybrid almost exactly corresponds with the hybrid *Cypripedium* which Messrs. Veitch raised and named *C. Leeanum*, the parents of which were *C. insignis* Maulei and *C. Spicerianum*. The flowers of Messrs. Veitch's plant are finer; the dorsal sepal being broader does not reflex, and is higher coloured and more copiously spotted. Both are undoubtedly great gains to the list of beautiful winter Orchids. Baron Schroeder exhibited flowers of a superb variety of *Cattleya Percivaliana*, one of the finest we have seen, the labellum being particularly remarkable for breadth and brilliant colouring. The Baron is the fortunate possessor of a large mass of this exceptional variety. He also showed a plant of a very handsome and distinct *Masdevallia* named *Shieldsiana*; it is one of the *Chimara* section, but differs from all others in the colour, which is a

kind of maroon-purple spotted on a white ground. Mr. Vanner, of Camden Wood, Chislehurst, sent plants of the pretty little *Masdevallia* *Armini* and a fine flowering plant of *Odontoglossum Jenningsianum* *superbum*, which somewhat resembles *O. crispum*, but has more of a yellow tint in the flower. A very beautiful variety of *O. crispum* named *Josephine* was shown by Mr. Measures, Woodland House, Streatham. It seems to be midway between *O. Andersonianum* and *O. crispum*. The blotches on the sepals, being very large and rich, render them very attractive. A group of interesting Orchids was shown by Mr. H. James, Castle Nursery, Lower Norwood. It included a long spike of the extremely curious and beautiful *Renanthera* (*Vanda*) *Lowi*, commonly called the Necklace Orchid. About three dozen flowers were borne on the spike, which was several feet in length. Mr. James also had a plant of a grand variety of *Odontoglossum crispum*, named *Trianae*, the flowers of which were about 4 inches across, with pure white and very broad lateral petals, faintly blotched sepals, and a broad lip. There were fourteen flowers on the spike. Another interesting, though not very showy, kind was *O. Dormannianum*, with flowers in the way of *O. pardinum*, and among the other plants was a beautiful variety of *Cattleya chocoensis* named *amœna*, having flowers with broad, pure white sepals and lip, the latter having a conspicuous blotch of amethyst upon it, which set off to advantage the purity of the other parts. A large-flowered variety of *Sophranitis grandiflora*, named *major*, was also shown, the flowers being nearly 3 inches across.

Among other plants of interest shown were a few fine new *Cyclamens* from Mr. Clark and Messrs. Page, Teddington. Those from the latter included one named *Acme*, a fine rose-pink sort, and *Excelsior*, a good white. They also showed a double white (*alba plena*), but many would consider it a single white spoilt. Double *Cyclamens* are surely not wanted. Among a basketful of *Tree Carnations* sent by Messrs. Hooper were such beautiful kinds as *Irma* and *Dr. Raymond*, the latter like the old *Cloua* *Carnation*. Two useful late *Chrysanthemums* came from Messrs. Cannell. They were Mrs. Charles Carey, with large semi-double white flowers, and *Ceres*, a large Japanese sort of a delicate blush white. Messrs. Cannell also showed plants of the old *Cineraria cruenta* and the same species "Improved," the latter having brighter and larger flowers. A white *Anemone*-flowered *Chrysanthemum* called *Late Queen* was shown by Mr. Child, Garbrand Hall, Ewell, which is useful as a late flowerer.

Fruit.—The chief exhibit was an extremely fine collection of Apples in excellent preservation, sent by Mr. Ingram from the Belvoir Castle orchards, near Grantham. The collection numbered about half a hundred dishes, representing as many varieties, and not a faulty dish was to be seen among them. Mr. Ingram stated that the Belvoir orchards are on *lias* clay, and that last year were very productive. As Leicestershire was not well represented at the congress in 1882 it may be the impression that it is not an Apple county, but Mr. Ingram apparently wishes to dispel this supposition. As this was such a thoroughly representative collection of late-keeping Apples, it may be useful to some to know their names. Among kitchen sorts the most conspicuous were:—

Gloria Mundi	Betty Geeson
Blenheim Orange	Tower of Glamis
Ryder	Mère de Ménage
Bramley's Seedling	Hambleton Deux Ans
Warner's King	Frogmore Prolific
Lord Derby	Wellington or Normanton
Beauty of Kent	Wonder
Yorkshire Greening	Prince Albert
Peasgood's Nonsuch	Peach App e
Court of Wick	
Pomme de Neige	
Golden Russet	
Margit	
Ribston	

Dessert sorts.

Old Nonpareil
King of the Pippins
Cox's Orange
Besspool
Golden Winter Pearmain

The kitchen sorts were all remarkable for their large and uniform size, and most of the dessert kinds formed very handsome dishes. A bronze medal was deservedly awarded to Mr. Ingram.

Among seedling Apples sent was one from Mr. R. Smith, Worcester, and another from Messrs. Elsdon & Co., Waterbeach. The latter was a fine handsome fruit, and the committee thought well of it. Mr. Denning, of Norbiton Lodge, Kingston, showed samples of his new early Cabbage.

Scientific committee.—Sir J. D. Hooker in the chair.

Sclerotoids in Potatoes.—Communications were read from Mr. A. Stephen Wilson, Professor Trail, and Mr. W. G. Smith on these bodies. Professor Trail completely confirms Mr. Wilson's conclusions that the clear oval body coated with calcium oxalate is protoplasmic, in that it absorbs magenta. Mr. Smith has renewed his experiments with results still more confirmatory of Mr. Wilson's views.

Lemons with seeds germinating in situ within the fruit.—Mr. Boulger mentioned instances of this, similar to what occurs in *Pernettya mucronata* and *Rhizophora Manglesii*.

Old floral plates.—Dr. M. T. Masters exhibited twelve coloured plates of plants cultivated in Furver's nursery, occupying the site of the Royal Horticultural Gardens, South Kensington, dated 1730. They were drawn by Peter Casteels, and were remarkable for the paucity of species, and showed little advance upon those known to Gerard and Parkinson in 1630.

Red-spotted Potatoes.—A communication was read from Mr. Hawkes, Royal Bath Hotel, Bournemouth. He corroborates the experience of others (reported at the last meeting), that this disease is most prevalent on light sandy soils, and that he has been familiar with it for some years. *Magnum Bonum* was slightly affected in 1881, but the produce from seed Potatoes saved from that variety was not injured at first; but as the crop began to ripen the spot began to get worse, and many Potatoes were affected that year. Early Rose, however, was not affected. This year he recommenced with fresh seed of Schoolmaster, Sutton's Ringleader, Myatt's Ashleaf, and *Magnum Bonum*, but he could not say which was the worst.

Ghost moth and Peonies.—Mr. McLachlan observed that an instance had come before him of the caterpillar of this moth attacking the stems of the Peony.

Double Daffodils.—Dr. M. Foster moved that the committee appointed last May should be re-appointed to examine into the question of the origin of double Daffodils, and that the committee should consist of Dr. Masters, Mr. Baker, Mr. Barr, Rev. C. W. Dod, Mr. Brockbank, Rev. G. Engelheart, Hon. and Rev. Mr. Boscawen, Mr. Burbidge, and Dr. Lowe as secretary. Dr. M. Foster was requested to communicate with Dr. Lowe upon the method of procedure to be adopted.

Crocus speciosus, rapid growth of.—Dr. Lowe described this plant as growing in his garden, some coming up through a plant of *Dianthus cæsius*, and remarked that at 11 a.m. one day in September last no signs of the Crocus were visible, but at 8.30 a.m. on the following morning four had appeared through the patch of *Dianthus* and five or six surrounding it. The former were from 4 inches to 6 inches in height, and the average height of those in the open was 6 inches. It was suggested that this rapid extension was due more to expansion of cells by turgescence rather than any actual growth in so short a time.

Cedrus Deodara.—Mr. Ford, gardener to W. E. Hubbard, Esq., Leonardlee, sent sections of a tree showing discolorations within and much fungoid mycelial growth below the bark. It was generally thought by the committee that the death of the trees—two or three being lost during the last twelve years, from 15 feet to 35 feet high—was due to failure of proper nourishment, the soil being of a sandy nature. Mr. Murray was requested to examine and report upon the fungoid growth.

Vanda Lavi.—Mr. H. James, of the Castle Nursery, Lower Norwood, forwarded a very fine pike of this Orchid, exhibiting basal flowers of a rich yellow and spotted, all the rest being of the

normal red colour, excepting one blossom of an intermediate character. It has been figured and described in Warner's "Orchidaceæ," and Dr. Reichenbach found the yellow flowers to be identical sexually with all the rest, and not monœcious, as in *Cycnoches*.

Orchids, vegetative multiplication of.—A communication was received from Mr. Webster on this subject, in which the author described the well-known buds produced on the branches of the rootstock, and remarked upon them as explaining the sudden disappearance and reappearance of certain kinds of Orchids. He also described *Epipactis palustris* as being provided with vegetative buds much in the same way, but in *E. ovalis* the underground growth is quite different from that of *E. latifolia*, of which species it is considered a variety. The new shoots appear close to the base of the old one, instead of at the end of a sucker, as in *E. latifolia*, and this peculiarity is constant under cultivation as well as in the wild state.

National Auricula and Carnation and Picotee Societies (Southern Sections).—At a meeting of the committees of these societies, held at South Kensington on Tuesday last, the rules for exhibitors were revised and the schedules for both societies were ordered to be printed. Judges for both societies were also appointed, and the following regulations for the exhibitions adopted: 1. An exhibitor can win one prize only in one class, except in the classes for seedlings, in which there is no limit; and in single specimens he may not exhibit more than two in each class, but may win two prizes with both exhibits. 2. At the time when the judges commence their work, all persons present save the officers and their assistants shall retire from the exhibition. The decision of the judges shall be final. 3. All plants and flowers shown in the schedule classes must have been the *bona fide* property of the exhibitor or his employer at least two months previous to the date of the exhibition. 4. Plants and flowers submitted for certificates must be staged separately from collections, in a place allotted by the committee, and shall be adjudicated upon by the judges only, save that the judges may, at their discretion, obtain the assistance of other persons in making their decisions. 5. No person shall be allowed to compete as an amateur who publishes a list of plants for sale, or who advertises them in any form whatever, with the exception of seedlings of his own raising. The treasurer was instructed to apply to Mr. E. S. Dodwell for a statement of the accounts of the two societies, and for a remittance of the balance of cash in his hands belonging to the respective societies.

National Chrysanthemum Society.—The annual general meeting of this society will be held on Monday evening next, January 19, at the Old Four Swans, 83, Bishopsgate Street Within, City. The president, Mr. E. Sanderson, will take the chair at seven o'clock precisely. The principal business will be to receive report and balance-sheet for 1884, to elect officers and committees for the ensuing year, and also to adopt schedule of prizes for the next exhibition to be held at the Royal Aquarium, Westminster, on Wednesday and Thursday, November 11 and 12.

QUESTIONS.

5308.—**Peacocks and bulbs.**—Are peacocks destructive to bulbs, flower-beds, or in the garden in any way? Perhaps some of your readers will kindly say.—J. B.

5309.—**Lawn sand and Pæonies.**—Will some of your correspondents kindly say how much of Watson's lawn sand is required to destroy weeds in a tennis ground 75 feet by 36 feet?—I mean, of course, for one application. I see a list of Tree Pæonies in last number. Can M. Max Leichtlin recommend a really good rose-coloured one—in fact, one quite distinct from the common kind?—J. H. T.

5310.—**Water Lilies.**—I am building a conservatory about 21 feet square, with a stage in the middle, under which I wish to have a tank to grow Water Lilies in. I shall be much obliged for information as to the best and most economical heating apparatus to heat both the water and the conservatory; or would the temperature of the conservatory alone heated be sufficient to warm the water, so that I could grow tropical Lilies in the tank?—W. D. S.

GARDENERS' ROYAL BENEVOLENT INSTITUTION.

At the general meeting of this institution, held at the Bedford Hotel, Covent Garden, on Wednesday last—Mr. E. Tidswell in the chair—the statement of accounts printed below was passed. The Duke of Westminster was elected president of the institution, and the following candidates pensioners, viz.: William Birkett, Sosgills, Windermere; Richard Hawkins, Malvern; William Archer, Stratford, Essex; Thomas Best, Upper Clapton; Robert Pryor, Water Lane, Brixton; Martha Swansborough, Bramley, Guildford; George Urquhart, Glasgow; Sophia Ware, Midhurst, Sussex. The following were placed on the pension list without election, viz.: Thomas Browne, Tooting; Hannah Cheall, Lymington; and Esther Dominy, Yeovil.

STATEMENT OF RECEIPTS AND PAYMENTS FOR THE YEAR ENDING DECEMBER 31, 1884.

DR.	£	s.	d.	£	s.	d.
To Balance, 1883	366	6				
Annual subscriptions	1189	2	6			
Donations	786	15	1			
Advertisements	53	11	0			
	£2029	8	7			
Dividends on Stock	456	15	0	2436	3	7
				£2852	9	11

Stock in Three per Cent. Consols, £15,950.

CR.	£	s.	d.
By Pensions	1372	0	0
Secretary's salary	160	0	0
Printing	121	1	6
Stationery	20	1	6
Book of cheques	2	1	8
Hire of committee room	5	0	0
Advertising	8	9	0
Expense of annual dinner	74	2	8
Postages, travelling expenses, and sundry petty expenses	100	19	9
	£1863	16	1

Purchase of £600 Consols	602	5	0
	£2466	1	1

Balances, viz.:	£	s.	d.
With Treasurer at bankers'	374	15	11
With Secretary	11	12	11
	386	8	10
	£2852	9	11

BALANCE SHEET OF THE PENSION AUGMENTATION FUND FOR THE YEAR 1884.

DR.	£	s.	d.	£	s.	d.
To Balance, 1883				13	13	2
Amount collected	1762	4	3			
Dividends on £2400	0	0	0			
Victoria Bonds	91	0	0			
Advertisements	3	10	0			
	1859	14	3			
	£1873	7	5			

£2900 Four per Cent. Victoria Bonds deposited at Messrs. Glyn, Mills & Co.

CR.	£	s.	d.	£	s.	d.
By purchase of £1500 Victoria Four per Cent. Bonds				1552	15	0
Printing	22	5	3			
Stationary, certificates, &c.	7	5	10			
Postages, circulars	62	4	2			
Honorarium to secretary	88	2	0			
	179	17	3			
	1732	12	3			
Balance at bankers	140	15		£1873	7	5

Vine book (C. R.)—Apply to the nearest bookseller, who can easily get it for you.

Renalemia nutans.—Can you give me information as to what this plant is? I am told that it is a gorgeous stove plant, but I cannot find the name in any catalogue or book.—J. EASTER.

. Renalemia nutans is the same as *Alpinia nutans*, a very handsome East Indian plant belonging to the Ginger family. It has growth similar to that of *Hedychium*, and bears on the top of leafy stems several feet high large drooping clusters of flowers, white and orange-red. It is an easily grown stove plant.—ED.

Names of plants.—*G. S.*—1, *Epidendrum cochleatum*; 2, *Brassavola speciosa*; 3, species of *Crassula*; 4, *Toxicophila spectabilis*. We cannot help you to name the two sorts of Oranges you send.—*T. B.*—1, *Dendrobium moniliforme*; 2, *D. crassinode*; 3, *Epidendrum ciliare*; 4, *Ada aurantiaca*.—*R. S.*—*Billbergia nutans*.—*Devon*.—1, *Helleborus niger* (typical); 2, *H. niger altifolius*; 3, *H. niger angustifolius*. We cannot name the other.—*T. P.*—1, *Lycaste lanipes*; 2, *L. aromatica*.

"This is an Art

Which does mend Nature: change it rather: but
THE ART ITSELF IS NATURE."—Shakespeare.

RENOVATING CONIFEROUS TREES.

FROM time to time accounts appear narrating the advantages which coniferous trees derive from applications of new soil to the surface of ground occupied by their roots, or by trenching in new material round the circle already occupied by them for the roots to run into, with a view to arrest a premature want of vigour which the trees exhibit, but, looking at the growth of a tree from a reasonable standpoint, that is, taking into consideration the length of time it takes to reach maturity and the proportions which it should ultimately attain, I would ask, Can such advice be set down as sound? Are not such operations manifestly devoid of enduring effects? The thousands of acres of fine old woods with which England abounds, and the countless magnificent trees that adorn the grounds round old mansions, owe their existence to forethought in providing for the embellishment of the land, and also to correct judgment evinced in choosing suitable trees where-with to effect it, by bygone generations of planters; but the least possible amount of foresight cannot fail to discern that the operations in question cannot have more than a passing influence in helping the trees so treated. If tree life was short, there might be some shadow of reason in planting kinds in places that necessitated the adoption of means of the description under notice to keep them going. But the lifetime of trees where soil and climate are suitable must be reckoned by centuries.

As a matter of course, in grounds of an ornamental character no tree should ever be planted where the presence of a tree is not required to improve their appearance, or to shut out the view of some object that it may be desirable to hide. If in tree planting these points were kept steadily in view and acted upon, there would not be much fear of the disappointing failures now to be seen in the numerous places where the selection of the kinds used shows that a liking for novelty has ruled instead of sound judgment. It may be said that if everyone had only planted such species and varieties of trees as had proved their ability to thrive in the situation selected, we should have had few, if any, beyond native kinds. But, as I have before said when speaking on the subject, by all means try all new-comers that show a chance of thriving, but confine them, until proved, to positions where their failure will not cause a gap that will take at least a considerable slice off a lifetime to fill. In half the gardens in the kingdom, from those confined to half an acre each to such as may be reckoned by scores of acres, may be seen examples of some or other of the kinds of trees for which the invigorating process is usually recommended in a condition of lingering failure whilst yet, literally speaking, they are in their infancy, although perhaps a score of years or more are lost by their inability to thrive, and even if kept going for a time by means such as those spoken of failure would only be deferred, as by the time they have got large enough to give a forecast of their natural size and character they

will be beyond the limits when such assistance can be continued. In the case of such species as *Araucaria imbricata* and *Cedrus Deodara* in the greater part of England, excepting in the comparatively few spots where the nature of the soil is such as to induce a more than ordinary cold-resisting condition, they are doomed to permanent disfigurement by the severe frosts that from time to time occur, and through such inability they are unfit for planting, except in places where the influences named favour them. Respecting other kinds of Conifers that may be hardy enough to bear uninjured our severest winters, but for which the natural soil in places is unfitted, they are equally useless. If there was any scarcity of kinds that have proved their ability to thrive where trees at all can grow fairly well, there might be some excuse for planters yielding to the temptation to introduce these unsuitable trees, but as matters stand there is none.

Other mistakes, too, are made in the treatment of trees liable to suffer in exceptionally hard winters. A very common practice is to prepare stations for them when young consisting of rich soil in considerable quantities; by the use of this strong free growth is secured, thus giving the trees a luxuriant appearance; but a hard winter comes, cold enough to send the mercury in the thermometer down to zero, and occasionally a few degrees lower, and with it goes the delusive appearance of the trees never to return, and all through the mistaken assistance given in the shape of over rich-soil. It would be difficult to devise any means more mischievous in its effects than adding anything to the natural soil calculated to induce exuberant growth in trees or plants at all susceptible to injury from low temperatures, to which our climate is subject, and more particularly is this so with trees expected to become important features in ornamental grounds. It may be said that such severe winters as injure the trees in question only come at long intervals, frequently not oftener than once in a score of years or more; this is doubtless correct, but such a consideration is a very insufficient reason for planting them. The seldomer, indeed, such unwelcome visitations occur, the more visible are their effects consequent on the larger sizes which the trees have reached.

Species of so decided a character and distinct appearance as *Araucaria imbricata* naturally cause a longing by those who are fond of trees to have them even where the conditions of soil and climate combined are not such as to give a prospect of their standing exceptionally low temperatures. In many places where this and some other trees suffer from occasional low temperatures the natural soil is quite good enough to grow them, but through its being somewhat too retentive of moisture, the growth made from year to year is too soft to endure much cold. In situations of this kind, if, instead of adding loam or compost of any kind, the ground, as far as the roots were likely to extend, had plenty of rubble, brickbats, burnt ballast, or similar material mixed evenly through it down as low as the roots were likely to descend, much good would be effected, enabling the tree to bear without injury an amount of frost that under ordinary conditions it would be unable to bear. It is needless to say that where such a course is taken there should be no half measures. Enough of the material ought to be used to give the required porosity to the soil; under such conditions the growth would be

proportionately slower, and on that account so much more to be depended on. In the southern half of England, where the land is of ordinary fair quality and where the subsoil is gravel or rock, this tree and others of a like nature rarely, if ever, fail to pass through the severest winters without the least injury. Additions to the soil, such as here suggested, that will to some extent bring it to a condition like that present naturally where trees of this description are found to continue to go on without injury from frost, is a likelier way to attain the end desired than by the use of matter that produces growth of too spongy a character to stand a trying ordeal. To say anything against such trees as those under notice may possibly be susceptible of misinterpretation, through a supposition that it implies an indifference to the desirability of having as much variety in the trees used in decorative planting as possible; but such is not the case. Absence of ability in a tree to keep on in a healthy thriving state, and of enough hardiness to stand the lowest degree of temperature to which the country is ever subject, are defects that no careful planter can overlook. Within the last forty or fifty years there has been a great increase in the number of species and varieties of coniferous trees and their allies introduced to this country, but many of them, after being tried, fail to uphold the opinions formed in their favour, or even to maintain the appearance of which the early stages of their growth gave promise. And although some amongst them, so far as can be judged by their appearance up to the present time, have turned out most acceptable additions to our hardy trees, still, taking the whole of them, good, bad, and indifferent, their presence has not been an unmixed gain, inasmuch as their numbers have been perplexing to many engaged in planting for decorative purposes, the unwary amongst whom have had reason to regret giving preference to them in prominent positions before others that had given proofs of their merits. Lessons of this kind—taught by experience dearly bought—are not likely to be forgotten or go unheeded by those who are conversant with tree life. Not a few, however, will most likely still go on planting kinds that are fashionable simply because about them there is a certain degree of novelty. T. BAINES.

The Spindle Tree.—In my recent notes from Devon (GARDEN, Dec. 27, p. 531) reference was made to the Spindle Tree (*Euonymus europæus*), which was then covered with its lovely fruit of carmine-pink, like Maltese crosses, adding a charm to the winter beauty of the Devonshire lanes. A lady has sent me the following quotation from one of the minor poems of our Poet Laureate:—

And after autumn past—if left to pass
His autumn into seeming leafless days—
Draw towards the long frosts and longest night,
Wearing his wisdom lightly, like the fruit
Which in our winter woodland looks a flower.

The poem in which this occurs is "A Dedication," and the footnote to the line in italics is "The fruit of the Spindle Tree—*Euonymus europæus*." Why should not this beautiful plant be grown in pots for winter decoration as we now grow the red-berried *Aucubas*? It would be a charming plant for Christmas decorations. I see standards of it offered for sale here and there by various nurserymen. These well fruited must be very beautiful.—WM. BROCKBANK, Jan. 17.

Golden Scotch Fir.—Miss Owen (p. 45) need be by no means dubious as to the character of this valuable acquisition being retained in trees of a large size. In a mixed Larch and Scotch Fir

plantation on the property of Sir William Verner, Bart., and but a few miles from the shores of Lough Neagh, I have often directed attention to an unusually fine specimen of this Conifer. Ten years ago it was about 16 feet in height, but since that time I have not seen it, although twigs for scientific purposes have been sent me on several occasions. Unlike the specimens mentioned by Miss Owen and "C. A. M. C." (p. 40), the one in question did not become green in summer, but at all times retained its distinct and beautiful variegation. It was a choice plant, and increased in splendour as it advanced in age.—A. D. WEBSTER.

ORCHID NOTES.

Cypripedium Spicerianum.—A distinct variety of this Lady's Slipper Orchid has been sent to us by Captain Hopegood, of Ferniebank, Bridge of Allan. Its flowers are remarkable for the high colour of the dorsal sepal. Quite a broad and deep stripe of claret runs up the middle of it, while the base of the sepal is heavily stained with the same colour. It is the highest-tinted form we have seen.

Vanda peduncularis.—In May last year I received from Ceylon a plant of *Cotonia* (or *Vanda*) *peduncularis*. It is now quite established in a teak basket hung up in a small stove, but has not yet flowered. Can any reader of THE GARDEN give me some information about *Vanilla Walkeri*, *Vanda spathulata*, *V. parviflora*, *Cymbidium bicolor*, *Liparis longipes*, *Luisia zeylanica*, *Oberonia longibracteata*, and *Josephia lanceolata*? They came with the *Cotonia*, but I cannot find their names in any book or catalogue I have.—M. P. F.

Root shoots on Phalenopsis.—In reference to Mr. Woodland's interesting note on this subject (p. 492), I may say that two instances have come under my notice recently—one on a small plant of *P. Stuartiana* in Mr. Corning's collection, and also on the same species in a select collection of Orchids belonging to Mr. Smith, of Troy, N.Y. In both instances the young plants were produced from the apex of a half-decayed root outside of the baskets. Not having observed or heard of its occurring in any other variety of *Phalenopsis*, I think it must be peculiar to *Stuartiana*. Young plants are often produced on flower-spikes, and I have occasionally observed suckers on the roots of *Cypripediums*.—F. GOLDRING, *Kenwood, Albany, N.Y.*

Winter-flowering Orchids.—What a charming effect a few well-bloomed Orchids produce at this time of year. My impression is that their singularity of form and flower as well as grace and beauty is only fully realised when they are seen in companionship with fine-leaved and flowering plants of other kinds. Looking at some small, but nicely bloomed plants of *Odontoglossum Alexandræ*, *Calanthe vestita*, and *Cypripediums* growing in a general, but well varied collection of plants in Sir John Ellis' garden at Byfleet the other day, I could not but think that many fail to realise the fact that in this way they might invest their warm houses with an additional charm at this dreary season of the year. The *Odontoglossums* are growing in a span-roofed house devoted to a great measure to fine-leaved decorative plants, and wherein *Callas*, *Cyclamens*, and other flowering plants are gently brought along into early bloom. Therefore, they do not get special accommodation, but get about the same atmospheric conditions as the other occupants of the house; yet no plants could look healthier, so that here we have good proof that with a little thought and management *Odontoglossums* may be grown in any ordinary warm house where the winter temperature does not ordinarily exceed 55°, and where little or no artificial heat is required in summer. The exceeding grace of *Odontoglossum Alexandræ* has caused it to become beloved of orchidists and of flower lovers generally, and many will probably be glad to know that they may grow it well even if not possessed of an Orchid house.—BYFLEET.

Sphagnum for Orchids.—The season having arrived when Orchid growers, as a rule,

will be potting their Orchids, it may not be out of place to state that in my experience I have always had a decided preference for what is generally termed Scotch Moss, which does not grow so fast, and therefore gives much less trouble in maintaining an even surface all over the pots or baskets in which the plants are grown, than Moss which is softer, longer, and consequently more fast growing. Some plants in the late collection at Dunlop House top-dressed with the *Sphagnum* here recommended were the admiration of all who saw them. The Moss kept beautifully green, besides lasting for a whole season without ever requiring any picking whatever. That got from the hills is short and firm, and keeps much longer in a sweet, healthy state than that which is generally found growing in marshy places. Of all sorts of *Sphagnum* with which I have had any experience I would say that which is found growing amongst water is the worst that can be used. It does not last much over six months in a pot. So much *Sphagnum* being required where Orchids are extensively grown, it should be the first consideration to have it of the best quality, and which will always be the cheapest in the end, all things considered. I have often thought that if it were pressed so as to take most of the moisture out of it before being forwarded to anyone, it would effect a great saving in the way of expense. When full of moisture it is so heavy, that when sent any distance the carriage becomes a serious matter.—DAVID KEMP.

ORCHIDS FLOWERING AT KENWOOD, N.Y.

THOUGH the Orchid flowering season has scarcely commenced on this side of the Atlantic, the houses here are looking very gay. From what I glean from the Orchid notes in THE GARDEN, I think we are fully three weeks earlier in this climate, a circumstance probably attributable to a better ripened condition of the bulbs, the result of stronger sunlight, and to less cloudy weather during winter. In Mr. Corning's rich collection at Kenwood, near Albany, more than 120 kinds may be seen in flower at the present time. Some of the species are represented by hundreds and even thousands of plants, such, for instance, as *Dendrobium Wardianum*, *Cypripedium insigne*, *Cattleya Trianae*, *Lycaste Skinneri*, *Odontoglossum crispum* and *Pescatorei*, *Phalenopsis amabilis* and *Schilleriana*. These at the present season make the largest display, and are exceedingly valuable for affording a supply of cut flowers, for which there is generally a great demand in this country. Among the *Cattleyas* in flower is the new and much-criticised *C. Percivaliana*, represented by a few good, but many bad varieties. This species has been in flower a long time, and is now on the wane. Following close upon it is the *Trianae* section, of which there are a few good varieties open, such as the chastely beautiful white form (*alba*). *Dodsoni* is one of the largest forms, but inferior to many in colour; the old, but somewhat scarce *C. quadricolor* is also flowering now. Among *Lælias*, one of the elegans section of *Lælia ensipatha*, named *Corningi*, may be placed in the front rank. We find that the varieties of *L. anceps*, *Hilli* and *Veitchi*, are much earlier than the type; both are very lovely. The pretty little *L. albida* may be seen in all shades of colour from pure white to the darkest rose. Among the *Dendrobiums* the most noteworthy is a plant of *D. Dearei*, having a spike that has been in bloom since the latter part of June, and some of the flowers are still perfectly fresh. *D. Fytchianum* is a remarkably free-flowering species, producing spikes of white flowers, on both new and old bulbs. *D. marmoratum* and *Boxalli* we have proved to be identically the same. The old and curious *Veitchianum* is bearing a spike of its curious, but by no means showy flowers. *Cypripedium Spicerianum* is probably the very best of the whole genus, which is saying a good deal, but no other can equal it in combination of colour, and it flowers and grows as freely as the old *C. insigne*, though requiring more heat. *C. nitens* much resembles, and is no better than *C. insigne*. We have *C. Ballenianum*

well represented, one plant carrying thirteen flowers. It may be described as a poor variety of *Hookera*, though flowering at a different season. A large and very dark variety of *Harrisianum*, called *superbum*, is a great improvement on the type, as is also the large variety of *Selligerum*, called *majus*. The *Vandas* in flower include the true *insigne*, which is almost a perpetual flowerer, and the *Greyi* variety of *V. coerulescens*, a very late flowering form; it possesses a fine colour, and the flower measures fully $4\frac{1}{2}$ inches across. A fine specimen of *Angracum sesquipedale* has ten flowers. The *Phalenopsis* house is not rich in flowering varieties at this season, but among other choice forms may be noted the three hybrids, *casta*, *leucochorrhoda*, and *Veitchi*, all as beautiful as they are rare; also the dark rose form of *P. Sanderiana*, which has proved such a lovely addition to the genus. *P. Valentinei* is nearly always in bloom with us; it may be described as a purple variety of *P. cornu-cervi*. A specimen of the nobilis variety of *P. Stuartiana* is bearing fifty-five flowers on a six-branched spike, and other uncommon *Phalenopsis* included *Boxalli* (a synonym of *P. Manni*), and *Day's* variety of *amabilis*, the latter being very fine. Among the choicer *Odontoglossums* are the following. *O. præstans*, a handsome spotted variety in the way of *O. Andersonianum*, of which, too, there is a plant bearing a spike of thirty-five flowers. *O. baphicanthum* has a spike bearing thirty-three flowers; there are many poor varieties under this name. The first retains the bright yellow colour of the flowers for five or six weeks. *O. Cooksoni*, *Wilckeanum* and its variety *pallens* are the best of the large spotted section. A good variety of *O. hystrix*, called *magnificum*, is considered a poor one here. The rare *O. prænitens elegans* has a fine spike of some fifteen flowers. *Masdevallia Roezli* and *Chimara* are the two best of the *Chimæroid* section. *Crossi racemosa* has just opened its pretty flowers, and will prove quite an acquisition. It grows very freely in a temperature of 60° night and day. Last, but not least, are some thirty large plants of *Sophronitis grandiflora* and *violacea*, averaging a dozen flowers apiece. F. GOLDRING.

NOTES ON HELLEBORES.

THE RIVERSTON HYBRID?—This very interesting variety of *H. niger* claims more than a passing notice. It is the only example I have come across in which there is combined in one plant the green petiole, purple mottled flower-stalk, and the pink stigma. I therefore came to the conclusion that it was a hybrid from *altifolius* × *angustifolius* of the green-stalked variety, probably the Irish form, "St. Brigid's." The flower, again, is most distinct, very nearly approaching in purity of colour that of the latter variety. It has, however, a sturdier and dwarfer leaf. The pink crown to the style is a marked peculiarity of *H. n. altifolius*. It occurs rarely in other varieties, but it is always in *altifolius*, and it is always in the Riverston variety, and most strongly developed. Mr. Poë's flowers have been on my table now twelve days, and the pink stigmas are still bright, even in decay. Here, then, we have most conclusive evidence of a true hybrid, although the editor of THE GARDEN "cannot regard it as a hybrid." "Possibly," he says, "it may be the true *H. niger major*;" but this is a well-known plant, and it has not the pink style. Mr. Poë also points out that his variety blooms before *H. n. major*.

H. n. ALTIFOLIUS.—Mr. Stamps, of Bishops-teignton, has been induced to sell his fine plant for a very large sum, and it has, I am sorry to say, been taken up and sent to the gardens belonging to a Scotch castle. The roots were found to go down to a depth of over 3 feet, showing the need for deep trenching and for the preparation of good soil to this depth for large specimens. I should be very much afraid that the removal of so large a plant would be a dangerous proceeding, and that the plant would take a long time to recover. Better far would it have been to have grown younger plants, and they would soon have become big ones on Mr. Stamps' system.

Brockhurst.

WM. BROCKBANK.

SOMERHILL, KENT.

ALTHOUGH more famous for historic associations than for its garden, Somerhill, the Kentish residence of Sir Julian Goldsmid, must be placed amongst the noble country seats to which Kent owes so much of its traditional beauty. There are other places more ancient in the county, as, for instance, Penshurst and Ightham, both in its immediate vicinity, but there are few to which belong such a chequered history as that which Somerhill possesses. From what may be gleaned from history, it appears that it had an ill-starred beginning. We are told that Queen Elizabeth granted to the widow of the unfortunate Earl of Essex, as a sort of recompense for the loss she had sustained, a good slice of land in the South Frith, which at that time contained a forest and chase. The countess subsequently married the Earl of Clanricarde, who then commenced to build a

this impression, the sky line being broken by the pointed gables in a most picturesque manner. The ground plan of the building takes the form of a parallelogram, and looking at it broadside from the park it has the appearance of being of enormous extent, which indeed it is, for since its present possessor became the owner of it he has made extensive additions to it, these being for the most part in strict harmony with the original architecture.

Returning once more to the history of the Somerhill estate, the heir, after the death of the Earl of Clanricarde in 1625 (a year or so after he had finished the house), was his son Ulick, but it appears that he became attached to the cause of Charles I.; consequently Parliament declared him a delinquent, and sequestered his Kentish estates and gave them to the Earl of Essex, then a general in the Parliament

and after him the family of the present owner. Somerhill has thus passed through many vicissitudes, which add so much to its interest; and though it has been changed considerably to suit the requirements of modern life, there is still, as has just been stated, an air of antiquity about it. From whatever point it is seen it has an imposing appearance.

Apart from the house itself, the principal feature of Somerhill is the park, than which it would be difficult to find another richer in scenery, being most beautifully wooded and diversified by hill and dale. The glory of the place is its Oaks, the deep, rich, clayey soil being just suited to them. One can easily perceive that generations ago this part of the weald was a forest, and the country seats that occur here and there simply clearings in the great wood. Walpole, who visited Somerhill in 1752, wrote, "The house stands high,



SOMERHILL. From the lawn.

mansion on his newly-acquired property. The house was, however, not completed until about the year 1624, when it was named Somerhill, and the earl was afterwards created an English peer under the title of Baron of Somerhill.

The spot chosen for the mansion was probably the most appropriate that could be found on the estate. It occupies a commanding eminence on the northern side, overlooking a wide stretch of the surrounding country. The original house has, during the course of over two centuries, been subjected to alterations, not always, perhaps, in correct taste, but as a whole it is still looked upon as one of the finest examples of the architectural style of the period of James I. It is built of stone, apparently quarried in the neighbourhood—a sandstone of a soft grey tone, veined with streaks of red. The original part of the house is very beautiful—the stone, tempered by the weather of some two centuries and more, being of that soft, quiet tone which gives to the place such an air of antiquity. The outline of the house, too, adds to

army. At his death, in 1646, Parliament handed Somerhill over to John Bradshaw, President of the High Court of Justice, in which court King Charles stood his trial. Judge Bradshaw dying in 1659, the estate went to his son, but on the restoration of Charles II., in 1660, Somerhill passed again into the family of the Earl of Clanricarde, who died in 1659. The heiress to the estate then was Margaret, wife of Viscount Muskerry, and during that time Somerhill was the favourite resort of the courtiers of Charles II. About the same time the virtues of the waters of Tunbridge Wells became known, and their popularity was in no small measure due to Lady Muskerry, who lived in brilliant style—so brilliant, indeed, that difficulties overtook her, and after parting with a great portion of the estate she died in distress in 1698. Somerhill then passed into the hands of a Mr. Dekins, who about the year 1712 conveyed his estate to Mr. John Woodgate, of Penshurst, whose family held the property for a long period. Subsequently a Mr. Alexander became possessor of it,

commands a vast landscape beautifully wooded, and has quantities of large old trees to shelter itself, some of which might well be spared to open views." Such is still the case, though perhaps the need of opening views is not so apparent as when Walpole visited the place. In some parts of the park the trees form dense groves, some of which would well stand thinning. Very old trees, such as one meets with at Penshurst, Coham, and other places in Kent, are not conspicuous at Somerhill. The Oaks appear to range in age from 100 to 200 years; hence they are just in their prime, and their ponderous boles, averaging about a yard in diameter, are as sound as a rock, their huge limbs and wide-spreading heads indicating that they are in their heyday of growth. As soon as one enters the lodge gate from Tonbridge, which, by the way, is about $1\frac{1}{2}$ miles distant, one is struck with the picturesque beauty of the park. Whether the groves of Oaks through which the drive is cut were planted or thinned out of the forest it would be difficult to say, but it is evident that whoever thinned or planted

them had a rare eye to the picturesque, as they are grouped in a most artistic manner. They do not stand one here and another there at stated distances apart, all being of the same size: on the contrary, they occur in little groups of from three to half-a-dozen trees, chiefly of different ages and sizes. In some cases one may see a couple growing as close as if planted in the same hole, the weaker of the two leaning away from the stronger. Again, one may see Oaks and Thorns in charming association, and sometimes mixed with Holly. The way in which the park is studded with trees points to the supposition that the original wood, forest, or chase, whatever it may have been, had merely been thinned out to make openings for the green-sward. There is quite a wealth of Oaks in this park, which in bygone days, when "hearts of Oak" were relied on for the "wooden walls of England," would have been the envy of a timber contractor for the navy. The conspicuous absence of very old trees such as one sees at other places in the county, as, for instance, at Cobham and Penshurst, may be probably due to impoverishment of the estate in Lady Muskerry's time. No doubt the Oaks, which at that period were in such demand for ship timber, were the first to be converted into ready money, and the fact that the majority of the present large trees are only a couple of centuries old seems to corroborate this supposition, as they could have been then but mere saplings, not ripe for the axe.

Though about Somerhill the Oak is most conspicuous, other trees flourish equally well: for instance, there are some fine Ashes in the park which seem to delight in the clayey soil. Beeches are not plentiful, but a few towering giants may be seen here and there, and in one part near the house a lane is cut so deeply through a grove of Beeches, that their network of roots serves as a wall to keep up the bank. This old lane is so picturesque, that we regret we were unable to illustrate it. Here and there on the rising knolls in the park stand groups of Scotch Fir, old and weather-beaten, rugged, and highly picturesque, particularly in winter. Some of the isolated specimens of deciduous trees, too, are marvels of symmetry, with their branches sweeping the ground on all sides. A wide expanse of water just after the entrance gate is passed forms a beautiful feature, being studded with picturesque islets, while its outline is natural and the margins untouched by art. This lake has apparently been formed by damming a small stream running through the valley to join the Medway. The carriage drive crosses the lake by an old stone bridge, and from this point can be seen one of the best glimpses of landscape beauty about the place. The ground immediately surrounding the house is level and rectangular, a kind of broad terrace; and here is the flower garden, consisting of a few beds of simple design, which in summer are planted with bold groups of showy things, as single Dahlias, Roses, and such like, quite sufficient to give an air of cheerfulness to the place, while the house itself is draped with twiners and climbers, which form a tracery of green on the grey old walls. A few fine trees grace the lawn, such as Lebanon and Atlas Cedars, but there is an absence of those pyramidal coniferous trees which in so many cases spoil the effect of lawns; indeed, in this case it would be a mistake to introduce any of the modern Conifers near the grand old pile; they would not only detract from its simple grandeur and ancient aspect, but would tend to impart to it a villa-like appearance. The boundary between the lawn and the park is a parapet wall, rather too high; in fact, as seen from the windows of the house, it has rather an awkward appearance, being quite in the middle distance.

It is an unfortunate occurrence in this, as in many other demesnes, that a public path cuts through the place, and, in this case, passes close to the house. Formerly the public passed quite in view of the windows, but Sir Julian has had a sunken path made, which is not only effectually out of sight, but gives a shorter cut to the public. This sunken path, recently formed at no small expense, is not such an eyesore in the grounds as one would imagine; on the contrary,

it has rather a good effect, the retaining walls being built of rough-hewn blocks of veined sandstone. A bridge across the path connects

THE KITCHEN GARDEN with the lawn. The whole of this department must be regarded from quite a utilitarian standpoint; nothing is grown that is not useful either for the cook, the dessert table, or the floral decorator, and, as may be imagined, a vast amount of garden produce is required to satisfy the demands of such a great establishment. The kitchen garden is provided with a network of walls, so that abundant space is afforded for fruit trees, which cover every yard of wall. Peaches and Nectarines thrive here to perfection on the open walls as well as under glass, as may be inferred from the fact that during the last season no fewer than 7000 fruits were gathered from the trees. A good many kinds of Peaches and Nectarines are grown, but only those of first-rate quality. Of the less common sorts, Mr. Hopgood, the gardener, speaks highly of such kinds as Stirling Castle, Sea Eagle, Mr. Gladstone, Early Sylva, and Dr. Hogg, the two latter for an early crop. Such sorts as Lord Palmerston, though they have fine large fruits, but no flavour, are not tolerated. This wise discrimination of sorts does not stop with the Peaches. It is followed out also with the Grapes, Tomatoes, Melons, and other fruits. For instance, one may find here the somewhat uncommon sight of a whole vinery devoted to Mrs. Pince's Black Muscat Grape, which is grown to perfection, the bunches being large and admirably coloured. The crop of this Grape which hung in the vineries last September was a remarkable sight. Its fine flavour is much appreciated here, although it is not generally considered the most desirable Grape to grow. The Lady Downes variety is also a favourite. Tomatoes under glass are a great speciality. They are grown on upright trellises, the favourite kinds being Vick's Criterion, Hathaway's Excelsior, and Trentham Fillbasket. The last named is grown most abundantly, it being so productive, as much as three bushels of fruit being the yield of one house in a season. Such large and clumsy-fruited sorts as President Garfield find no place here, their fruits being rejected by the cooks, who prefer those of moderate size and smooth and symmetrical shape. The big and ugly fruits are only fit for sauces and such like. The favourite Melons are William Tillery and Victory of Bath, two excellent sorts when grown as they should be.

THE PLANT HOUSES are crowded with a stock suitable either for yielding an abundant supply of cut flowers or for embellishing tables, halls, rooms, &c. For the latter purpose there are stately Palms, Cycads, Anthuriums, and the like; Maiden-hair Ferns, including the beautiful new Adiantum Victorine and A. rhodophyllum. The other parts of the garden are in keeping with the importance of the place. Visitors to Somerhill interested in horses should obtain permission to see the stables, which are fitted in the most elaborate way.

W. GOLDBRING.

5307.—Ice and icehouses.—In order to have ice keep it should be collected and stored while firm through freezing, and not when a thaw has set in, as then there is much loss in the carting and getting it into the house, for while this work is going on, the water running from it and draining over the whole surface melts it fast, and it does not get together in the solid mass in the way it does while frost is still on. The great thing is to break it up small, which can best be done while it is being thrown into the carts, as then each piece as it falls can be smashed by a knock or two from a long-handled wooden mallet, which could not be done when a lot is lying together in a heap at the house. This ought to be lined round with straw tied up in small bundles, and a good thick layer placed over the top, which will exclude the air, while that around the sides will do the same and afford the requisite drainage. An icehouse to be good should be in a cool, shady position, and so constructed that the passage leading to it is sloping down, that the ice when shot from the carts may slide or be pushed in without the labour

of lifting. The shape of the house matters little, as it may be in the form of an egg, square, or long, but it must be properly drained, and it is best to be tapering, so as to be a little smaller at the bottom, as the ice then wedges itself at the sides and rests tightly against the straw lining. The point to be particular about is to have the entrance doors close fitting, so as to be as air-tight as possible.—S. D.

NEW PLANTS OF 1884.

PROLIFIC in the way of new plants as may have been many of the preceding seasons, the year which has just passed away is not at all behind them in this respect. On the 8th of April ten varieties of *Azalea indica* were shown by L. Van Hontte, all of which were awarded first-class certificates. These ten varieties were all undoubtedly of superior quality. *Souvenir du Duc d'Albany* was unanimously acknowledged to be the best and most distinct of this remarkable set. It is without exception the largest flowered white variety yet raised; its handsome flowers, of snowy whiteness, generally single, but with a slight tendency to become double, measure fully $1\frac{1}{2}$ inches across, and in general appearance bear a strong resemblance to those of the beautiful *Rhododendron Veitchianum*, the more so, because in this *Azalea* the edges of the petals are very elegantly crisped or undulated. Among the most striking varieties shown at the same time by the same raiser were *Comte de Paris*, a single flower of very fine form and large size, with broad petals overlapping each other of a conspicuous salmon-pink colour, and broadly edged with white, spotted and blotched with carmine. John T. D. Llewellyn, delicate flesh pink; the flowers of this are very large and very double, and their petals, which are broadly edged with white, are heavily blotched with crimson in the centre. Baron Nathaniel de Rothschild, also belonging to the double-flowered section, of which it will always remain one of the brightest ornaments, has flowers of a peculiar rich rose-purple and very perfect in shape, forming quite a rosette of slightly undulated petals. A fortnight later another Continental grower, M. Rosseel, also exhibited under the name of *Souvenir de Marie Rosseel*, an exceedingly handsome and wonderfully free-flowering form of *Azalea indica*, and one which was unanimously ranked as one of the very best among the already numerous double varieties. The plants shown were only small specimens, but so literally covered were they with lovely salmon-pink blossoms of medium size and perfect form, that they captivated the attention of all those present: therefore this variety cannot well fail to become a general favourite. Some of our home growers also showed some good *Azaleas*. Mrs. Alfred Heaver, shown by Mr. Todman, is a very free-flowering variety with pure white semi-double flowers of good substance and form. As it was shown early in March and in capital condition, it may with some reason be expected to be an excellent plant for early forcing. Besides those just enumerated I may also mention as deserving a special notice the home-raised varieties—*Antigone*, *Little Beauty*, *La Merveilleuse*, and *Princess of Wales*.

ORCHIDS.

Of Orchids, no fewer than 75 were awarded first-class certificates, a fact indicating plainly what an amount of interest is vested in these deserving plants, many of the best of which only require cool temperature. Of *Odontoglossums* alone, 18 were deemed worthy of special distinction, while a dozen or so of *Cattleyas* and the same quantity of *Cypripediums* were likewise successful in the competition for awards. Amongst *Odontoglossums*, the most marvellous plant is undoubtedly *O. Alexandre Veitchianum*, a variety with flowers perfect in form and beautifully spotted. This became the property of Baron Schroeder. Other fine varieties of *O. Alexandre* or crispum are *Bal-lantinei*, a charming form, quite different from all others. Its flowers are very large and beautifully shaped, on account of their broad sepals being overlapping, of a pure white and marked with very

large blotches of chestnut-brown, which render the flowers particularly attractive. *Roseum guttatum* is another of those wonderful forms of *Alexandrea* which cannot possibly be passed over in silence. It is not only remarkable for the large size of its well-shaped flowers, which measure nearly 4 inches across, but is essentially distinct from all others through the peculiar and pleasing colouring of their wide and overlapping sepals, profusely marked with large irregular spots of rosy purple on a white ground. Besides the forms just named there are also several others, such as *dellense*, *guttatum*, and *Souvenir du Prince Leopold*, all of which were honoured with first-class certificates. Different from all others is *D. crispum aureum*, a kind with large, well-shaped flowers, the broad sepals and petals of which, instead of being white, as is usually the case, are of a clear, soft, yet bright, canary colour, spotted with cinnamon-red. They are particularly attractive through their being much crisped and crimped, and also from the fact of their being borne on a tall wavy spike. Of other *Odontoglossums* not belonging to the *crispum* or *Alexandrea* class must be mentioned the beautiful *O. excellens*, supposed to be a natural hybrid between *triumphans* and *Pescatorei*. The flowers of this are equal in size to those of a good form of the first named species, but its sepals are white, largely bordered with yellow, while its lip, which is of large dimensions, shows on a white ground large spots of a chestnut-brown colour copiously dotted all over it. Notice must also be taken of the lovely *O. Oerstedii*; this produces on each of its small bulbs a solitary flower, waxy white, and spotted in the centre with yellow, making it one of the prettiest of cool-house Orchids. *O. vexillarium superbum* is undoubtedly the handsomest variety of this useful summer-flowering species. Its flowers are deep rose-pink and well formed, the centre being ornamented with a large blotch of maroon-crimson of the deepest hue. *O. elegans superbissimum* should also be mentioned; it is supposed to be a natural hybrid between *O. Halli* and *cirrhosum*. *O. Pollettianum* is exceedingly fine in form and heavily spotted. *O. mulas*, *polyanthum*, and *Williamsianum* belong to the *grande* type. To *Oncidium* has been added *Jonesianum*, a most distinct and welcome addition. This new and interesting species belongs to the section provided with quite round and fleshy or Rash-like leaves; its lovely flowers, which measure about 2 inches across, are produced in somewhat lax spikes, and are conspicuous among all others by its sepals and petals, which are greenish yellow in colour spotted with cinnamon-red, and contrasting singularly with the pure white ground of the broad lip, which is also spotted with cinnamon. *Cattleyas* and *Laelias* may fairly be ranked, as regards usefulness, next to the *Odontoglossums*.

Of *C. Mendeli* we have such marvellous forms as *marginata* and *selbornensis*, the former producing large well-shaped and splendidly coloured flowers, the lip of which is adorned with a broad and conspicuous margin of rich magenta-crimson. The most distinctive character of the latter is the exquisite frilling of the lip, the throat of which is a lovely mixture of lemon-yellow and white. Although of smaller dimensions than *marginata*, the flowers of this variety are equally attractive; they are irreproachable in form, and the deep rosy lilac colour of their broad sepals is shown off to advantage by the glowing carmine-magenta hue of the lower portion of the large dilated lip. Foremost amongst varieties of *C. Trianae* stands *Leeana*; this variety is remarkable for the charming colour of its flowers as well as for their large size, measuring, as they do, 8 inches across the outspread sepals; the lip, the neck of which forms a prominent sharp ridge, measures 2 inches across and the outer sepals about 1 inch, while the inner ones are not less than 3 inches broad and of such a firm texture as to hold themselves out quite boldly; they are of a delicate mauve colour, while that of the labellum is carmine-magenta, gradually deepening towards the interior of the throat. *C. Trianae splendidissima* is a fine variety, the flowers of which, though of a much smaller size than those of the preceding, are of perfect form and particu-

larly handsome, being carmine-purple with a wide labellum beautifully and conspicuously frilled at the margins. The varieties, *C. Gaskelliana* and the much-abused *C. Percivaliana*, are also remarkably good, but the most striking new member of the genus, with the exception of home-grown hybrids, has undoubtedly been the distinct and attractive *C. Schroederiana*, a new species intermediate between *C. Walkeriana* and *bicolor*, and whose flowers, which are about 4 inches across, have a particularly broad lip of a bright glowing magenta and plum-coloured sepals. As in *C. bicolor*, the pseudo-bulbs of this new comer reach to about 12 inches in height, and bear at their summit two thick ovate leaves. The genus which in importance comes next to those already treated is that of *Cypripedium*, a popular class of plants and of easy culture when compared with most other Orchids, inasmuch as they succeed well and flower freely when grown amongst other decorative plants in either a stove or intermediate house. Several very noteworthy additions to this genus have been made through home-raised hybrids. The most striking species among the new comers is undoubtedly the beautiful and distinct *C. Godefroyae*, a near ally of the lovely *C. niveum* and *concolor*, from both of which it is distinguished by its foliage, by the reflexed upper edge of its petals, and specially by the remarkable spotting of its flowers, which are of a French white, spotted all over with magenta-purple. The dorsal sepal, which is suborbicular, is tinged with pale green at the apex; the petals are oval oblong, broad, and deflexed, as in *C. concolor*, from which, however, it is entirely distinct. There are two more very deserving new species named *C. ciliolare* and *C. Curtisii*; the latter is very handsome, and is nearly related to *C. argus* and *superbiens*, though entirely distinct from either; the former, which also belongs to the section of *Cypripediums* with mottled foliage, is distinguished from most others by its dark purple pouch, its claret-purple lateral sepals, and by a large dorsal one striped with green and white. Amongst other Orchids may be mentioned *Aerides Lawrencei* and *Sanderianum*, both of which may be best described as much enlarged forms of *A. odoratum*, with flowers of the same colour, ivory-white, tipped with amethyst, but attaining very large dimensions. *A. Houlettianum* also belonging to the *crispum* section, but its distinctly coloured, deliciously fragrant flowers, very similar in form to those of that popular species, are produced on a long and pendulous spike; the sepals and petals are of a soft fawn colour, and contrast singularly with the deep rose-magenta colour of the lip. In *Angracum fastuosum* we have added one more to the list of small gems. This has small, leathery, roundish leaves. The flowers, which are large for the size of the plant, are produced in crowded clusters, and very attractive, being snow-white, ornamented with the usual long spur peculiar to all species belonging to this genus. *Trichosma suavis* is another good addition to small-flowered Orchids and delightfully fragrant. Its ivory-white flowers are produced in gracefully drooping spikes, the lip being the only part possessing any colour; it is heavily barred with red, and furnished at its summit with a bright yellow crest.

Some famous hybrid Orchids have been produced, of which the majority are due to the exertions of Mr. Seden. It is only four years since *Cypripedium Spicerianum* first flowered, and in January last a lovely hybrid from it was offered under the name of *C. Leeanaum*, the result of a cross between *C. insigne* *Maulei* and *Spicerianum*. The flowers of this are larger than those of *C. Spicerianum* and furnished with a pouch of darker colour than that of either parent; the broad dorsal sepal, which is nearly all white, is lined and dotted with purple and the habit of the plant is intermediate between that of the two parents. Amongst the many other good things for which we are indebted to the same raiser may be mentioned *C. albo-purpureum*, *calurum*, and *Schroedera*—all wonderful improvements on existing kinds, especially the latter, produced by a cross effected between *Sedeni* and *C. candidum* and partaking of the characters of both parents. The pouch is much larger

than that of the species, but the sepals are considerably shorter; they are also twisted in a pleasing and peculiar way, and, like the rest of the flower, of a beautiful pinkish colour. *C. cardinale*, also belonging to the same group, is a decided acquisition, a hybrid between *Sedeni* and *Schlimi* album; its sepals and petals are almost pure white and the pouch is of a deep rosy carmine. In the *Selenipedium* section we have to record a marked addition, in which the flowers are much larger than those of *C. longifolium*, though somewhat of the same colour. This is *C. grande*, a very vigorous grower, and one which throws its spike of flowers well up above its luxuriant foliage. Lastly, there is *Cattleya calumnata*, of Continental extraction, obtained from a cross between *C. Aclandiae* and *Leopoldi* by Mons. A. Blen, who is well known for his successful hybridisation of *Caladiums*. This partakes of both parents, and produces, we are told, two or three times a year its bright flowers, which are freely spotted on both petals and sepals with magenta-purple on a pale pinkish ground.

FINE-FOLIAGED PLANTS.

Of these only some ten species have been distinguished by first-class certificates, including five of Mr. Wrigley's hybrid *Sarracenias*. The handsomest of all, *Wrigleyana*, has pitched leaves, intermediate in size and form between the two parents, *S. psittacina* and *Drummondii*; they are slightly curved, of a reddish bright tinge and prettily netted and mottled with white, each being about a foot in length. Three new *Caladiums*, Baron James de Rothschild, L'Aurore, and Mitzand, all belonging to the section with bright crimson and red-coloured leaves, have been added to the already numerous list of those highly ornamental and easily cultivated plants; while of the several *Crotons* brought under notice, *Flambeau*, a variety with long and gracefully recurved leaves of a bright yellow, veined and ribbed with carmine-crimson, and *mosaicus*, with long narrow leaves of a green ground, mottled and veined with crimson, are about the most distinct. *Dieffenbachia Jenmani*, with ample and broadly lance-shaped leaves of deep green colour, variegated with transverse bands of white, is, notwithstanding the several kinds already in cultivation, a welcome addition to the genus. The same remark applies to *Ficus elastica albo-variegata*, a new variety of this most popular species, from which it differs in having its broad, leathery leaves beautifully variegated with different shades of creamy white, yellow, and green. To the section of climbing plants with ornamental foliage, *Philodendron grandident* is the only noteworthy addition. This species has long and somewhat heart-shaped leaves, from 12 inches to 15 inches in length, of a velvety bronze green colour, relieved by whitish veins and midrib. The most interesting of all the coloured acquisitions is undoubtedly *Amasonia punicea*, an extremely handsome stove plant of erect, shrubby growth, with large, spreading foliage, which when mature is dark green. This new introduction from Tropical America is extremely ornamental for several months at a stretch, its singular flowers being associated with brilliant bracts, like those of the *Poinsettia*, but much more numerous, extending, as they do, for about a foot along the stem; like the leaves themselves, they are lance-shaped and measure from 2 inches to 4 inches in length by 1½ inches in breadth.

FLOWERING PLANTS.

Had it not been for several remarkably good hybrids amongst *Amaryllises* and *Rhododendrons*, last year's introduction of flowering stove and greenhouse plants would have been very poor indeed, for, with the exception of a large and highly coloured *Dipladenia* named *Elliotti*, whose colour is a uniform pleasing deep rose-pink; two remarkably handsome *Epacris*, *Diadem* and *The Premier*, the former a very fine variety with wide-tubed flowers of a lovely rosy carmine, and the latter producing long spikes densely set with large blossoms of a beautiful clear rose; and the beautiful and thoroughly distinct *Ixora Westi*, with flower-buds of a lovely rose-pink tinge, which when fully open show the interior of a delicate

blush, quite distinct from all others—no great advance has been made on flowering plants already in cultivation. A goodly array of Amaryllises have made their appearance, and, with the exception of A. Mrs. Hird and Mrs. W. Lee, the latter belonging to the reticulata type, being a hybrid between that species and one of the hybrid race, and producing flowers of medium size, of a delicate rose colour pencilled with a deeper hue, all the others are the produce of crosses effected at Messrs. Veitch's by Mr. Hird, to whom we are also indebted for so many of the beautiful forms of Rhododendrons of the javanicum type. Most of these new Amaryllises belong to the bright or dark coloured section, A. zitella being the only one among them with a carmine ground colour, beautifully striped and banded with white. The flowers, which are large, have recurved segments and partake of the characters of the well-known A. marginata. A. virgo is one of the most attractive of its class; its flowers, which are of ordinary size only, are of excellent shape and vivid scarlet, banded and netted with white. Probably the largest one shown this season was A. Sir Redvers Buller, the gigantic and well-shaped flowers of which are of a vivid scarlet, relieved by a broad stripe of white extending the whole length of each petal, and measuring nearly 9 inches in diameter. A. Colonel Burnaby, General Graham, and Ne Plus Ultra are all deep-coloured and remarkably handsome varieties. Different from the above is Mrs. Shirley Hibberd, a kind distinct not only in ground colour or markings, but also in shape; it belongs to the Leopoldi race, whose distinguishing characters are well-formed flowers with petals tipped with a lighter colour. Those of the kind just alluded to are deep crimson tipped with white. In Rhododendrons, the Javanese section has supplied us with novelties for this season. Empress is a lovely variety, distinct from all others already known. It has large and finely shaped flowers, bordered by a ring of very pale pink, the rest of the colour being salmon-pink—nearly orange; President and Princess Beatrice, both of which produce massive trusses of flowers, circular in outline and thick in texture, are of vigorous habit. The flowers of the former are reddish orange in colour flushed with pink, those of the latter of a most delicate shade of salmon-pink. R. Curtisi, a native of Sumatra, where it is met with at an elevation of 3000 feet, is undoubtedly the most interesting species introduced for several years, and although not in itself a very decorative plant, it may be found useful in the creation of a new race of dwarfier and more bushy plants than those already in commerce. It only grows about 2 feet in height, and has slender branches of a somewhat spreading habit. It is remarkably floriferous, producing at the extremity of each twig little clusters of three or four campanulate flowers of a waxy texture and of a peculiarly deep crimson-red.

FERNS.

These have been tolerably well represented. In *Adiantum cuneatum strictum* we have a variety of the common species with a peculiar upward mode of growth, all the fronds, large and small, being borne erect—characters which give it quite a distinct aspect. *A. rhodophyllum* is unanimously acknowledged to be one of the very best productions of recent years. It is of dwarf, compact growth, seldom exceeding 9 inches in height, and its coriaceous fronds are in a young state of a lovely coppery red tinge comparable with those of the better known *A. rubellum*, *macrophyllum*, *tinctum*, *Veitchianum*, &c., but more effective on account of the pinnules being larger and the whole plant being also of a better habit than any of the above. As is usually the case with tinged fronds, Ferns that colour gradually pass through different shades until they become of a deep green hue, showing the perfect maturation of the fronds. A particularly bold-looking Fern is *Asplenium horridum*, a kind with long and simply pinnate fronds of a leathery texture and deep green colour, gracefully reflexed on all sides of the plant. *Cyathea microphylla* is a very distinct species, having very little similarity of habit or vigour

with any other known kind; it is a dwarf Tree Fern with slender stem and very large, but finely divided, fronds, spreading widely and forming a flat, yet very graceful, head. The most distinct Fern of last year's introduction, however, is the exceedingly pretty *Nephrolepis Bausei*, a form of *N. pluma*, the deciduous character of which it shares to a great extent, keeping its light coloured foliage on until mid-winter. Its fronds, which are about 18 inches long, are abundantly produced from small transparent bulbs, similar to those of the common *N. tuberosa*, and through their pinnæ being deeply cleft into numerous fine segments they have a feathery appearance, entirely absent in all other kinds belonging to the same genus. Among new Ferns lately brought out may be named *Adiantum Weigandi*, *Davallia Mariæi cristata*, a most elegantly tasselled form of the Japanese species, introduced some five years since; *Gymnogramma chrysophylla Alstoni*, *Lomariopsis buxifolia*, and *Pteris serrulata cristata compacta*. The last has a peculiarly dwarf and dense habit, each frond being broadly tasselled and very graceful.

FLORISTS' FLOWERS.

Among Auriculas should be named the lovely white-edged *Conservative*, the flowers of which are good in form and of medium size; it is a show variety, with a black body colour, dense white paste, and gold tube. Also a very fine self-coloured variety named *Hetty Dean*, the flowers of which are of fine form and clear yellow, with mealy-white centre. Likewise a very fine alpine variety named *Mungo McGeorge*, a kind with large yellow flowers, the ground colour of the centre being a deep maroon, shading to a paler hue. Of Begonias, no less than thirty varieties received last year first-class certificates, and though the enumeration and description of all the prize-winners would occupy more space than could be well afforded, I could not pass over in silence, in the section with single flowers, such varieties as *Her Majesty*, a variety which produces large and symmetrically-shaped flowers with white petals, edged and also suffused with delicate pink; *Torey Laing*, a sort with large flowers of good substance and perfect shape, also well worth notice; as is likewise *Mrs. Weekes*, a lovely and distinct variety, with finely-shaped pure white flowers, having a distinct margin of rose-pink. These stand out boldly amongst all others. In the double-flowered section, *Octavia* is probably the finest white yet raised; *Canary Bird* produces perfectly double flowers of a pleasing soft canary-yellow; like the preceding, the habit of this variety is vigorous, dwarf, and floriferous. Double reds have been produced in profusion, and it is somewhat difficult to decide as to which deserves most notice. *Souvenir de W. Saunders*, however, is one of the most remarkable amongst the deep coloured ones, on account of its dwarf sturdy growth and the rich crimson-red colour of its large flowers. *Rhum Von Erfurt* is another remarkable for its sturdy habit and the brilliancy of its flowers, which are of a vivid scarlet; while *Madame Arnoult* and *Madame Crousse* are among the very best of the soft salmony buff and clear salmon-rose tints. Carnations have been tolerably rich in novelty; most distinct among kinds belonging to the tree or perpetual flowering section are *Mrs. MacLaren* and *Mrs. Keen*, both of which produce flowers of perfect shape, the former being of a pale pink colour flaked with various shades of crimson, while the latter is a self-coloured flower of peculiarly rich deep maroon-crimson. W. P. Milner is one of the best white border varieties ever produced; its flowers are of good form and the whole plant is vigorous in habit. The same remarks apply equally well to *Celia* and *Mary Morris*, both of which are pink and first-rate in constitution. Among *Chrysanthemums* the Japanese kinds certainly have had the preference, and foremost amongst them must be mentioned such varieties as *Mons. Henry Jacotot*, *roseum superbum*, and *Mlle. Lacroix*, all of very great merit. *Cinerarias*, *Primulas*, *Cyclamens*, and *Dahlias* have also been fairly well represented and generously rewarded, while in *Pelargoniums* nearly all those which have been

deemed worthy of high honours, such as *Erl King*, *Belle Nancienne*, *Isidor Feral*, and *Mme. Thibaut*, belong to either the zonal or Ivy-leaved section. The best show *Pelargoniums* have been *Phyllis*, a pretty fancy; *purpureum*, the perfection of what an ideal show *Pelargonium* should be; *Harvester* and *Jack Sheppard*, both of which belong to the decorative section, and have extremely handsome flowers and excellent constitutions.

I cannot finish this review of the new plants of 1884 without giving also the names of a few of the most decorative trees and shrubs destined to contribute largely to the ornamentation of our parks and gardens. Among those grown for their foliage only may be noticed *Acer japonicum aureum*, *palmatum aureum*, *Cornus brachypoda aurea*, *Ilex laurifolia aureo-marginata*, and *Prunus pissardi*; while among new plants remarkable on account of their flowers the most meritorious have been *Clematis coccinea*, *Indigofera floribunda alba*, *Kalmia latifolia splendens*, *Spiraea bullata* and *purpurea*, and *Syringa vulgaris fl.-pl. Lemoinei*, a very good double-flowered form of the common Lilac obtained from seed by M. Lemoine, of Nancy. I had nearly omitted *Comte de Brazza's Neapolitan double white Violet*, a charming kind. It is exactly of the same size as the ordinary Neapolitan, but pure white and extremely floriferous. S. G.

INDOOR GARDEN.

RHIPSALIS HOULLETI.

THE thirty species of which the genus *Rhipsalis* is comprised are remarkable for their wide variation in habit and for their generally singular shapes, all more or less interesting botanically perhaps, but scarcely any of them ornamental enough to find much favour as garden plants. For so small a genus, the many different forms which the species assume is quite exceptional; the wide range from *R. sarmentacea*, a small creeping species with spiny stems, not unlike caterpillars, and when not in flower, easily mistaken for a small *Cereus*, to the Mistletoe-like *R. Cassytha* and the flattened-stem, leaf-like species represented by *R. Houletii*, is filled up with other curious forms. This genus may be looked upon as the connecting link between the fleshy, leafy, spine-clothed genera of Cacti and the outlying leaf-bearing, shrub-like *Pereskias*, well known horticulturally as the best stocks on which to graft *Epiphyllums*, and botanically as possessing characters so much like the Gooseberry, as to have led to the union of Cacti and Ribes under the same Natural Order by Jussieu. The most curiously marked kinds of *Rhipsalis* are *R. paradoxa*, with long, pendent, chain-like branches, anomalous enough in form to render the name most apt; *R. saglionis* and *R. salicornoides*, both of which have numerous round, swollen branches, without leaves, and the habit of a miniature tree; in *R. Cassytha*, the Mistletoe-like species, berries, habit, everything in fact about the plant except leaves mimic that parasite; the tiny species, *R. mesembryanthemoides*, hardly as long as its name, is made up of little fleshy branches which are more like the foliage of some *Mesembryanthemums* than branches of a Cactus; and lastly, the flat-stemmed kinds, such as *R. rhombea* and *R. Houletii*, which are *Epiphyllum*-like in habit, as will be seen in the adjoining woodcut. Some of the species bear small, but pretty, berry-like fruits which remain on the plants for a considerable time; others have orange or yellow flowers, generally small, but as a rule attractive. The species here figured is by far the handsomest flowered amongst the cultivated kinds of *Rhipsalis*, as well as being graceful in habit. It has been grown at Kew for the last twelve years, as also have the whole of those kinds named above, and it flowered there in December last, when our drawing was made. The charm of the plant resides in the graceful curves of its long slender branches, which are partly terete and partly widened out into a blade-like expansion similar to the flat branch of a *Phyllocactus*. In the crenatures along the edges of this blade-like

portion of the branches the flowers are formed, and when a long branch is thickly clothed all along each side with flowers the effect is very pretty. The stems grow to the length of 3 feet or 4 feet, probably much longer in nature. The flowers are about 1 inch across, creamy white, fragrant, and remain open for several days. For their cultivation the *Rhipsalis* require a tropical temperature, moisture when growing, a dry atmosphere when at rest. They do not require so much sunlight as the majority of Cacti do; but, like the *Epiphyllums*, they thrive best in a position where they would be shaded from the hottest sunshine without being shaded all day. Although where these plants are grown it is usual to plant them in soil in pots and treat them as terrestrial plants, yet in their native haunts the whole of the species of *Rhipsalis* are epiphytal on trees, from the branches and trunks of which they hang down often to a great length, presenting a very different appearance from what they do here in our stoves, where we are compelled to grow them as small shrubs. Like all the Cacti, these plants are easily propagated by cuttings, and, except *R. sarmentacea*, they all grow freely, the stronger kinds growing in sturdy little specimens in about two years. *R. Houletii* is deserving of popularity as a pretty and graceful winter-flowering stove plant, easy of cultivation, and of very distinct habit and appearance both when in and out of flower.

W. W.

Forcing Snowdrops.—Some enquiries were made about this time last year respecting the possibility of getting Snowdrops to flower earlier than usual by forcing them. Mr. Groom's experience in the matter was not, if I recollect rightly, at all encouraging; I therefore thought that I would test the matter thoroughly this season, and here is the result: At the end of July last I put about ten bulbs in some $4\frac{1}{2}$ -inch pots and placed them in a shady frame, in which they remained until early in November. There being twelve pots, the number was divided into three sets, four in each. One set was placed with some Pines that required a temperature of 70° to 80° to ripen them; another was placed in a house in which the temperature ranged from 55° to 60° during the day and about 10° less at night; the last were kept in a cool greenhouse. Those in the coolest house were the first to open their flowers, those in the intermediate house next, and those which had heat sufficient to ripen Pines satisfactorily are fully a fortnight behind all the others. This ex-

periment shows that it is not possible to force the Snowdrop into flower by means of a high temperature.—J. C. C.

FUCHSIAS IN AND OUT-OF-DOORS.

FEW, if any, of the old-fashioned plants with which we are acquainted are so graceful and effective either for greenhouse, conservatory, or window decoration as a well-flowered Fuchsia. It is also easily cultivated, but, nevertheless, considerable skill is required to grow really fine, clean, healthy,

new soil. A good compost for Fuchsias is a mixture of loam, leaf-mould, and either cow manure or horse droppings in a decomposed state, about three parts of the former to one part each of the latter, with a good dash of sand to keep the whole porous; mix all well together previous to potting. When the young plants begin to grow the shape and size of the plant should be determined; if for a standard, the leading shoot should receive every encouragement and be kept tied to an upright stake, rubbing out all side eyes until the desired height is reached, when the formation of the head should be encouraged by removing the points of the leaders, and afterwards pinching to every pair of leaves made until the desired size of head is obtained. If a pyramid be the shape aimed at, it will be necessary to pinch the leaders at an early stage of growth, to induce a bushy habit from the first, taking care, however, to train up another shoot as leader as the plants progress; it may also be necessary to continue to pinch the side shoots several times in succession, in order to induce a still more dense habit, particularly if a large specimen is required. If this method of pinching be neglected in the earlier stages of cultivation, it will be almost impossible to obtain well-grown pyramidal specimens, no matter how diligently the cultivator may attend to their requirements afterwards.

CUTTINGS struck in September, which is a good time to commence specimen Fuchsia growing, should be thrifty little plants by the end of October; they should then occupy a position near the glass and where the temperature does not fall below 50° , bearing in mind that it is not desirable to encourage much growth at that period. They should succeed in the position just indicated until about the beginning of January, when they may be given a little higher temperature, such as that of a vinery which is being forced would afford, or better still,

a position on a bed of fermenting material, the atmosphere about which appears to exactly suit them. They will now begin to grow freely in either of the positions just named, and should never be allowed to flag from want of water. As soon as the roots begin to show themselves at the sides of the 3-inch pot, shift into $4\frac{1}{2}$ -inch and 6-inch pots, using the compost already recommended, but in a rougher state than before, and with the addition of a little bone meal. They should be turned round to the light at least once a week to induce a uniformity of growth, and they should be allowed all the sun obtainable for some



Rhipsalis Houletii (detached branch and flower natural size); colour transparent white. Drawn at Kew in November.

well-flowered plants. In order to have fine plants in one season, cuttings should be made of shoots that have not exhausted themselves by producing flowers. They should be inserted singly in $2\frac{1}{2}$ -inch pots, or a quantity in $4\frac{1}{2}$ -inch pots will serve the same purpose. They should be plunged in a mild hotbed or propagating pit, and given a gentle watering through a fine-rosed can, which will keep the foliage fresh, and also settle the soil about the base of the cuttings. In a few weeks they will emit roots, when they should be potted off singly in 3-inch pots. They should be kept close for a few days, until the roots begin to push into the

time to come. A moist atmosphere should be maintained; therefore syringe overhead in the morning and afternoon whenever the weather is favourable. When the $\frac{1}{2}$ -inch and 6-inch pots are well filled with roots, shift into $\frac{3}{4}$ -inch and $\frac{9}{16}$ -inch pots, which will afford room enough in which to grow the finest specimens. When giving the final shift, pot rather firmly; the soil is apt to retain moisture for too long a period if potted loosely, and consequently it may become sour before the roots have occupied it. Thorough drainage should be secured during all stages of growth and the plants should be kept in a warm, moist, growing atmosphere after their final shift, gradually inuring them to more light and air. As the days lengthen and the weather becomes bright it may be necessary in certain cases to afford them a little shade for a few hours at mid-day. Fire heat may be entirely dispensed with from May onwards, and cold draughts and sudden changes of temperature should be avoided.

TRAINING.—It is not a good practice to stake or train the Fuchsia to any great extent, and, indeed, such a practice would be superfluous in the case of many varieties; but, while bearing this in mind, I have found it to be beneficial to insert a few thin, short stakes around the sides of the pots to enable me to tie out the branches of some of the closer growing varieties when intended for specimens, thus forming a basework on which to rear my future specimen. When the pots in which the plants are to be flowered are well filled with roots, liquid manure may be given, rather weak at first, but increased in strength as the plants get accustomed to it. Green and black fly sometimes make their appearance, and also thrips and red spider, particularly if the atmosphere is dry, and therefore an outlook should be kept for such unwelcome visitors. Never allow them to establish themselves on the plants; should they do so, they will be the means of making them cast their foliage, and that in a very short space of time. An occasional syringing with soft soapy water or with Fir-tree oil diluted in the usual way will keep the plants clean and free from the pest just named. It is not desirable to retain many old plants over winter, unless very large specimens are required. A few plants started in a brisk heat in January will in a short time yield abundance of cuttings, which can be grown to a good size during the early spring months for greenhouse or conservatory decoration. Growers for Covent Garden Market seldom, if ever, use any pot larger than a $\frac{1}{2}$ -inch, and the results obtained in this sized pot and by the judicious use of stimulants are wonderful. When done flowering they may be placed out-of-doors to ripen the wood, and when frost sets in they should be brought indoors and placed on a border from which they can absorb a little moisture, as they never break freely in spring if dried to too great an extent. Old plants should not be repotted until well started into growth. Fuchsias are very ornamental in beds or borders out-of-doors when judiciously blended with other plants; indeed, it is surprising that they are not more extensively used for outdoor decoration than they are. I mean, of course, varieties different from *gracilis* or *Riccartoni*, the only kinds usually met with out-of-doors.

D. SHEAHAN.

Brachysema lanceolatum.—For forming a screen, say at the end of a greenhouse or conservatory, or as a pillar plant therein, this native of Australia commends itself to favourable consideration, more especially from the fact of its flowering at this season of the year. It is of a rambling rather than a climbing habit, and when well established will quickly cover a considerable space. The leaves are green on the upper surface, but silky white beneath, while the flowers are of a rich scarlet-crimson, and borne freely during winter. Its roots are by no means gross feeders; therefore, in potting, care must be taken to have a good open compost combined with thorough drainage; indeed, such conditions as those in which its allies, the *Chorozemas*, delight. If planted out in the conservatory the same rule

must be observed, for if kept too wet large plants will sometimes go off without any preliminary warning, and they are then somewhat difficult to replace.—T.

PROPAGATING LUCULIA GRATISSIMA.

THIS and a few other plants used to test the propagator's skill, but why, I could never understand, for under certain conditions the *Luculia* roots freely enough. As to seedlings, I presume they would not flower so freely and early as plants raised from cuttings, and would probably require more attention in a small state. In England *Luculia* seeds would not mature, but I have no doubt they would ripen in this country if the plants were not cut down. As regards flowering this plant in pots, I have done so in 3-inch ones, in which the plants were only a few inches in height, but the only satisfactory way with *Luculias* is to plant them out, and I consider a *Camellia* house the best place in which to grow them, although I have some recollection of seeing this plant growing in a Palm house many years ago, but the house was not so hot as Palm houses are kept now-a-days, and there was usually a strong smell of Tobacco smoke in them to keep down thrips and green fly, to which this plant is very subject, especially when grown in a temperature warmer than that of an ordinary greenhouse. Both in England and in this country I have planted the *Luculia* in *Camellia* houses, and when the flowering season was over I cut the plant back to a few eyes, and gave little water until it had made shoots a few inches in length; then I selected the small shoots and removed them with a piece of the old bark attached, put them into $\frac{2}{3}$ -inch pots, and placed them in a close, brisk bottom heat; under these conditions they usually rooted as freely as *Gardenias*. I have also taken off small shoots later in the season, which root, but not quickly. I must, however, note that *Luculia* cuttings must never suffer from lack of moisture, or there will be no success. With attention ninety per cent. of the cuttings put in root easily, but the plants must not be kept in the propagating house longer than is necessary.

JAS. TAPLIN.

Maywood, Bergen Co., New Jersey.

3310.—**Water Lilies.**—"W. D. S." will, I think, find a tank beneath a stage—i.e., a stage usually employed for pot plants—too shady for the successful culture of Water Lilies. Tropical Lilies require all the sunlight which our dull climate can afford, and even where that is assured, the bright season is so short, that by the time the summer growths are formed and flowering in full progress, autumn sets in and blights our prospects. The water in the tank should not be below 56°, though upwards of 60° would better accelerate growth.—WILLIAM EARLEY.

Azalea narcissiflora.—Wherever *Azaleas* are required early in the season this is one of the best, either for supplying cut blooms or in the shape of plants for decorative purposes. It forces readily, and the blossoms, which are semi-double, are of the purest white, and last in perfection longer than those of the single varieties. Like all other early kinds, if forced every year it may be had in bloom some time before Christmas with far less trouble than plants that have not been before subjected to the process of forcing. In order to insure this they must not be neglected as soon as the flowers are over, which is too often done; on the contrary, the growth must be completed in a genial temperature, and when that is finished the plants should be hardened off.—T.

Arum Lilies.—It is often said that the best results in the culture of *Arum Lilies* can only be obtained when they get a supply of fresh rich compost annually. Some growers shake them out and replace them in the pots in spring or early in summer; others plant out for the summer months in good soil in a semi-shaded moist situation. Some plants now in flower grown by Mr. Bissett, gardener to Sir John Ellis, of Byfleet, seem to prove that this trouble is by no means indispensable. The plants in question are in 8-inch pots

and have had no fresh soil for two years. Finer or healthier specimens I never saw; indeed, in several instances the blooms are larger than any I have ever seen at this time of year—quite equal to the finest samples brought into Covent Garden during the month of May, when their development is of course aided by the longer days and stronger light. Mr. Bissett tells me that his plants are liberally fed when growing, and I noticed that they were top-dressed with cow manure. I think plants grown in this way have a higher decorative value than when two or three or perhaps but one crown is put into a pot. The plants have a richer appearance, being fuller of foliage, the smaller growths clothing them down to the base with leaves. These *Callas* help to confirm what I have more than once asserted in THE GARDEN, viz., that we too often report when we could give the needful support more easily in another way. Recently I gave instances of the satisfactory growth made by Japan Lilies when grown two years in the same pots. Nile Lilies, it appears, can also be grown in the same manner.—J. CORNHILL.

LAPAGERIA LEAVES DYING AT THE TIPS.

REFERRING to what has recently been written on the subject of the leaves of the *Lapageria* becoming brown at the tips, I may mention that sudden atmospheric changes will cause the points to wither. Indeed, in nine cases out of ten I fancy this would be found to be the only cause of their doing so. *Lapagerias* appear to be peculiarly sensitive to a sudden rise of temperature accompanied by much aridity, and in houses where this is often likely to occur they will not, I think, be likely to thrive with any great degree of vigour, and will become denuded of foliage at the base. Where a hot dry atmosphere prevails during a great portion of the day the plants have a weary, suffering look, and the leaves quite lack the lustrous hue similar to that of the Laurel which they possess in a perfect state of health. Several years ago I became possessed of a small plant of the white variety, and attempted to grow it in a small lean-to greenhouse in a south exposure. It made roots very freely, and pushed up every spring several strong shoots from the base, but although they grew very vigorously for a time, the points invariably turned yellow during the first period of hot weather at the latter end of May or June, and the tips of the leaves withered, the oldest ones dropping off. In the past season the young growths were stronger than ever, but the summer was very parching, and they absolutely refused to move after the beginning of June, ultimately going blind, and the whole plant looked so bad, that I feared it would die. I then turned it out into the open air in a position where no sun shone on it and where Ferns grew well. The change was marvellous. The leaves immediately took on the hue of health and it broke anew into growth, which continued until late in autumn. The leaves were perfect—not a sign of decay in them—until I re-boused the plant, when a few hot days came and the tips of many of the leaves went brown. This showed me pretty conclusively the true cause of the *Lapagerias* thus suffering; they cannot bear the sudden change from comparative humidity to aridity which they experience in many glass structures.

J. C. B.

PARIS DAISY ETOILE D'OR.

I do not think that I over-estimate the merits of this plant when I say that everyone having space for a score of plants should include it in their collection. It is one of the few things that bloom in winter in a house which is only heated to keep out frost, and for this reason it should be valued by those who, desiring flowers in winter, have no warm house in which to bring them along. There is scarcely a plant in cultivation that can equal this *Marguerite* in continuity of bloom; the same plants will flower uninterruptedly during nine months of the year, but this is, however, more than should be expected of them. Plants intended for winter blooming ought not to flower in summer, but should have the buds picked off until the end of September, after which time they

may be allowed to develop, and will open from the beginning of October onwards through the winter and spring. Cuttings strike with the greatest freedom either in warmth in early spring or later on in a cool house or frame, and, growing freely, will come into 4½-inch pots early in autumn. In the form of bushy specimens, clothed with healthy foliage and full of bloom, this Paris Daisy is very attractive, but its great value lies in the fact of the flowers being so admirably suited for cutting. They are symmetrical in form, and have long, slender, but strong foot-stalks. Those who need plenty of cut flowers should grow this plant in quantity, as if kept in a constant temperature of from 50° to 55°, the beautiful clear soft yellow blooms will be continuously and freely produced all through the duldest months of the year.

J. C. B.

CINERARIAS IN MID-WINTER.

WHEN looking through a garden a few days ago I came across a number of Cinerarias in a greenhouse growing in a temperature far too hot and dry to ensure the well-being of the plants, I saw the leaves were browned on the edges, small, wanting in robustness, and decidedly unclean, which was not to be wondered at. This is unfortunately the condition under which not a few Cinerarias are grown during the winter months, and it is not a matter for surprise if the head of bloom is altogether unsatisfactory, and I was all the more impressed with the grave mistake committed by growing Cinerarias in this way when about the same time I saw another collection in luxuriant health, and full of promise of yielding fine heads of bloom. The main flowering tops had been stopped; the result was the throwing out of stout lateral shoots, all of which will produce rare trusses of bloom. Such plants must now be kept in a healthy and growing condition, taking care to keep them clean by occasional fumigations, giving air freely on all favourable occasions, but, as a matter of course, excluding frost and cold winds. The best quarter for Cinerarias at this season of the year is a frame heated with one line of hot-water pipe, the pots standing on an ash bottom and the heads of the plants within 3 inches or 4 inches of the glass. The Cineraria is a much hardier plant than is generally supposed, and during severe weather a little air may be given with advantage, provided there is heat enough in the pipes to temper the incoming atmosphere. Cinerarias can be best grown in such a place; and, indeed, they might be wintered in an entirely cold pit, only removing the plants to a greenhouse when the weather is unduly severe. While they have to be grown in an unheated pit they are in danger of receiving a check, and really the plants should not have any such check. Plants in a healthy condition and at the present time in 8-inch pots, if stopped with discretion and carefully tied out, will make a fine display in February and March. Such plants might have another shift this month, or a portion of them, but they should not be further stopped, and they will flower in April and May. I suppose the practice of growing from cuttings has nearly died out. The Royal Horticultural Society give certificates of merit to new varieties, but one never hears of their being propagated and sent out in the usual way with new plants. A good compost for the Cineraria can be made up of yellow loam one half, another half of thoroughly rotten manure and leaf-mould, the latter preponderating, and with some rough silver sand mixed with it.

R. D.

ASPHALTE WALKS.

THE remarks on this subject at page 23 show that the writer is very imperfectly acquainted with the subject, as I shall show, and they are calculated to dissuade people from making walks in their kitchen gardens and other premises that for everything that makes a good walk desirable beat every other description of walk. We are told that very much more can be said against asphalt walks than in their favour—that they are of unmitigated ugliness, that there is ever present more or less stench from them when the sun is

shining, that they are slippery in frosty weather, and on the whole generally objectionable, all of which statements are incorrect. As far as ugliness is concerned, where is the ugliness in a perfectly even, clean walk of any colour you like to make it, and which never needs any weeding? A properly asphalted surface is quite smooth and even, does not clatter under the feet like flags, and the surface may be completely hidden by gravel rolled in or put on afterwards loose in the ordinary way, but not deep enough to encourage weeds. Some neighbouring gentlemen's places about here have their carriage drives asphalted, and nothing could look neater, cleaner, or better. If I am not mistaken, the broad walks in the Sheffield Botanic Garden are of asphalt. As for the stench, the assertion of "T. B." is a gross exaggeration. In very sunny and hot weather, such as we have not experienced here for years, ill-made walks not properly drained sometimes yield a little and smell, but it is the exception, and I will undertake to lead "T. B." with his eyes bandaged over asphalt walks and defy him to tell by the smell that he is anywhere near gas tar. The disadvantages which he enumerates are imaginary. I do not, however, approve of asphalt in the case of the flower garden and pleasure grounds myself, because they have not a gardenesque appearance, having a too smooth and artificial look; but for kitchen gardens, back walks, and wherever there is much traffic they cannot be approached if well made. They want absolutely no keeping; whereas gravel walks are the most expensive item in the garden and woods, and I have a very accurate notion of their cost here. All asphalt should be laid on a bottom of dry rubble 2 inches or 3 inches deep; next, the asphalt itself should be made of sifted ashes without much or any fine ash; and lastly, only sufficient tar should be put on it to make it sticky. This composition, put on 2 inches or 3 inches deep and well rolled, sets as hard almost as cement, and when taken up years afterwards has to be broken with hammers like bricks. The cake becomes quite hard and dry, so hard as to resist the hardest frosts and warmest sun.

S. W.

CHURCH DECORATION.

It could hardly be expected that the question of the floral decoration of churches would meet with universal approval; I was not, therefore, surprised to see (p. 20) "Northerner's" adverse remarks on the subject. His mention of the curate who felt "like an owl in an Ivy bush" and the cartload of Laurel convinces me that the art of church decoration is of the most primitive kind in the locality in which he resides. Southerners have long ago discarded the old "smother" of common Evergreens and have substituted light festoons of flowers and a few plants in pots. The taste for gardening in all its branches has spread of late through all classes from the highest to the lowest; flowers now enter into every phase of public and private life. No meeting of any kind, whether public or private, is considered complete without more or less of floral decorations. Not only are the conservatories of the wealthy more richly stocked with flowers than formerly, but every villa has its greenhouse, and nearly every mechanic in this locality has his garden frame or miniature glasshouse, and those who are not possessed of either have their window plants or some contrivance whereby they can enjoy a few flowers at all times of the year. Cut flowers are now worn by everyone, and they are sent as presents to friends. I see daily troops of children, too, placing fresh flowers on graves; therefore how can we banish them from our churches? As to the question of good or bad taste, who is to be dictator in such a matter? Why, no two people, it is said, see a thing in the same light. Clergymen from northern and manufacturing districts, who come to the Isle of Wight to seek a genial climate, bewail the backward condition of floriculture amongst their parishioners as compared with what they find associated with the humblest cottage in the south. The use of flowers indoors is not so much a question of means as of taste; our workmen spend their leisure time

in tending their flowers, which formerly was spent in less elevating pursuits. As to folks being deterred from sending flowers to a church at Christmas because it is an inclement season, why should it be more difficult to send them there than to any other place at that time? In this locality many growers for market prepare whole housefuls of plants for the occasion and for supplying cut flowers. In fact, the continuous demand has made such work quite an industry, and many a gardener who has of late years taken to this branch of the flower trade would fare badly if "Northerner's" ideas were but partially adopted. There is, however, little fear of that, as the demand for flowers is still spreading in all quarters, and there can be no question that they exercise a softening and humanising influence, even on the most hardened natures. Therefore, if flowers enhance the pleasures of life, let us not seek to discourage their use by setting up questions of taste; and as regards our churches, if flowers draw some there who have never been there before, they will have done some good, and their sweetness will not have been wasted on the desert air.

J. G. Gosport.

NOTES FROM FRANCE.

Cypripedium Godefroyæ—This new species of Lady's Slipper has been successfully grown and flowered by M. Bergmann, Baron Rothschild's gardener at Ferrières, and was exhibited by him at a recent meeting of the French National Horticultural Society, when it was accorded a first-class certificate. Apparently there should be but little difficulty in growing it, for it is probable that few plants have had so many adverse circumstances to contend with on their journey home from their native land to Europe as this has had. In 1880 M. Godefroy sent to Singapore a collector, who, being quickly affected by the climate there, made up his mind to push on to Tonquin in the hope that a change of climate might restore his health. Making his way into the hitherto unexplored region of Laos, he discovered this Cypripedium growing on the east side of a mountain. Soon after gathering about fifty plants he died, and the case containing them, being deposited with the English consul, was refused transit by several vessels on account of the cholera which prevailed there at the time. It even remained for a period of three weeks on the quay. At length a passage was secured for it to Marseilles, but only again to experience a vexatious delay of forty days, the custom house officers at that time refusing to pass it because it was not accompanied by a certificate attesting that the country from which it came was free from the Phylloxera. Naturally the plants had suffered much from this lengthened confinement, but those that remained alive were consigned to the Messrs. Veitch, and one of them has lately been exhibited in bloom by M. Bergmann. The flowers are large, pure white, with purplish brown lines running down them, the petals are broad enough to overlap, and the foliage is prettily marbled, dark green on a lighter tint on the upper sides and reddish purple underneath. This new Cypripedium is undoubtedly a valuable acquisition, and will probably be rare for some time to come; indeed it is possible that it is not plentiful in its native land, for the collector who discovered it found it growing in a limited area, and probably secured all that he saw. It is said that the plants now in cultivation show considerable divergence as regards habit, thus indicating the presence of several varietal forms of this Cypripedium.

Peach culture at Montreuil.—In England we are apt to think that in the sunny land of France fruit growers are so specially favoured by climate as to render their work as easy and pleasant as it is profitable. That they have their trials, and that the good results obtained by them are principally due to an excellent system of culture and constant supervision and painstaking care, the following extract from the pen of M. Michellin in the "Journal of the French National Horticultural Society" sufficiently proves. "The Peach in our Paris climate demands the shelter of a wall. At Montreuil the walls are built especially for

Peaches, and are therefore bound to answer. The number of kinds grown is restricted, consisting principally of the Mignonne, the Madeleine, Belle Beausse, Bon Ouvrier, Galande, Belle Imperiale, Blondeau, Reine des Vergers, and Vitry. These are good and fine varieties which have been thoroughly proved, and to which are added some new ones, particularly those which ripen early or late in the season. In soils long under cultivation the trees are liable to become covered with Lichens and Mosses, against which remedial measures are constantly being taken, a mixture of lime, black soap, sulphur, and glue being found very efficacious. The constant warfare which Peach growers have to maintain with fly and other insect pests is the most important item in the culture of this fruit. Without it failure would be almost certain. For white louse, which fastens on the roots and which sometimes seizes on a tree and causes its death in a few days, there is, however, no certain cure. Trees thus destroyed are replaced by other kinds of fruit trees, such as Apples, Pears, and Cherries, as blank spaces on the walls are not tolerated. Such as may occur at the foot of the Peaches are filled with Apples grafted on the Paradise, the fruits of which materially help to swell the winter receipts. But everything grown on the walls, whether Peaches, Apples, Pears, or Cherries, get the best of care, and far the greater part consist of those choice kinds of which the sale at good prices is pretty well assured. Disleafing is an operation which gives colour to the fruits; it is performed progressively and in such a manner as to be completed just when the fruits have attained their complete development, that is to say, about a fortnight before they are ready for gathering. This period generally suffices to impart a good colour to Peaches. The ranges of walls are erected in parallel lines, with a space of between 30 feet and 40 feet between them. They are generally about 9 feet in height, and the dividing spaces are occupied with such things as best suit the interests of the owners to cultivate. Fruits, flowers, seeds, vegetables of such kinds as sell in the Paris markets find a place there." In the neighbouring commune of Rosny Peach culture appears to be largely practised; indeed, it seems probable that in the course of time the pre-eminence which Montreuil has acquired in this respect will be transferred to its neighbour, as in the latter place the land is becoming so valuable for building as to render the extension there of fruit culture in a measure impracticable. The most noted of the Rosny Peach growers is M. Bertaut, who owns a garden enclosed by walls containing nearly 5000 square yards, and the walls of which, running from 8 feet 9 inches to 9 feet in height, are about 500 yards in length. The culture is about the same as at Montreuil, but the details are if possible more minutely followed, M. Bertaut growing as much for pleasure as for profit, and not having so great an area to supervise as the Montreuil growers generally, very few kinds are grown, the Mignonne being one of the principal, but the most highly esteemed is the Blondeau, a variety which originated at Montreuil, and which M. Bertaut finds a profitable one, as it unites beauty with fertility. A portion of the space is given to the early and late bearing kinds.

The Calville Apple.—M. Bertaut devotes a considerable amount of space to this fine Apple, which is so highly esteemed in our markets and in those of Paris, and which the French growers export to all parts of Europe. These Calville Apples are either grown indiscriminately among the Peaches or on walls by themselves. In any case they get the same cultural care, the consequence of which is that the Rosny Calvilles are renowned for super-excellence. Two south walls are especially reserved for this Apple, on one of which some 120 feet in length are trained twenty trees some twenty-five years old. The branches, striking upwards from the base, run to the top of the wall, and last year bore about 1500 Apples, which were sold at a minimum price of sevenpence each. This wall is completely covered with fruit-bearing wood, there being no blank spaces. Another wall about the same size is covered with

younger trees. These trees are all on the Paradise. The principal points kept in view are the training of the branches sufficiently wide apart to allow of the wood and fruit being exposed to light and a free circulation of air, a system of pruning which keeps the fruit near the main branches, thus protecting them against the full influence of the rays of a scorching sun. This is accomplished by drawing some of the foliage over them, which is, however, gradually withdrawn as they approach maturity. With this attention they acquire that delicacy of colour so much prized in this fruit, and which in its highest development imparts a high value to it, so that in the winter season some of the finest specimens may be sold at from two francs to three francs each. Thus we see that all is not owing to climate, and that the superior quality of these fine Calville Apples, which many think cannot be produced in this country, is due to the intelligence and care bestowed upon their growth. That similar fruits could be obtained with us there can be but little doubt, for our climate is, on the whole, as favourable to the Apple as that of Paris. The question is, would it pay to grow them? Would it pay to erect walls in the way that the Montreuil Peach growers do and devote them to Apple culture? Considering the high prices obtainable for such choice samples, one is tempted to think it would. Of course, nothing must be left to chance; the safety of the blooms must be assured against frost, and this is all the Apple needs to render crops certain in this country. Peaches and Apricots die away, but the Apple lives for many years, and I am of opinion that in many instances it would be more profitable to grow choice Pears and such a valuable Apple as the Calville on walls than stone fruits. Two shillings is a high price for an Apple, and one would think that the culture of the Calville might be made a profitable industry with us.

Verbesina Mameana.—This is one of M. André's introductions, and was accorded a certificate at a meeting of the French National Horticultural Society. It comes from Ecuador, and is remarkable for its quick growth, attaining a height of 1½ feet in the course of the summer in the open air when raised from seed in spring. The foliage is very large when fully developed and of an ornamental character, so that this plant falls into the category of those fine-leaved things which are now used for summer bedding. *Verbesina gigantea* and *pinnatifolia* are well known, but this new species is said to exceed them in beauty.

New hybrid Gesnerad.—The latest production of M. Vallerand, of Bois Colombes, the well-known raiser and originator of the spotted Gloxinias, is a hybrid between the *Nægelia* and the *Achimenes*. It is said to be a fine plant, the parentage of the *Nægelia* being most fully declared in the foliage, whilst in habit it is more robust than the *Achimenes*. What recommends this new hybrid more particularly is the length of time it remains in bloom—plants which commenced to flower in the beginning of June being exhibited the last week in September in excellent condition, and seemingly likely to produce flowers for some time after that date. It, therefore, seems probable that this intermediate form will prove of considerable decorative value.

Cyclamen pereicum splendens.—M. Eberlé, nurseryman, of 146, Avenue St. Ouen, Paris, thus names his strain of the Persian Cyclamen, which, by the way, appears in a fair way of becoming as popular in France as in this country. He states that this strain is the result of crossing the German strains with those most highly esteemed in this country, the object being to obtain a race of plants dwarf in habit, bearing large flowers, and with foot-stalks sufficiently stout to obviate the necessity of supports. A group of plants in flower recently exhibited at a meeting of the French National Horticultural Society was awarded a first-class certificate.

BY FLEET.

5308.—**Peacocks and bulbs.**—In reply to "J. B.," who asks if peacocks are destructive in the flower garden, allow me to state that they are

especially troublesome in many ways, and if "J. B." values his bulbs more than his peacocks he will take precautions to keep them out of the flower garden. When peacocks walk over beds of Hyacinths, Tulips, and other spring flowers their long tail sweeps the blossoms off wholesale, and in the summer garden *Calceolarias* and other plants of a brittle character get very much broken in the same way. In the kitchen garden, too, they will be found to be very destructive during spring when young crops are coming up.—J. G., Hants.

—Peacocks do not harm bulbs when below the soil, but during cold, frosty weather they will occasionally injure any casual tips of green that appear above ground, especially if not fully fed by hand, as they should be. One prominent winter garden plant they treat as an especial delicacy, however, and that is the Hellebore, more particularly the large white flowers of *Helleborus niger*.—WILLIAM EARLEY.

GARDEN FLORA.

PLATE 476.

THE SUNFLOWERS.

(WITH A FIGURE OF *HELIANTHUS MULTIFLORUS* MAJOR.*)

THE genus *Helianthus* is almost entirely North American, and for the distinction and limitation of its species we are indebted to the labour of Dr. Asa Gray, now universally recognised as the highest authority on North American plants. In the recently published second part of his "Synoptical Flora of North America" he has described thirty-nine species, six of which are annual. The synonyms and cross-naming adopted by previous authors have led to much confusion, which probably will not now be altogether cleared up, for Dr. Gray warns us that the characters of some of the species are variable, especially in cultivation. It may be added that some at least of the species readily form hybrids. There is always more or less difficulty with a variable genus in making garden plants fit wild specific types, but in the following notes I have described no kinds which I have not myself cultivated, selecting the best forms and giving them the names assigned severally by Dr. Gray to the species to which our garden plants seem to come nearest.

HELIANTHUS MULTIFLORUS, or, according to Asa Gray, speaking botanically, *H. decapetalus* hort. var. *multiflorus*, is mentioned first, because it is the subject of the coloured illustration. The name *multiflorus* is established by long usage, and perhaps, was originally given in contrast to the few-flowered habit of *H. annuus*, for the type of the species is more floriferous than the variety, of which Asa Gray says that it is "known only in cultivation from early times, must have been derived from *decapetalus*," a statement which gardeners would hardly have accepted on less indisputable authority, as they will all think the habit and appearance of the two plants widely different. The variety *multiflorus* has several forms; the commonest form is double, the disc being filled with ligules much shorter than those of the ray flowers, after the form of many Daisy-like composites. In this double form the ray flowers are often wanting. It is common also on old plants in poor soils to see double and single flowers from the same root. In the single forms the size of the flowers varies, the difference being due to cultivation as often as to kind. I have obtained by far the finest flowers by the following treatment: In early spring, when the young shoots are about an inch high, cut some off, each with a portion of young root, and plant them singly in deep rich soil and a sheltered, but not shaded situation. By August each will have made a large bush, branching out from one stalk at the base, with from

* Drawn in Messrs. Paul's nursery, Cheshunt, in September.



HELIANTHUS ANNUUS L.

thirty to forty flowers open at a time, each 5 inches across. The same plants if well dressed produce good flowers the second season, but after that the stalks become crowded and the flowers degene-



Flower of *Helianthus argophyllus*.

rate. The same treatment suits most of the perennial Sunflowers. The following kinds are mentioned in the order in which they occur in Asa Gray's book:—

Annuals.

H. ARGOPHYLLUS (white-leaved, not argyrophyllus, silver-leaved, as written in some catalogues).—An annual with woolly leaves, neater and less coarse than *H. annuus*, with which it is said soon to degenerate in gardens if grown together with it.

H. ANNUUS.—The well-known Sunflower in endless varieties, one of the most elegant having pale lemon-coloured flowers; these, too, liable to pass into the common type if grown in the same garden.

H. DEBILIS VAR. *CUCUMERIFOLIUS*.—I have never seen the typical species, but the variety was introduced a few years ago by Mr. W. Thompson, of Ipswich, from whose seed I have grown it. It becomes 4 feet or 5 feet high, with irregularly toothed deltoid leaves and spotted stalks, making a widely branched bush and bearing well-shaped golden flowers more than 3 inches across, with black discs. It crosses with any perennial Sunflower that grows near it, simulating their flowers in an annual form. I had a very fine cross with it and *H. annuus*, but the flowers of this produced no good seed.

Perennials.

H. ORGYALIS (the Fathom-high Sunflower).—The name is far within the true measure, which is often 9 feet or 10 feet. A very distinct species, increasing very slowly at the root and throwing all its growing efforts upwards. The long linear

ribbon leaves, often exceeding a foot, spreading in wavy masses round the tall stem, which has a Palm-like tuft of them at the summit, are a more ornamental feature than the flowers, which are moderate in size and come late in the axils of the upper leaves.

H. ANGUSTIFOLIUS.—A neat and elegant species, which I first raised from seed sent by Mr. W. Thompson, of Ipswich. It has a very branching habit quite from the base like a well-grown bush of the common Wallflower. The flowers are abundant, about 2½ inches across, with a black disc. The plant, though a true herb, never comes up in my garden with more than one stalk each year.

H. RIGIDUS is well known as the best of the perennial Sunflowers, and has many synonyms, the commonest being *Harpalum rigidum*. It need not be described, but one or two things about it may be noted. The shoots, which come up a yard or more from last year's stalk, may be transplanted as soon as they appear without injury to the flowering, but if put back to the old centre, the soil, which should be deep and light, ought to be enriched. The species is variable, and improved forms may be expected, as it produces seed in England. The number of ray flowers is often very large. I have one form which has several rows of them, nearly hiding the disc. A variety is figured in *Botanical Magazine*, tab. 2668, under the name of *H. atro-rubens*. Another comes in the same series, tab. 2020, as *H. diffusus*. Other synonyms are *H. missuricus* and *H. missouriensis*. Its native range extends across North America in longitude, and covers many degrees of latitude. It likes a dry soil. In wet soil and wet seasons the flower-stalk is apt to wither in the middle, and the bud falls over and perishes prematurely.

H. LETIFLORUS.—Under this name we grow in England a tall, much-branched, late flowering kind, with smooth and very stout and stiff stalks, sometimes black, sometimes green. It increases at the base of the stalks; it makes close growth, and shows little disposition to run at the root. The flowers are rather small, not more than 2 inches across, but so durable and so well displayed by the numerous spreading branches as to make the plant very useful for late decoration. I own that I cannot identify this plant with the *letiflorus* of Asa Gray, which he tells us resembles tall forms of *H. rigidus*, with rough stalks, and bears flowers with numerous rays 1½ inches long.

H. OCCIDENTALIS.—Recently introduced by Mr. W. Thompson, of Ipswich, who gave me the plant



Helianthus argophyllus, showing habit of growth.

two years ago. It is a neat species, growing about 2 feet high, well branched, and producing at the end of July abundance of flowers about 2 inches

across. The lower leaves are small and broad, with long stalks, ovate in form.

H. MOLLIS, so called from the soft white down with which the leaves are covered, grows about 4 feet high. Leaves large, ovate, and sessile



Helianthus orgyalis, showing habit of growth in autumn.

growth of the plant upright, with hardly any branches; flowers pale yellow, about 3 inches across, not very ornamental. Cultivated at Kew, whence I had it.

H. GIGANTEUS grows 10 feet high; stem much branched and disposed to curve. Flowers about 2½ inches across, produced abundantly in August; rays narrow and pointed, cupped, with the ends



Helianthus multiflorus, showing habit of growth.

turning outwards; leaves lanceolate and sessile; rootstock creeping, forming tuberous thickenings at the base of the stems, which Asa Gray tells us were "the Indian Potato of the Assiniboine tribe," mentioned by Douglas, who called the plant *H. tuberosus*.

H. MAXIMILIANI.—Half the height of the last, which it resembles, but the stem is stouter, the leaves larger, as are also the flowers, which are produced later. It is not so floriferous and ornamental as the last.

H. LEVIGATUS.—Smooth stalked, very distinct, does not spread at the roots, which are composed of finer fibres than those of most of the

genus; stalks slender and black, growing closely together, branched near the summit, 5 feet high; leaves narrowly lanceolate and acute; flowers



Jerusalem Artichoke (*Helianthus tuberosus*).

plentiful and about 2 inches across; rays few and disc small.

We are warned that the following species are "difficult of extrication," either confluent or mixed by intercrossing:—

H. DORONICOIDES.—I place this, the third in merit, amongst perennial Sunflowers, *H. rigidus*



Helianthus annuus globulus fistulosus.

and *H. multiflorus* being first and second. It is 6 feet or 7 feet high, upright in growth, with many tal ks. Flowers $3\frac{1}{2}$ inches across, produced from

the end of July to the end of September, bright golden yellow; leaves large, ovate, tapering from the middle to both ends; stalk leaves sessile and nearly connate, that is, clasping the stalk by their opposite base. The plant spreads rapidly by running root-stocks, and ripens seed in abundance. Figured as *H. pubescens* in *Botanical Magazine*, tab. 2778.

H. DIVARICATUS resembles the last, but is inferior, being a smaller plant in all parts, especially in the flowers, which come out a month later. The



Helianthus rigidus (syn., *Harpalium rigidum*).

canine leaves are stalked and diverge widely, which habit gives its name to the plant. A casual observer would hardly notice the difference between this species and the last, but when grown together the superiority of *doronicoides* as a garden plant is at once evident.

H. STRUMOSUS.—Fully 6 feet high; growth upright; rootstock less spreading than the last two leaves on very short stalks, broadest at the base, ovate tapering by a long narrow point; flower-disc narrow, but rays large and orange-yellow; flowers showy, 3 inches across; they come out late in August. I had this plant from Kew. The



Common Sunflower (*H. annuus*), showing habit of growth.

shape of the leaves would have led me rather to refer it to *H. trachelifolius*, a closely allied species.

H. DECAPETALUS.—Five feet high; flowers from end of July; makes a dense forest of weak, slender stalks, much branched at the top; spreads fast; leaves serrate, oblong-ovate, rather large; flowers abundant, pale yellow, about 2 inches across; rays nearly always more than ten, in spite of the name.

H. TUBEROSUS.—The well-known Jerusalem Artichoke; not a plant grown for ornament, being too coarse and late in flowering, but several things in its history may be mentioned, as Dr. Asa Gray has spent labour and study over it. It is believed to have been cultivated by the natives before the discovery of America, and the edible tubers are thought to be a development of cultivation. Forms of it without tuberous roots are found

wild, but whether indigenous to the place or degenerate from cultivation was for long uncertain. Several species of *Helianthus* have a tendency to



Flower of *Helianthus annuus*.

produce similar fleshy tubers at the top of the roots. Dr. Gray used to refer the origin of this species to *H. doronicoides*, but it is now believed by him to be a distinct species, though one of which it is difficult to identify with certainty the typical form.

I omitted to say that the word *Helianthus* is Greek for Sunflower. After several years' careful observation, I believe the notion that the flowers keep their face to the sun is quite a delusion.

Edge Hall.

C. WOLLEY DOD.

KITCHEN GARDEN.

THE MOST PROFITABLE PEAS.

NUMEROUS as Peas already are, new varieties are added every year. To this there can be no reasonable objection provided the new comers are distinguished by superior qualities, and the public reject some of the old sorts superseded. This would be a boon to the trade, seeing that so many are named as different varieties that are in reality so much alike, if not identical, that it is impossible to distinguish them. Every Pea that possesses any well-defined characteristic quality should have a name, but names without distinction are a disadvantage to all concerned. And here I must protest against calling Stratagem "a sturdy branching form of Telephone," which it is not. It is a sturdy branching form of Pea, but not of Telephone. The latter may be properly defined as a blue-wrinkled marrow, pods long, large, slightly curved, and well filled with Peaa of a delicious flavour, second early, about twelve days after the earliest, height $4\frac{1}{2}$ feet, while Stratagem is 2 feet in height, more or less according to cultivation. It also differs from Telephone in the Peas being larger and the pods of a different shape. There is an equal impropriety in calling Pride of the Market a dwarf Telegraph. Who has ever seen a dwarf Pea $4\frac{1}{2}$ feet high? "W. I. M." seems to have aimed a heavy blow at these Peas, but nothing less than the bringing in of superior varieties can harm them. I for one should not be sorry to see them beaten, as in that case all would be gainers. Culverwell's Giant Marrow is a grand Pea, and may stand very close to Telephone, but I have not yet seen one that can come near Stratagem. It will not be easy to persuade the public that large Peas are not the best. A Pea, be it recollected, may be large without being coarse. How a grower and a market salesman could speak against Stratagem and Pride of the Market is beyond my comprehension. It appears that by thick pods "W. I. M." means thick shells. Large pods well filled will compensate for very thick shells, and I would challenge "W. I. M." to name a variety that will produce an equal measure of Peas from the same number of pods, as will any of the five following,

viz., Stratagem, Pride of the Market, Telegraph, Telephone, and Culverwell's Giant Marrow—I mean a variety that shall be different from any of the above, and I would further request him to name a variety that will from the same measure of pods produce an equal measure of Peas as Stratagem. The pods of The Baron, “W. I. M.” says, are veritable “wind bags”; with us they are large, straight, and well filled. Evolution he says is a promising sort. I have grown this two years, and find it to be a mixture of four or five distinct varieties, the characters of which do not appear to be yet fixed, but from which, as the name implies, something good may yet be evolved, and then let us hope for the “survival of the fittest.” “For sowing in frames, under walls, and on warm borders, the dwarf American Wonder is invaluable,” as “W. I. M.” says. It of course spoils the palate for round-seeded sorts, but no one need regret that, as we have now so many early wrinkled varieties, that a continuous supply may be had without going to round-seeded kinds. For instance, if we commence with American Wonder, we may go on with Premium Gem, Turner's Emerald, Laxton's No. 1, Alpha, William Hurst, Bijon, Little Wonder, Dr. Hogg, and Bliss's Abundance, and thus without difficulty we can reach Telephone, which with the same treatment is about twelve days later than the first named variety.—R. G.

—Notwithstanding all that has been said (p. 47) in favour of Telephone and Stratagem Peas, I quite agree with “W. I. M.'s” estimate of them, that they are not of sufficiently high quality to grow for high-class consumers. I have to study quality in what I grow, and although excellent as Telephone is for exhibition, that in my opinion is the only merit that it possesses.—J. C. C.

—Following up the remarks of “W. I. M.” (p. 7), I am induced to give your readers my experience under this head. I grow a very large quantity of garden Peas for table every season and in great variety, and whilst admitting the sterling all-round qualities of such popular sorts as Ne Plus Ultra, Dr. McLean, and Marvel—this latter being an especial favourite of mine—I can honestly say that I never grew such wonderful kinds as Stratagem and Telephone, their habit, size, and abundance of pods and quality of the Peas being totally distinct from all other sorts with which I am acquainted. I am not alone either in this opinion, as our “chef de cuisine” has also discovered these superior qualities, and is continually asking for the “Peas in the big shells;” and further than this, their fine flavour has elicited remarks from the table. In writing to Messrs. Carter, who introduced these Peas some years ago, I then told them that I considered their Stratagem the best Pea I had ever seen, and I have no reason to-day to alter my opinion. I might also add, I am in the habit of adjudicating at local shows in the summer months, and it is really astonishing to notice how popular these Peas must have become, as they are to be found in almost every amateur's collection, and in those classes assigned to Peas only they seem to carry all before them; one does not find, moreover, such “fleshy pods” amongst these contributions as when produced under a very high course of cultivation.—D. M. T.

—The lively discussion originated by “W. I. M.” with respect to Peas is in danger of being deprived of its usefulness when it turns upon the merits or demerits of this or that kind only, and deals not with so important a vegetable in its higher or most interesting aspects. There seems to be an assumption that if certain kinds of Peas yield well, give, in fact, a large produce, all is obtained that is required. The same claim has often been urged in favour of large and heavy-cropping Potatoes, that they were profitable, and therefore good kinds because they filled the bushel. I am not prepared to say so much concerning Peas, but certainly it is the case with regard to Potatoes, that just as the tubers are large so are they proportionately lacking in good quality, and especially flavour. Filling the basket is one merit, but it is a merit of a totally different order from having good quality with bulk, and if that be

lacking, how much is the bulk worth? There is just now a strange run on large Peas. I mean not merely large-podded Peas, but kinds which give large Peas when shelled. Now, what is much more worth discussing than is the prolificacy or otherwise of some one or more given kinds is that of relative table quality and fitness as found in large and small Peas. I have heard many good growers decline to grow large kinds of Peas on the ground that they were held objectionable at their employers' tables. That is a point worth discussing, because it is of far more moment that one should grow kinds which give satisfaction than that we should grow merely prolific kinds. Apart, however, from the question as to whether small kinds of Peas—and in using this term I do not necessarily mean small croppers—may have better flavour than larger ones have or not, there is the further question as to whether large Peas, be they ever so good, are so much esteemed as smaller ones are. Many of our new kinds of Peas, unless when shelled before half matured, give a sample that rivals Hazel Nuts in size. Is not that too large for the general, or, perhaps I had better say, refined taste of consumers? I am specially struck with the fact that our metropolitan market Pea growers do not favour large kinds, although they are glad enough to fill the bushels well. William the First and Kentish Invicta, Champion of England and Hundredfold, Veitch's Perfection and G. F. Wilson—these still rank amongst the most favoured of market Peas. Growers would be glad enough to grow larger podded kinds if their customers would have them, but the preference remains for flavour allied to samples of moderate size. I do not wish to put the matter dogmatically, because there is much to be said on both sides, and the discussion ought to be carried on without bias for certain Peas, if that be possible. It is unfortunate when the truth is obscured by a strong desire to favour some one thing or other at its expense.—A. D.

—Judging from what appeared in THE GARDEN last week (p. 47), I am altogether wrong in my estimate of the value of Telegraph, Telephone, Stratagem, Pride of the Market, and Giant Marrow Peas—in fact, it would appear I know but little about Peas, especially those best adapted for market work. Worse still, Messrs. Carter accuse me of having started with the determination to elevate into prominence certain Peas that had hitherto been in obscurity at the expense of four varieties that are admitted to be unequalled for exhibition, &c. Now, I rather pride myself in being independent and impartial, but if Messrs. Carter are correct, then I am guilty, to say the least, of gross partiality. This I positively deny. If the Peas just named are of such inestimable value as they are said to be, I think Messrs. Carter might have trusted to their customers who have presumably so largely benefited by their introduction to come forward in their behalf without any special effort in the matter. Besides, these Peas have now become common property; any seedsman in the country is in a position to supply them, and I hold that I have a perfect right to give an opinion upon their merits. As it happens, I have grown Telegraph, Telephone, Stratagem, and Pride of the Market probably as long as any private gardener in the country. Telegraph we had when the seeds were mixed and before the white wrinkled portion of this variety was converted into Telephone. Surely, therefore, I ought to be competent to estimate their merits. All four are essentially second early sorts, and as such are valuable, but without much extra trouble, in the shape of trenches filled with turf and manure, or prepared as for Celery with plenty of water and liquid manure, they are of no real service either for main or late crops. The majority of us are not in a position to devote much labour upon the Pea ground, and what we want are sorts that yield the most heavily with a minimum of labour and expense expended on them. I have grown and recommended others to grow Telephone from the first, or, if a dwarf sort is preferred, to substitute Stratagem, either Telegraph or Pride of the Market being suited to

those who prefer a greener and less sweet Pea. It appears, however, we ought to grow them all, but will my opponents explain why? We make two sowings of Telephone at an interval of a fortnight, a long row of each, and this we find ample, but I suppose the correct practice would be to sow four small rows each of the four indispensable sorts. This may do for exhibitors and amateurs, but would be a very unwise practice where much packing has to be done.

In my original remarks on the varieties under notice I plainly stated that they “rarely fail to fill well,” and but for the unfortunate omission by the printers of one small word, Mr. Marriott would have had still less cause to complain. Concerning those four varieties, I remarked that “all were good second early sorts, but to grow them all (as it should have been), except for exhibition purposes, would be a mistake.” Are they such wonderful croppers? or do not the dwarf sorts especially produce more haulm and fewer pods than such less showy and, I repeat, thinner podded sorts as Dr. McLean, Marvel, Gladiator, and Wordsley Wonder, which I am supposed to be lifting from obscurity? Does “A Pea Grower” seriously assert that the big-podded sorts which he named produce double the quantity of Peas that either Champion of England or the early form of it, Huntingdonian do? If he is correct, then I readily admit I have much to learn in Pea culture.

“A Pea Grower” admits that he knows but little concerning the comparative market value of large-podded Peas, and yet he tries to prove that I am equally inexperienced in the matter. This is anything but complimentary to me, especially seeing that I have spent several years among growers for the markets. At first Pride of the Market did sell well, but soon came down to the level of the rest, and was actually of less value than Dr. McLean, the latter also being the heaviest cropper. “The Pea trade (as it is termed) has gone from bad to worse” was the last report I had this season, and if Mr. Waterer or anyone else “has cleared a large sum” with Peas during the last season, I shall be agreeably surprised. Will “A Pea Grower” give us a clearer idea of the space devoted by his neighbour to Pea culture, the quantity of Peas he sold, and the “large sum he cleared”? The other Welsh seller who made the regular market grower feel so uncomfortable will be fortunate if he or she is able to annually and successfully repeat the experiment. Much the same thing happened here years ago, but the game is played out. Have market growers taken to the private gardener's method of growing Peas—that is to say, with the aid of stakes? or do the Messrs. Carter assert that the hundreds of bushels of Telegraph they have sold to them are to be grown in the open fields, and, as usual, without stakes? I do not believe it will be a profitable speculation if stakes have to be bought, and it is very certain that tall-growing Peas, or those, say, which attain the same height as Telegraph, viz., from 5 feet to 6 feet, cannot be profitably grown without stakes. When writers recommend tall-growing Peas for market growers, I at once conclude they do not know much about the matter.—W. I. M.

HEAVY POTATO CROPS.

THE Potato is the most important of our garden crops, and that being the case, it is very desirable that the best methods of planting and cultivating it should be well understood. The late Mr. Thomas Andrew Knight made some successful experiments with Potatoes. In 1832 he says: “I had a crop of Potatoes dug up three days ago (of a new and early variety just obtained from seeds) in the presence of several farmers and gardeners, and accurately weighed, when the produce per acre was found to be 964 bushels of 80 pounds each and 64 pounds over, or 34 tons, 8 hundredweight, 3 quarters, 25 pounds, and I do not entertain any doubt of being able, if I live long enough to gain proper varieties, of raising 1000 bushels of 80 pounds from an acre of ground. I am further confidently of opinion that if the crop of Potatoes be wholly consumed on the ground, or the whole

of the manure produced by them, if eaten by animals, be returned to the soil, that it will grow annually richer and be capable of producing better crops." Mr. Knight's plan of culture was to dig holes about 3 feet apart, into which he put a good dressing of manure, and planted three or four Potato sets. His aim was to "expose the largest possible surface of foliage to the light and atmospheric influence, and to keep the soil round the tubers and roots as loose as could consistently be done." At that time it was the practice in Herefordshire, where he resided, to carefully loosen the soil round the roots during the growing period. This practice met with Mr. Knight's approval, but he complained that they planted too late; consequently the tubers exhausted themselves in producing growths before they were planted. Where many acres are planted with Potatoes it is not easy to avoid planting some of them late. On some farms with which I am acquainted the period of planting is necessarily spread over a space of from six to eight weeks. In gardens there must also be different methods of planting, as well as different periods in which the operation must be performed.

The sets for our earliest crop are planted whole. The varieties are the old Ashleaf Kidney and the Uxbridge Kidney. We place some damp Cocoa-nut fibre or leaf-mould in shallow boxes; the Potatoes are placed closely together and pressed into the material. If the weather is fine about the first week in March, the Potatoes are planted out in well prepared soil on a border slightly sloping to the south and sheltered from the north by a wall or fence. The next best position to this is a similar border sheltered from the east, and be it well understood that the soil should be friable by being well exposed to the weather. As soon as the previous crop has been removed the soil should be dug up and manured for the Potatoes. It may, in this case, be well exposed to the sun in autumn, which does the soil as much good as the winter's frosts. We have planted Potatoes in two ways, and I am not very sure which is the best. The first is to draw deep drills with a hoe across the border at a distance of 2 feet from each other, planting the sets a foot apart. The other method is to begin at one end of the border and fork it carefully over, planting the Potatoes as the work proceeds. They are, of course, planted the same distance apart. Perhaps on some soils and in certain states of the weather the latter method is the best. The boxes, up to the time of planting have been kept on the floor of a vinery, and the sets are generally sprouted and have frequently formed roots; they are planted with the sprouts and roots attached to them. The sets for succession are also laid out on the floor of a close shed, and if they sprout in that position, the sprouts are short and vigorous looking. They may well be planted without removing the sprouts if the Potatoes (as they ought to have been) were placed in a light position. The old practice of keeping the sets in a "clump" or pit is a bad one; they are sometimes neglected until the sprouts have grown a considerable length and are matted together. The later planted varieties have the sprouts snibbed off them, about twice at least, before they arrive at the period for being planted out.

A very common method of planting Potatoes in gardens and fields is by the use of the dibber. In some cases an implement is used that is very badly adapted for the work; it is of such a character that the hole made by it is not wide enough at the bottom, so that the Potato set is suspended with a considerable vacuum underneath it; a little loose earth is pushed into the hole, and the operation of planting is considered to be complete. Under such circumstances, can it be wondered at that failures occur? Large market growers in the outlying London districts, some of whom plant 100 acres of Potatoes in a season, use a dibber with a heavy blunt iron head fixed on a handle about 4 feet long, with a cross bar at top. The planter pushes the dibber into the ground with considerable force, making a hole large enough for any Potato set; but the sides of the hole, if the soil is of a clayey character, are

thus made so hard and smooth that it holds water, and in a wet season many of the Potatoes are killed. It requires three persons to plant the Potatoes in this way. A man uses the dibber, a small boy follows, dropping a Potato into each hole, while a larger boy follows with a hoe and draws some earth over each Potato; this he generally does with one stroke of the hoe. Nearly all our late Potatoes are planted by forking the ground over and planting as the work proceeds. In this way the sets are placed in loose earth, and as no trampling of the ground is necessary, the whole of it is left in the best condition possible. I have often wished, when observing the operations of planting Potatoes going on in this district, that the growers would take more care of their Potato sets before planting them. I do not know any crop that is so much improved by good cultivation or deteriorated by bad management as the Potato. As soon as the plants appear above ground the draw hoe should be at work amongst them, and if the ground is rather foul with weeds it will be necessary to hoe it over twice in two weeks. Kill the weeds during their first inception, and when the ground is perfectly clean and the plants have grown sufficiently, let them be moulded up. One more word of advice: Be careful not to injure the plants, either root or branch, during the operations of moulding up or of hoeing. The late Mr. Knight's advice is founded on sound practice—that is to expose as much as possible of leaf and branch to light and air.

J. DOUGLAS.

EARLY PEAS IN HOT PLACES.

MANY will now be thinking of sowing early Peas, and an attempt will be made to get them up as soon as possible. The best way of accomplishing this is to sow them in pots, boxes, turves, or something of the kind, and place them in a temperature of 65° or 70°. Here they soon show themselves, and in ten days or a fortnight they will have grown some inches in height, but the question is, can they be kept growing at this rate? and if not, will they be injured by the check which they must sooner or later experience? Certainly they will. Peas are often sown in January and February, and grown in warmth until about a fortnight previous to their being planted out in March, when they have a short hardening off in a cool frame, but they are generally very tender and straggly, and it is some weeks before they really begin to grow. Throughout their existence, too, they retain evident traces of having been unnaturally treated at first. This, I fear, is of common occurrence, but it is a mistake, a fact confirmed by the appearance of the plants and the inferior quality of their produce. There is, however, a remedy, and an effectual one, viz., raising them in cool positions under glass. The seed will germinate well enough at this season in a frame or house in which no artificial heat is employed, and this is the way in which Peas may be raised successfully without experiencing any check. Their growth is not rapid, but it is sure and substantial. I like a frame about 2 feet deep better than any other structure in which to raise early Peas. Fill some hundreds of small 3-inch pots half full of soil, then put in ten or a dozen seeds, finish off with more soil, and place them in a frame covered with a good sash; they will soon germinate and make fine, sturdy, dark green-leaved plants, which may be planted out almost at any time without receiving the slightest check. If a batch were placed in a cold frame and another in a warm house at the same time, the latter would soon appear to be far ahead of the former, but by April the frame ones would be by far the best as regards robustness and fertility. Cool frame treatment comes nearer to natural growth in insuring healthy development than anything else, and it is before it in bringing them on to maturity. I repeat, there is no better place than a cold frame in which to raise early Peas, and I would advise everybody, especially amateurs, to try Pea growing in this way. No expense is incurred in getting them up or anxiety in getting them put out and hardened off, as by judicious air-giving on fine days they may

be grown from the first in a most natural way and induced to pod some weeks earlier than any grown wholly in the open ground.

J. MUIR.

Margam, Glamorganshire.

Wormleighton Seedling Potato.—I believe I am accurate in stating that this Potato was awarded the first prize for the best dish of Potatoes at the Crystal Palace Show, an honour which it well merits. For five years I have grown this Potato largely, and I can say with confidence that it is the *beau idéal* of a first-class Potato. There are some growers who look upon it as identical with Magnum Bonum, an opinion from which I totally differ. We are just now using this variety. It is kidney-shaped, but slightly flattened, of large size, and in flavour excellent. The skin is rough, but not scabby, and as regards productiveness it is positively extraordinary. As a disease-resister, too, it is invaluable, its hard woody stems clearly denoting the fact. Last season, although the weather was remarkably dry, this Potato, in consequence of its vigour, got well hold of the land, and its large haulm completely shaded the tubers, a fact which doubtless did much towards securing a crop.—R. GILBERT.

BOOKS.

THE FERN PORTFOLIO.*

THIS portfolio of Fern portraits is the most luxurious of Mr. Heath's compilations on the subject of British Ferns—a subject which he has treated from the popular point of view in some smaller earlier publications. The present is, however, a somewhat pretentious work, inasmuch as the author claims for it that it "stands alone," and that "no other publication dealing with the subject gives absolute *fac-similes* in form, colour, and venation of the fronds of Ferns," as if Mr. Bradbury's Nature-printed volumes had never seen the light. The publication is in folio, and contains fifteen plates, in which are represented life-size all the species of British Ferns. The production of these portraits, it is stated, is the special aim of the work, the text being intended to be quite subordinate to the plates. The size of the page (16 inches by 12 inches) permitted of fair samples being selected for illustration. The figures themselves, which are executed in chromo-lithography, are of unequal merit; and while in some of them the form and venation are accurately rendered, the fructification is in most cases a failure. Neither plates nor text are numbered, which is objectionable, on account of the difficulty of making references. True, there is a table of contents, in which the plants figured in each plate are set down, but on turning over the leaves to find any one species in particular there is beyond that not the slightest assistance given to the reader that we can discover.

The first plate represents the Royal Fern (*Osmunda regalis*), which is very faithfully depicted, the form, colour, and venation being accurately rendered. The description is meagre, as indeed the introduction leads us to expect; but the statement that the fronds are of two sorts, barren and fertile, is only true in the sense in which it might be applied to any other Fern. The next plate is the Broad Buckler Fern (*Lastrea dilatata*); the figure is good, but the description says, "The frond in general form is broadly lance-shaped, though nearly triangular"—which is not very clear, and would have been more accurate if the latter phrase stood alone. Next comes the Black Maiden-hair Spleenwort (*Asplenium Adiantum-nigrum*), a heavy-looking plate, showing none of the "rich and glowing loveliness" it is said to possess. The common Polypody (*Polypodium vulgare*) is represented in both the blunt-lobed and the acute-lobed forms, but the former only is described. The form selected to represent the soft Prickly Shield Fern (*Polystichum angulare*) is scarcely a typical one, being too distinctly acute

* "The Fern Portfolio," by Francis George Heath. London: Society for Promoting Christian Knowledge.

n the pinnules, giving the frond an unusually spiny appearance; nevertheless, there is such a form to be found, and the figure very well represents it, except that nothing can be made of the sori, of which the text says, "The spores are produced in two short rows, &c.!" Next comes a plate containing figures of Hart's-tongue (*Scolopendrium vulgare*), Hay-scented Buckler Fern, *Lastrea recurva* (æmula), Rigid Buckler Fern (*Lastrea rigida*), and Hard Fern (*Blechnum Spicant*), all good general figures, but lacking the special definition of the venation, which the introduction points out as one

or the veins. The sori of Maiden-hair is quite incorrectly described, and the venation of the Holly Fern is also incorrect. The European Bristle Fern (*Trichomanes radicans*), Limestone Polypody (*Polypodium calcareum*), Three-branched Polypody (*P. Dryopteris*), and Mountain Polypody (*P. Phegopteris*) form one group, all except the first fairly represented, but that, so far as we can make out, shows no fructification, and the *Polypodium Dryopteris* is unreasonably small compared with the other Polypodies beside it. Another group consists of Marsh Buckler Fern (*Lastrea Thelypteris*),

dered. In the next plate, which is devoted to the hard Prickly Shield Fern (*Polystichum aculeatum*), *Cystopteris regia*, *Gymnogramma leptophylla*, and *Allosorus crispus*, the figures are all fairly good, the first being perhaps a little too small in its parts compared with other subjects throughout the work. Then comes a plate with five subjects, of which only very brief description can possibly be squeezed in; they are *Polypodium alpestre*, sterile only; *Asplenium lanceolatum*; *Asplenium Ceterach*, very poor; *Asplenium fontanum*; and *Asplenium Ruta-muraria*. This is followed by the Crested Buckler Fern (*Lastrea cristata*), *Asplenium Trichomanes* and *A. viride*, *A. germanicum*, and *A. septentrionale*. The first is a sterile frond only, and very incorrect as to venation, some of the forked venules being made to run parallel nearly the whole length of the segment. Last plate of all (No. 15, according to the contents table) comes the Male Fern (*Lastrea Filix-mas*), the two *Woodsias*, *ilvensis* and *alpina* (poor figures), and the two *Hymenophyllums*, *tunbridgensis* and *unilaterale*. The Male Fern is a good figure—one of the best in the book, perhaps—but it certainly does not represent the typical form of the species, but the variety *paleacea*, a form so far removed, that some botanists regard it as a distinct species.

We have thought it only fair in noticing a book of this pretentious character to indicate briefly some of its shortcomings. As a popular picture book, well got up and suitable for the drawing-room, it is worthy of commendation, for many of the figures are life-like and telling. We notice that throughout the work Mr. Heath pays no respect to capital letters in the names of the species when he ought to use them, nor does he always select the best or the current name, or acknowledge to whom he is indebted for any of those he uses—matters which might be passed over in silence were it not for the pompous announcement of his being the first to give correct details of venation, form, &c., a statement which we have shown by his own book many of the figures do not bear out. Still, we repeat, the volume, being exceedingly well got up, is fit to find a place on any drawing-room table, and we trust, in the interests of Ferns and Fern culture, that it may find its way to a large number of them, and be the means of bringing many of its readers into the well-filled ranks of Fern fanciers. M.

GARDENERS EMIGRATING.

UNDER this heading we published in Vol. XX. of THE GARDEN (p. 496) some useful advice from Mr. Peter Henderson, of New York, to gardeners intending to emigrate to the United States, and to that well-known florist we are again indebted for the following on the same subject: "I think if you will again publish in THE GARDEN a warning against the error so often made by gardeners in coming to the United States at unseasonable times of the year, it will do many of them a great service. The time for gardeners to come to the United States is during our spring months—say from February 15 to April 1. Hundreds of them come over every season in our hot summer weather or in midwinter, when everything is frozen solid. At either of these times it is next to impossible for gardeners to get work, and they have often to remain idle for months in New York, where board costs about £1 per week. As I am often written to for information on this subject, you might say that no gardener should come here bringing his family with him unless he has an engagement, or else has means enough to keep him for at least six months, unless his family happen to be old enough to work and willing to do so. Emigration is better suited to the young. Few men take kindly to a new country, even at middle life, and old men hardly ever do. The wages for gardeners' assistants run at the present time in the vicinity of New York from £3 to £4 per month and board, and for head gardeners from £10 to £12, with house, fuel, &c. There are some, of course, who get higher pay and some lower, but these are about the average. It must be taken into account that the purchasing power of 20s.



Helianthus multiflorus fl.-pl. (See p. 66.)

of the main features of the work. The descriptions, four on one page, become very meagre. Then come the Mountain Buckler Fern (*Lastrea montana*) and the Prickly-toothed Buckler Fern (*L. spinulosa*), both very good figures, excepting that the curved arrangement, by which the fronds of the latter is twisted into the space, destroys one of its most striking characteristics, and the unnatural curving is not pointed out in the accompanying notes. The Lady Fern (*Athyrium Filix-femina*), the true Maiden-hair (*Adiantum Capillus-veneris*), and the Holly Fern (*Polystichum Lonchitis*) occupy the next plate. The figure of the Lady Fern is coarse, without definition of the sori

British Bladder Fern (*Cystopteris fragilis*), Mountain Bladder Fern (*Cystopteris montana*), and Sea Spleenwort (*Asplenium marinum*). Here the *Lastrea Thelypteris* shows only the sterile frond, while the others give a good general idea of the plants intended without going into details. Next comes the Bracken (*Pteris aquilina*), Moonwort (*Botrychium Lunaria*), and the two Adder's-tongues (*Ophioglossum vulgatum* and *O. Insitanicum*). The Bracken specimen represented, though fair-sized, is spindly, and shows no fructification. The others are such characteristic plants, that a recognisable figure could scarcely fail to be obtained, but in the *Ophioglossums* the venation is not well ren-

here is not equal to £1 in England. I would say that it would be fair to estimate, everything considered, that a man getting £10 with perquisites per year in England would be as well as if he got £60 here. On the other hand, we have advantages, as our more rapid increase in population and opening of new towns in every direction give gardeners beginning the business of florists and market gardeners more facilities than in England. It is, however, a necessity for success that no matter how well a gardener may be posted in his business in England, our climate and conditions of things are so different, that to be successful in any departments of our business here, a residence of some years in the country is indispensable. I have known scores of men who have come from Britain with capital and at once plunged into business here who have lost their all in twelve months."

FLOWER GARDEN.

MORE ABOUT DAFFODILS.

MANY questions about Daffodils are now asked every week in the gardening journals. The answers given are various and sometimes contrary to one another: still, under varying conditions all may be right. I send a few notes founded on long experience in the cultivation of the Daffodil, and suggest a few experiments, which anybody may easily try. The questions asked are, What is the best time to plant bought Daffodils? How deep should they be planted? When we want to divide or transplant them, what is the best time for doing it? And does it injure them to keep them out of the ground? or are they better for being taken up and dried?

To give a general answer: Most kinds of Daffodils are so hardy and so enduring as to be able to go through a great deal of ill-treatment without resenting it or feeling much injured; but as the public are beginning to buy rare and expensive kinds they naturally wish to do the best with them, and there are some which require careful cultivation. The most important question is that which relates to the time for transplanting; the bulbs may be dug up and moved without injury any time that they are at rest; but this period is very indefinite, lasting in some dry soils, and with some early kinds, from the middle of June till the middle of September, but in wet and late soils less than half that time. Indeed, in the damp, strong soil of my garden I never at any time find the roots quite dead, and of some late kinds in wet seasons an inch or so of green leaf remains at the crown of the bulb all through summer. In such soils as this I think the best time for lifting is before the leaves are quite dead—perhaps when dead for two-thirds of their length. The next point is, ought they to be replanted at once, and are they better or worse for being kept some time out of the soil? Anyone may test this, and in ordinary soils if he plants half at once and keeps half out of the ground in a dry and airy place for three months and then plants them, it is likely enough that in flowering time next spring he will see no difference between the two sets. In this backward and wet soil I often keep those I am moving out of the ground for two or three months to ripen them thoroughly, partly, too, for convenience or giving away, and spread them under a south wall in all the little sunshine this climate affords. I replant before the end of September, and think the flowers finer and the growth more vigorous than if replanted at once, but I am not very confident about it. On the other hand, when in the ground they are more out of harm's way. They cannot be forgotten. They will not become mildewed, as they do to their detriment if stored in a damp, ill-aired shed. When above ground birds peck and scratch them about from curiosity, for I never found that any bird or any kind of mouse would eat Daffodil roots. It must not be supposed that any change of treatment after the spring growth is completed will make a bulb flower the next year which would not otherwise have flowered. I believe that all

spring bulbs make the germ of the next year's flower while this year's leaves are growing. We are often told that Daffodils bought from nurserymen have been planted after Christmas and, nevertheless, flowered well; but if planting is deferred so late the flowering is retarded, and the subsequent growth less satisfactory. I should plant from choice before the end of October, though I have many times planted all through November with good results. The surest way to spoil the next year's flowering is to transplant bulbs, letting the roots get dry whilst still in flower. If a ball of soil is kept round the roots, or they are packed for a short time only in wet Moss, they may be transplanted with little injury at any time. As regards depth of planting, I am unwilling to lay down any definite rule. I have found wild Daffodils at all depths, from a foot to 2 inches, often in the same field, and I have repeatedly tried planting at all these depths. For deep planting of course the soil must be deep and well worked below the bulb; and the deeper, the earlier it will come up, being more out of the reach of frost, but the leaves and flower-stalk will grow taller. If we wish to encourage a dwarf and compact habit, shallow planting should be the rule, but the lighter the soil the greater the depth may be. Where garden room must be economised, deep planting enables us to utilise the space over Daffodils for late annuals or bedding plants, and, provided an autumn dressing is given, this double crop does no harm. A safe rule in good soils is to leave 6 inches of soil above the crown of the bulb.

The moral to be drawn from these remarks is that all should make experiments and observe the treatment best suited to their own soil and climate, as well as to the different kinds of Daffodil they can cultivate. I have only just read a note in *THE GARDEN* on "Planting Narcissi," the writer of which says that he is in the habit of buying Daffodils in September, of potting half at once and the other half in December, "with only this difference in their flowering, that the late potted batch is always the best by a good bit." No doubt he will be contradicted, and the converse affirmed. Without any wish to encourage controversy I have stated my own experience as well as I can, but let everyone try and judge from results.

C. WOLLEY DOD.

Edge Hall, Malpas, Cheshire.

PROTECTING CHRISTMAS ROSES.

THE beauty of the Christmas Rose is only fully seen when the blooms are shielded from harsh drying winds and heavy rains. When fully exposed the blooms are not only disfigured when pelting rains bespatter them with dirt, but they do not come to their full size and purity of colour. Covered with a handlight, the more genial climate thus created favours their perfect development, the flowers coming large and being ready to gather when they are most required. Probably the best way to ensure an early supply of bloom is to take up the plants carefully about the last week in October, putting them into pots just large enough to comfortably contain the roots, and placing them in a position near the glass in a light airy house. Christmas Roses will not bear forcing, as the word is commonly understood, but, like Camellias, Cyclamens, and zonal Pelargoniums, they enjoy a temperature which does not fall below 45° and which does not rise much beyond 55°, never exceeding 50° at night. Give them this constant warmth, with abundance of air on fine days, and you will get plenty of good flowers for Christmas decorations. Those who can devote a frame or two to this useful flower will be well repaid for the accommodation accorded, as there being no necessity to disturb the plants from year to year, the growth made by them will naturally be stronger and the individual blooms will come larger. But frames are often much required during the summer months, in which case it is easy to move the plants out in spring, but the best way is to plant them permanently in beds the width of the frames. Then, if some boards are fixed round—

a layer or two of bricks will do—the lights can be laid on when the proper time arrives and again replaced when the blooming time is over.

J. C. B.

MOSSY LAWNS.

ALLOW me to state that one of the simplest and best methods of destroying Moss on lawns is by an occasional light dressing with fresh-slaked lime mixed with a small quantity of soot to prevent its appearance being conspicuous and offensive. Both should be sifted through a fine sieve before use, so as to remove any stones or other objectionable matter. This mixture should be sprinkled evenly and lightly over the Grass once or twice during the autumn or winter, choosing a dry day just before rain for the operation. As spring approaches and the Grass begins to grow, a light dressing of finely-sifted stick ashes and burnt earth will effectually destroy any mossy patches that may have escaped, and further tend to produce a dark, healthy colour in the Grass. This, like the other dressings, should be applied just before rain-falls; it will then disappear quickly. Where the Moss is very dense, these top-dressings will cause it to appear yellow and unsightly for a short time; but where this is the case, a small quantity of fine Grass seeds should be mixed with the last dressing, and the roller run over it when finished. By these simple applications any lawn may be easily kept perfectly free from Moss, and the turf rendered rich and uniform in colour.—W. C. T.

Let Mr. Ward take advantage of the first frost to rake the lawn over with iron rakes; the Moss will then come clean out and leave the Grass undisturbed; then give a slight dressing of some good sifted material, such as burnt garden refuse, old lime rubbish, or, failing these, some good garden soil or road scrapings, and at the same time sow a few pounds of good lawn Grass seed. All work of this kind should be done between January and March. Another method nearly as good is to get a cartload of unslaked chalk lime and have it made into a cone-shaped heap; then have it banked round with some good light loamy soil, and when the moisture of the soil has slaked the lime have the two well mixed together and sifted through a fine sieve; sow this mixture all over the mossy lawn and the Moss will die out and the Grass improve.—R. M., *Tattondon.*

There are several ways of clearing a lawn of Moss, the cheapest and most expeditious being a good dressing of fresh-slaked lime, which turns the Moss quite brown in a very short time and destroys its vitality, when it may be swept out from the Grass quite easily, or allowed to remain till it rots away or becomes shrivelled up. As dusty lime is awkward to put on alone, it is better to mix it with fine soil, as then it may be sown or scattered broadcast, and the lawn regularly and evenly covered. Moss may also be got rid of by raking the ground, giving it a thorough scratching with fine iron rakes, which tear it out and do good by scarifying the surface, especially if it is intended to sow fresh seed, as the raking is a good preparation by making a bed in which it can germinate. Plantain, Daisies and such like large growing weeds may be killed by dropping vitriolic acid into their crowns, which anyone can do quickly by having a long stick notched at the end where it goes into the bottle, when it will hold enough to do several plants without redipping. The bottle for the acid ought to have a large mouth, and be tied round the neck with a piece of wire, terminating in a loop at the end to carry it by, as, were string used, the acid would soon burn it up. Lawns that are infested with Moss and weeds are generally poor, and the plan to pursue when they are so is first to destroy the Plantain and Daisies, and then give a coat of lime, soot, and soil, which should be worked about by the aid of a coarse wooden rake, that it may be distributed properly and the crowns of the Grasses set free. If these are thin and patchy, some seed ought to be sown to furnish the gaps and make a close bottom, as it is not in the nature of things for ground to be bare, and if Grass has not possession, weeds soon take its place. Many sow

seeds, collected at random, that fall from bay-racks, which are very unsuitable, and it is far better to get the mixtures sold by nurserymen, as they contain only sorts that are fine growing and that make a nice sward. For sowing these mixtures March is the proper time, and to give the seeds a fair chance and keep them from the attacks of birds, they should be well raked in and covered with fine soil, or the loss will be great.—S. D.

RANUNCULUSES AND THEIR TREATMENT

I AM often surprised we see or hear so little of these showy and once popular florists' flowers. The tide of fashion seems to have set in against them; but there are other causes for their disappearance—for instance, a supposed difficulty as to soil, situation, &c. This is shadowy and unreal, as I shall indicate in a moment, but a veritable mistake arises from giving the same general directions for the successful cultivation of the several sections. Recently looking through a manual in which this matter is dealt with, no distinction is made as to the treatment of the Persian, the Turban, the Scotch, or the French, not to mention the recently introduced Cockade *Ranunculus* or the old semi-double section, still retained in several old Irish gardens, called Meladoces. The three last, I may at once say, I have found perfectly hardy here, but a severe winter injures the foliage somewhat and checks subsequent growth. To remedy this, while at the same time strengthening and improving the blooms by-and-by, I mulch with short stable litter at the end of November. Those thus treated are now in very fine condition, though so far we have had here practically no winter. This is when I do not choose to lift them. They may, however, be lifted, dried, and stored in sand if you wish to remake the bed or to divide them. This I cannot find time for or think necessary more than every third year. The Persian or Turban will not bear open treatment, but must be thoroughly matured, dried, and wintered indoors. Those I have left outdoors have failed, but I am certain all will agree with me that there is no flower in the whole garden more deserving of this attention. Now, a word as to soil and situation above referred to. Any soil that will retain a fair proportion of moisture without becoming stagnant and that is tolerably rich will grow *Ranunculi*. A sprinkling of peat often assists in this way. I grow mine in partially raised beds, so that they may be fully exposed. The two first-named sections love the sunshine, though, when intense, it causes those too richly grown to flag. In planting I prefer a bed previously prepared, though this or various manures or composts is unnecessary. I always put some river sand above and below the tubers. It acts as drainage while retaining moisture, and supplies the necessary silicates to give firmness and stamina to leaves and flower-stalks. To-day I have started the Persians in boxes of mould with the view of transferring them to the beds later on.

Clonmel.

W. J. MURPHY.

HYBRID HELLEBORES.

MR. POE's communication (p. 38) relative to a distinct form of *Hellebore* of the *niger* family raises an interesting question, and one that deserves consideration. It is nothing less than this: Is there such a thing as a hybrid *Hellebore* of the *niger* family? This involves itself into the further question: Is there more than one species of *Helleborus niger*? Of course, if the four ordinarily recognised forms, *niger major*, *maximus*, or *altifolius* and *angustifolius*, are true species, then, as they are confessedly very closely related, intercrossing is not only possible, but probable, and so Mr. Poe's plant may well be a hybrid. But if there is but one species of *H. niger*, then no cross-breed between any two of its forms or varieties can be a hybrid. Now, Mr. Poe's plant is interesting, as affording an instance of the gradual blending of forms which some regard as so distinct that they reckon them as species. His flower at first sight would be taken for *angustifolius*, but the marbled flower-

stem excludes it from that so-called species. Again, we are told that the coloured pistil is a specific character of *maximus* or *altifolius*. Well, Mr. Poe's flower has the coloured pistil, but the plain green leaf-stalk excludes it from that so-called species. It is evident, then, that a coloured pistil is not sufficient to constitute *H. niger maximus* a species, nor a green leaf-stalk sufficient to constitute *H. niger angustifolius* one. I think it very likely that, according as growers of *Hellebores* take an intelligent interest in carefully examining their own plants and those which they see elsewhere, as Mr. Poe does, there will be found many more such instances of the blending of the various forms of *H. niger*. I got a plant last summer from Guernsey, through Mr. T. Smith, of Newry, which is quite distinct from any other I have seen. It has soft red-coloured flowers of the build of *maximus*, with marbled flower-stem, but the pistil is ivory-white and the foliage is green and smooth on the edge; yet I feel pretty sure that it is only a seminal variety of *maximus*. It would be well if some recognised botanical authority would examine the question and decide whether the four commonly received forms of *H. niger* are specifically distinct, or are only varieties of the one species. Then, if it be decided that they are not specifically distinct, it would be a gain to gardening to abandon as misleading scientific distinguishing titles and to give them, and such other really good and distinct forms as may arise or be found, floricultural names, such as are found so convenient in the case of varieties of the caulescent section.

FREDERICK TYMONS.

HYACINTHUS CANDICANS.

Now that the bulbs of this fine hardy plant are plentiful and cheap, it ought to be extensively planted wherever a stately plant is wanted. I cannot think that the adaptability of this plant to all kinds of soils and positions is sufficiently well known. I do not mean to say that individual plants make striking objects, but planted in clumps of from twelve to twenty bulbs in each, and covering a space of some 18 inches, they form no mean ornaments in any position. When once planted they take care of themselves and last for years; in fact, when grown in a fairly good soil their vigour increases, although the number of bulbs does not. This plant is admirably suited for mixed borders, and as it flowers in August and September it comes in when many other hardy plants are on the wane. It is just the plant to use in the wild garden, for neither heat nor cold, wet nor dry weather will injure it. Plant the bulbs about 3 inches under the surface, well stirring up the soil before planting, and their well doing is insured. Where white flowers with long straight stems are required, a permanent row may be planted anywhere in the kitchen garden; it will be found that they will be most useful, for their stiff straight stems and drooping bells associate well with most other subjects. This plant, I think, might be turned to useful account in isolated bedding; a bed planted with alternate rows of the *Hyacinthus* and the taller growing *Daffodils* might be made to give two distinct displays of flowers in one year. The *Daffodils* would be out of flower and the leaves dying away by the time the other was a few inches above ground. For the embellishment of the conservatory this *Hyacinth* is admirably adapted. If six bulbs are put in a 7-inch pot, a good sized specimen may be quickly formed; for this purpose they should be potted at once; any good loamy soil will suit them. By placing a few in a cold pit or greenhouse and another lot plunged in ashes in the open air, a succession of flowers may be had. If desired, this *Hyacinth* may be had in flower six months out of the twelve, as it submits to steady forcing. I am acquainted with a grower who makes a point of forcing it into flower in May in order to obtain its white flowers for bouquet making.

J. C. C.

5305.—Raising seedling *Alstroemerias*. If the *Alstroemeria* seed which "G. C." has is good, there ought to be no difficulty in raising

plants from it; it should germinate readily in gentle heat if sown about the middle of March, which is the best time, as then the plants may be turned out to make their growth in the beds or borders, where they will drive their tubers far down by the autumn. As it is almost impossible to transplant *Alstroemerias* successfully, owing to their being so impatient of any disturbance, the seeds should be sown thinly in small pots, and the plants transferred from them without breaking the ball. Another way of getting *Alstroemerias* established is to sow where they are to remain, which should be done as soon as the seeds are gathered, when they will germinate the following spring. To grow the plants well out-of-doors, special preparations should be made for them; they must have good drainage and a warm situation. The best place for them is a border in front of a south wall or house, where the earth should be dug out to a depth of 2 feet 6 inches or so and a layer of brickbats put at the bottom. To keep the interstices between these open it is advisable to cover them with a sprinkling of half-rotten manure, when the bed may be filled up with sandy soil and leaf-mould and the plants planted out. Started in this way, they spread rapidly and soon become fine and strong, when they flower profusely if properly protected during winter, which may be done by giving a top-dressing of half-rotten leaves; the latter will keep out frost and shelter the young crowns and shoots that strike so early in spring.—S. D.

WORK DONE IN WEEK ENDING JAN. 20, 1885.

JANUARY 14.

FROST continues. Carted manure to Potato ground; thinned out Apple trees in orchard by cutting out the worst varieties, also thinned out the branches of Nut trees and removed suckers from them, these being preserved, as they make excellent sticks for plant tying; cutting and pointing Pea sticks, and also cut away a few low branches from Oak and Beech trees that obstructed the sight of certain vistas from the pleasure grounds. New seeds arrived, and previous to putting them in the drawers these were all cleaned out, and such old seeds as it was thought might yet be of service were marked as old, so that if required for use the date could be a guide as to how to sow—that is thick or thin according to age and appearance of seeds. Sowed Celery in a shallow box, over which was placed a sheet of glass till germination takes place. Vegetable seeds that we sow in this manner are placed in a cool house, such as a late Peach or Fig house. Put in warmth a few more *Hyacinths*, *Narcissi*, *Tulips*, and *Roses*, also another fifty *Strawberry* plants; those in flower were given a little air daily, slightly increased firing being needed this cold weather to enable this to be done.

JANUARY 15.

Thaw, very slight rain, which did not hinder our open-air work. Began trenching again in kitchen garden, also began to prune large orchard trees. There are large bushes, and the pruning we do is simply to cut out any branches that cross or chafe each other, and any cankered ones and extra long spurs on branches that are left are shortened back—Moss and Lichen being rubbed off as pruning proceeds. The orchard is on Grass, and the most satisfactory way of manuring the trees we have yet tried is a good dressing of soot and guano, sown thickly over the entire orchard and left for the rain to wash it in; put away seeds, labelled drawers, spread out seed Potatoes on fruit room shelves; also Garlic, Shallots, and Onions for seed. The three last will be planted as soon as the ground is in working order. Sowed Conifer seeds received from Corsica. They are sown in pans covered with glass and placed in a cold frame; also sowed the following seeds in pans and placed on bed in Melon house: *Acacia lophantha*, *Salvia argentea*, *Phormium tenax*, *Grevillea robusta*, *Marvel of Peru*, *Chamaepeuce diacantha*, and *Chamaepeuce Casabonae*; washed pots of *Cinerarias*, *Primulas*, and bulbs, and arranged them to the best advantage in second Peach house. The con-

stant shifting about of plants that fruit forcing always entails where proper plant houses are lacking is oftentimes very inconvenient, but at the same time it affords frequent change of arrangement, and therefore of renewed pleasure to many, and thus the additional labour is compensated.

before the gravel gets dry, else it does not bind nicely. This soft state of the gravel is also the best for applying surface sprinklings of new gravel on such parts as look dirty or discoloured, and some of this work we have done to-day. Shrub pruning (Laurels and Rhododendrons) and

the borders the old mulching and loose top soil will be removed and new material be given. Gave another watering to late Muscat house (inside border); the lights of this house are not movable, and artificial watering is therefore compulsory. The whole of the interior is



Full-sized flower of *Helianthus multiflorus*. (See p. 66.)

Turned heat on Fig house; forcing will begin but slowly, 50° at night being the maximum on cold nights. The trees will be syringed each day when the house is shut up at two o'clock.

JANUARY 16.

The thaw is complete. All walks have been rolled; the frost upheaved the ground, and it is therefore imperative to get this operation done

clipped hedge of Lawson Cypress. This plant makes the neatest of hedges and bears any amount of clipping, and which may be done at any season. Pruning orchard trees and digging Potato ground. Took lights off late vinery, the inside borders being thus, as it were, turned outside. All the woodwork and Vines will now be well cleaned and the lights be washed before they are again put on. Soon as there has been sufficient rain to well soak

being washed with soapy water and the Vines dressed with Gishurst. Trailed Peach and Nectarine trees on back wall of new vinery; we have not much faith of their doing any good beyond the second year, as by that time the Vines will shade the whole of the wall, but the trees will then remove well to some other position, so that there will be no loss. The plan of furnishing back walls of vineries with other fruit trees, by limiting the

Vines to about two-thirds of the roof, is not to be commended, for the best Grapes are always had when the Vines are allowed every available bit of head-room or length of rod. Sowed the following seeds in pans and placed them in heat: *Solanum pyracanthum*, *Ferdinanda eminens*, *Echeveria metallica*, *Centaurea candidissima*, Tomatoes Earliest of All and Hackwood Park Prolific, and Telegraph Cucumber. Got in soil for Melons: moderately stiff loam with just a sprinkling of half-inch bones is our compost, and it is well beaten down as each layer is put in. Wireworm is present in the soil, and as some are sure to escape us when the soil is being housed, we place pieces of Carrot in it, a bait which they quickly find out, and so get caught. Having had whole sets of plants destroyed by this pest has made us wary in respect of preventive measures to avoid similar losses in future.

JANUARY 17.

Dull, no frost, but very cold; cleaned up coach roads and rolled recently laid turf, tidied up kitchen garden, and began to relay Box edgings, and to mend such parts of edgings as do not require entire replanting. Did a little more trenching, and planted a few Gooseberry and Currant trees. Planted more Potatoes in frames, Early Ashleaf and Sunrise being the varieties. Sowed Radishes broadcast over the soil; they will be usable before they are of any detriment to the Potatoes. Made up afresh the linings to the forcing frames, and turned over the heap of leaves and litter that is intended for renewal of Pine beds soon as the weather is mild enough to begin that work. In addition to the weekly all-round thorough clean up of houses, time was found to put fruit room in order, to look over Grapes in Grape room, and fill up the bottles with water. Muscat Grapes have never kept so well in bottles with us as they do this season, and as the conditions are just the same as in previous years, the cause must be the more perfect ripeness due to the splendid summer and autumn of last year. Watered Pines. Those not showing fruit, but which were expected to do so now, are still kept dry, in the hope that the check may conduce to a fruiting state. Potting off succession stock is much needed, but till the weather is warmer cannot be done; consequently a more liberal supply of water is needed to obviate the evils of a root-bound condition at this stage of growth. Thinned fruit and picked weak blossoms off Strawberries, those that are well set being shifted to the shelves in Pine stoves, and those still in flower remain in Strawberry house, which for the present is kept well ventilated, to suit the plants at the flowering stage in particular.

JANUARY 19.

Digging and trenching. Laying Box edgings. Planted Lettuces on a south border. Sowed a successional lot of Peas (William I. and Ringleader); also a few Longpod Beans. Dug up Leeks and heeled them thickly in under a north wall. Salsafy also was dug up and laid in sand, the ground being required to be got ready for spring cropping, this particular piece being intended for early Cauliflowers and Coleworts. Dug up Jerusalem Artichokes, and the ground is now being trenched preparatory to making a new plantation of Rhubarb, another supply of which has to-day been put in to force. Began to prune Peaches on the open wall. There is soft scale on some of them, and this is rubbed off as each tree is pruned, but to make sure of their destruction, all the trees will have a painting over with a mixture of soft soap, tobacco water, and Gishurst. Sowed Sweet Peas in small pots and placed them in heat; they will be planted out before they get root-bound in a trench prepared the same as for Celery. No flowers more greatly repay the labour, or cost of high cultivation, than do these, and yet it is rarely they are to be seen doing well. We give them rich deep soil, pinch out the tops repeatedly, which makes them branch out, and pick off the flowers soon as faded to prevent seeding. They thus flower continuously the season through, and yet, with all this profuseness of flowering and

pinching, they frequently attain a height of 9 feet, or 10 feet. Put in more cuttings of soft-wooded bedding plants. Weeded and picked over Violets in frames, scraped off Moss, and stirred soil between the plants with a pointed stick. Commenced potting Ferns, Palms, and other foliage plants.

JANUARY 20.

Slight fog, but dry under foot. Pruning orchard trees and Peaches. Cutting Grass verges of coach roads and repairing the roads; trenching in kitchen garden, and raking rubbish—leaves principally—from sides of lake. The work in the houses has been the same as for the last two days—viz, propagating, potting, and getting in soil for Melons, Cucumbers, Tomatoes, and for potting Pines.

HANTS.

FRUITS UNDER GLASS.

VINES.—The keeping of late Grapes until long after early ones are ready for use having been reduced to a certainty, many people have given up starting their first house in November, when forcing is dead against Nature, and the quality of the fruit is by no means equal to first-class examples of Lady Downes and Mrs. Picee, which have been ripened under more favourable solar influences. This fact does not, however, prevent the thrifty grower from pruning, cleansing, and getting all his houses in order and ready for starting under conditions which best suit his own altered arrangements, and as this work will have been brought to a close, the papers which I am now about to supply will point forward rather than backward to cut-and-dry details which may be lagging in arrears. In my own management I always make a point of keeping Lady Downes until the end of May. The house from which they were this year cut at Christmas has been pruned, cleaned, and thrown open for a two months' rest before being again subjected to artificial heat. The inside borders have been moderately watered to bring back the compost to a growing state, and, with the exception of a good mulching for the protection of the surface roots, the outside borders are exposed to the influence of the weather. As this house will not be required for the protection of plants, constant coddling by shutting and re-opening the lights, turning on and shutting off heat, will not be needed, unless the weather becomes very severe, when prudence will suggest precautions for the protection of the stems as well as the hot-water pipes. We now turn to the early house containing Vines which have been forced for forty years. Formerly it was closed in November, now it is kept open until the end of December, and so great is the force of long usage, that a temperature ranging from 50° at night to 60° by day causes the buds to burst by the middle of January, when the temperature is raised to a minimum of 60° and a maximum of 70° to 75°, according to the state of the weather. The management of the external borders is as follows: In September they are cleared and top-dressed with fresh loam and bone dust; in November and December Oak leaves are carted home and placed in the front area, where they remain until the buds begin to swell freely; when this stage has been reached and the leaves are in a state of fermentation, a thick covering of 12 inches to 18 inches is forked up to the surface of the border from the front; sheets of corrugated iron are placed over all, and the external roots are safe for the season. Some Grape growers place fermenting material on the borders at the time the houses are cleared for forcing, but this is a mistake, as the roots are excited into action at the expense of the stored-up sap, and the breaking of buds is retarded thereby. When all the buds are pushing freely and disbudding has been attended to, the young rods are tied up in their places, and detailed management, so often written for the pages of THE GARDEN, is followed, with variations suggested by the ever changing atmospheric conditions by which we are surrounded.

INTERMEDIATE VINERIES do not here call for remark, but where early propagation of young

canes for planting out in May or for growing on into pot Vines is important, the eyes put in last month and kept in a temperate pit should now be plunged in a bottom-heat of 75° to 80°, where they will soon form roots. If firmly potted in small 3-inch pots and plunged in moist tan, water will not be needed until the stored-up sap has expanded into young roots and bursting buds. A light dewing over with the syringe may, however, be necessary to the maintenance of proper atmospheric conditions, and a steady bottom-heat through this critical stage is imperative.

FIGS.—Unlike Grapes, this delicious and rapidly increasing favourite fruit cannot be had in condition after November. Therefore arrangements are now usually made for starting the first house in November. Where this has been done and suitable kinds, such as Brown Turkey, White Marseilles, Negro Largo, and Osborn's Prolific, in pots or inside borders, were started about that time, the embryo fruits formed at the points of last year's shoots will now be pushing freely, and the terminal buds will be bursting into growth. Well-prepared trees of the above kinds may be carried through the early stages at, or a shade above, temperatures recommended for Vines. Copious syringing with warm water and a steady bottom-heat ranging from 70° to 75° are also essentials which must not be neglected. The trees at this place, formerly in pots, are now planted out in a cemented brick pit, 2 feet deep, with 6 inches of drainage and 18 inches of soil of a light, rich, calcareous nature. Each tree is confined to a superficial space of about 3 feet square. The space in the pit unoccupied by compost is filled with fermenting leaves when the house is closed, and these are turned and renovated through the early stages until the young roots render it advisable to discontinue disturbance. They are then allowed to ramble through the decaying vegetable matter; abundance of warm water is given to the half-cube of compost, and "dropping" when the fruit should be taking its last swelling is almost unknown. When treated in this way, Brown Turkey, still the best for early forcing, becomes a perpetual bearer throughout the season, and can only be induced to go to rest by the removal of the roof lights early in September. When two or more houses are devoted to Figs, a second should be shut up early in the current month, well watered, syringed, and treated precisely the same as the early vinery.

PEACHES.—Twenty years ago it was the practice in early forcing gardens to shut up the first house in November. Now, thanks to the late Mr. Rivers, equally satisfactory results can be secured by planting the best of his early race of Peaches and Nectarines and starting the house six weeks later. The 1st of January being a favourable time for starting the first, or it may be the second house, let everything be done that will facilitate the swelling of the buds without having recourse to much dry fire-heat, particularly during dull days and the hours of darkness. If at hand, a good bed of fermenting leaves will be found invaluable, and often sufficient to keep the necessary heat for the first three weeks, while the genial moisture given off will reduce the necessity for much direct syringing until after the fruit is set. Water at the roots is also an important factor, but, provided the borders have been kept in a moist growing state all the winter, heavy slushing, will not be advisable until days have increased in length and brightness. Under the impression that the Peach revels in moisture, many people deluge and starve the roots, and very often rot the flower buds by a too liberal use of the syringe when they have neither sun nor leaves to carry off copious supplies; therefore, while guarding against aridity above or below the surface of the soil avoid a sloppy condition of the house; commence forcing (always with a chink of air) at a minimum temperature of 45°; apply fire-heat early in the day and syringe when the maximum of 55° has been attained. Assuming that the earliest house is approaching the flowering stage, fumigate once or twice to secure immunity from green fly before the first blossom opens. Many good houses of Peaches are ruined by the neglect of this simple

operation. Get all late houses cleansed and tied in; point and top dress the borders, and keep all the ventilators constantly open unless the weather is unusually severe. If pot trees are still out of doors protect the buds from the ravages of birds, and lose no time in making arrangements for placing them under glass.

CHERRIES.—Independently of the fact that a dish of early Cherries in May is a great acquisition to the dessert, a well-furnished house of trees in full flower is one of the most delightful sights that can well be imagined. Then, again, Cherries are so moderate in their requirements as to fire heat; indeed the great danger to be guarded against is the application of too much. I always close my Cherry house the first week in January, and allow the temperature to range from 40° at night to 50° by day, when fire-heat is needed. When the external air is above 50° the pipes are warmed every morning as usual, and an extra quantity of air is admitted to produce conditions similar to what one might expect to experience against a warm sunny Peach wall in April. When the day temperature reaches the maximum, the trees are syringed with tepid water, but on cold sunless days atmospheric moisture is produced by dampening the walls and floors only. For ordinary forcing there is nothing better than the old May Duke, Black Circassian, Elton, and Bigarreau Napoleon. These should be thoroughly established in internal borders composed of rich calcareous loam, and thinly trained over a trellis some 12 inches beneath the glass.

STRAWBERRIES IN POTS.—Where a proper Strawberry house does not exist batches of plants can be brought on in early Peach and Cherry houses, also on the back shelves in early vineries. Vicomtesse Héricart de Thory and La Grosse Sucrée force well. The first is the earliest, the second is the finest. I have not yet discovered that there is much difference in the quality of very early fruit.

W. COLEMAN.

Eastnor Castle, Ledbury.

COE'S GOLDEN DROP PLUM.

IN Mr. Webster's interesting and instructive communication on fruits (p. 30), this Plum, along with others, is alluded to. Mr. Webster also mentions another variety, named Webster's Gage, a seedling raised between Green Gage and Coe's Golden Drop, the former being the pollen parent. Therefore, judging from its parentage, this variety may well be expected to prove a first-class dessert fruit. And as Mr. Webster admits that it ripens best upon a south aspect, it may, when transplanted from its northern home (if this has not already been done) and become established in more genial climes, be found to even surpass in flavour and excellence its well known and highly appreciated parents. Be that as it may, my present purpose is to allude to Coe's Golden Drop, which, wherever it may be grown, is found to be one of the best and most useful of dessert Plums. It seldom ripens before the end of September, and after being ripe it will continue to hang long upon the tree and remain in good condition, and it is highly appreciated by many even when it has become shrivelled, or the fruit may be gathered when ripe and kept in a dry place until nearly Christmas. It is of large size, oval in shape, and of a pale yellow colour, the side most exposed to the sun being marked with numerous dark red spots. The flesh is yellowish red and adheres to the stone, but is at the same time sugary and delicious. This variety of Plum is well known and almost universally grown, but it may not be so universally known that it originated in the town of Bury St. Edmunds during the latter half of the last century, and is supposed to be a cross between the Green Gage and the variety known as Magnum Bonum. The family name of Coe is by no means uncommon in this neighbourhood, and about the time alluded to there flourished in the town of Bury a market gardener named Gervaise Coe, in whose garden grew trees of the Green Gage and the Magnum Bonum in close proximity. Here a self-sown Plum tree put in an appearance, which in due time produced fruit, which was considered to be of the

Magnum Bonum variety, and as such was sold to his customers, among whom was an old lady, who, happening to observe the tree from which she was supplied, particularly desired to be again furnished with fruit from the same tree. This circumstance, so the story goes, directed Coe's attention to the improved and delicious variety of Plum which he had originated, or rather which had originated itself upon his premises. The Magnum Bonum, although handsome and highly esteemed for the purpose of preserving, is not remarkable for flavour, and can only be regarded as a culinary variety; while Coe's Golden Drop, although much like it in appearance, doubtless derives its fine flavour from the Green Gage, one of its supposed parents. The finest and best flavoured fruit of the Golden Drop I have seen were for many years produced by somewhat old trees trained to a high garden wall facing due north; the fruit, nevertheless, ripened quite as early as that of trees of the same variety on aspects which might have been considered more favourable, such as those facing east and west.

P. G.

Bury St. Edmunds.

OBITUARY.

MR. R. T. VEITCH.

THE death is announced of Mr. ROBERT T. VEITCH, last surviving son of the late Mr. James Veitch, of Exeter. The deceased, who was in his 62nd year, had been in failing health for some time, and died on Sunday evening at Torquay from consumption. Mr. Veitch started in life as manager of a large corn-growing estate in Smyrna, having previously qualified himself for the position by a course of practical farm study somewhere in the neighbourhood of Slough. From Asia Minor Mr. Veitch proceeded to the Cape of Good Hope, and there started farming on his own account. It was at the Cape that Mr. Veitch was married and four of his children were born. In 1857 he returned to Exeter and assisted his father in the management of the well-known nursery on the Topsham Road. On the death of Mr. James Veitch, in 1863, that property was sold, and his son then established the Exotic Nurseries, which have since been carried on with so much success in the New North Road, Exeter. Mr. Veitch devoted himself with great success to the cultivation and improvement of fruits, flowers, and vegetables. He introduced many novelties and improved varieties which bear his name. Though Mr. Veitch never took any prominent part in public affairs, he was ever ready to lend a helping hand for the advancement of any good work, and contributed liberally to the support of the hospital of which he was a governor, to the Zenana and other missionary societies, and various charitable institutions. About three years ago he re-visited the Cape for the benefit of his health and came back greatly restored, but a severe cold caught in the following summer ended in the affection of the lungs which caused his death.

MR. GEORGE STERLING.

MR. GEORGE STERLING, the subject of this notice, died in Edinburgh some little time ago, aged seventy-nine years. His name as a gardener, and particularly as a botanist, was known throughout Britain. Uneducated and self-taught botanist as he was, few men surpassed him as an authority on the general nomenclature of plants. I was an apprentice under him while gardener at Melville Castle in 1842, and at that time the collection of hardy herbaceous plants under Mr. Sterling's charge numbered over 15,000 species, and the collection of Cape Heaths and New Holland plants was probably unsurpassed by any private collection in the vicinity of Edinburgh. George Sterling was a stern disciplinarian, though one of the kindest of men, and the position of his workmen and apprentices was no sinecure. Nearly every plant of his large collection was distinctly labelled, and all, too, by his apprentices and workmen at night in their own time, often burning the midnight oil for our own benefit, he said. A list was given to each man weekly and a set task exacted from each.

Rarely a week passed but his interesting collection of plants was examined by amateur and professional botanists, and such men as Dr. Neil, McNab, and Turnbull, of Glasgow, consulted and deferred to his opinion. Mr. Sterling was a candidate for curator of the Cambridge Botanic Gardens in 1864, and received scores of testimonials from the highest sources in Britain vouching for his peculiar ability for the position. I visited him in Edinburgh in 1872. He had then retired from active work, and though sixty-five years of age was as bright mentally and physically as a man of fifty. He still kept a collection of over six thousand species of plants, mostly alpine, and amused himself by making exchanges with the different botanical gardens throughout Europe. Mr. Sterling had but one son, who, I understand, has inherited the botanical tastes of his father, and who has been for some time in the United States, and is now of the firm of Gould & Sterling, nurserymen, Jacksonville, Fla.

P. H.

Royal Horticultural Society.—The annual general meeting of this society will be held at South Kensington on February 10. The following persons are recommended by the council to be appointed to the offices of president, treasurer, secretary, and auditors of the society: President, Sir Trevor Lawrence, Bart., M.P.; treasurer, William Haughton; secretary, Major F. Mason; auditors, John Lee, James F. West, and William Richards. The vacating members of the council are the Right Hon. Lord Aberdare, the Right Hon. Viscount Enfield, and J. H. Mangles (deceased). The Fellows recommended by the council to fill the above vacancies are the Hon. and Rev. J. T. Boscawen, Colonel R. Trevor Clarke, and W. T. Thistleton Dyer, F.R.S.

Open spaces in London.—The attention of the Metropolitan Public Garden, Boulevard, and Playground Association has been directed to a large open space, three acres in extent, at Dartmouth Hill, Upper Holloway, one of the reservoirs of the New River Company, whence can be obtained a view of the surrounding country extending some 20 miles. A turfed roadway stretches from the base to half way up the embankment and around it; and it is suggested that if this were planted with shrubs, and flower-beds were formed and seats placed, it would constitute a most attractive health resort for the residents of the locality. Further, it is suggested that if the public were permitted to use the top of the reservoirs—which are covered in and turfed over—as lawn tennis grounds, it would prove a great acquisition to the neighbourhood. Steps are being taken with a view of inducing the company to permit the use of the ground for recreative purposes in the event of the Metropolitan Board of Works or local authorities being willing to take over and maintain the space as a place for recreation.

Lælia anceps (G. Wilkins).—The flowers you send represent Barker's variety of this Orchid. A plant bearing twenty-seven flowers on eight spikes is considered a very fine specimen, and the spikes rarely have more than five flowers. The flowers you sent were so bruised as to be scarcely recognisable.

Tree Pæonies.—I would recommend "T. H. T." to procure the following, viz.: Gloria Belgarum, Incarnata, Elizabetha, Countess of Crawford, and Souvenir de Gand, all of which are of different shades of rose and salmon-rose and quite distinct from P. arborea fl. pl.—MAX LEICHTLIN, Baden-Baden.

Naming plants.—Four kinds of plants or flowers only can be named at one time, and this only when good specimens are sent.

Names of plants.—A. E.—1, Asplenium bulbiferum; 2, Adiantum hispidulum; 3, A. cuneatum; 4, A. formosum.—R. G.—Smilax mauritica.—C. A. C.—Fragaria (Ophiopogon) japonica.—G. S.—No. 2, Brassavola caudata (sent last week).—W. B.—Pleopeltis fulva.

BOOKS RECEIVED.

Cassell's "Popular Gardening," vol. i. Cassell & Co., Belle Sauvage Yard, London.

"Dictionary of Gardening," vol. i. L. Upcott Gill, 170, Strand.

"Epping Forest," by E. N. Buxton. Stanford, Charing Cross.

"Brass Repoussé Work," by Mme. Amélie, 40, North Audley Street, W.

"This is an Art

Which does mend Nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

HELLEBORUS NIGER AND VARIETIES.

MR. TYMONS' welcome letter on divers Hellebores has tempted me to send a few notes in corroboration of his view that these so-called hybrids are varieties; they do not sufficiently differ to rank as hybrids spite of some forms, notably maximus, being sterile. Having for some time collected Hellebores, specially of the niger type, I have picked up from time to time various forms that struck me as good, and I now have such close gradations in colour, size, and earliness between the earliest maximus and the latest niger, as to suggest most conclusively that, like the Oxlip and the Primrose, there is no room to draw a line and say, here ends one species and there begins another. Among a batch of *H. niger* seedlings I got from the Continent three years ago, one has flowered this year with blooms exactly the size and shape of maximus, but of the purest white both outside and in. The stigmas are faintly tipped with red in an old bloom, but are green when opening. Another has flowers in pairs, very rosy outside, but white inside, and with no red on the stigmas, while both have green leaf-stalks and red mottled flower-stalks. With maximus on one side and angustifolius (so called) on the other, these two exactly bridge over the differences between the extremes. In Yorkshire there is a variety with very narrow leaves and small flowers, faintly pink outside and white inside, which, if there is anything in a name, should be the origin of angustifolius, but spite of its name it is a very inferior variety to the beautiful pure white blooms and bright green colouring of foliage and stalk of the variety of which Mr. Brockbank and many another gardener is justly proud.

ED. H. WOODALL.

MUMMY PEAS.

THERE seems to be much speculation as to the chances of the seed vegetating found by Mr. Bond in an old Egyptian vase, supposed to be 2000 years old. Perhaps it may interest your readers to know that many years ago, Pettigrew gave my brother-in-law some Peas that fell out of the wrappings of a mummy he was unrolling. They were planted at once, and most of them germinated. I saw them when in blossom, and a nice little row they were, about 2 yards long, and the seed ripened well. There could be no question as to their being foreigners; the foliage seemed more succulent and larger than the English garden Pea; the form of the flowers was also quite different. Instead of the standard being upright, it fell forward surrounding the keel, and giving the appearance of a bell-shaped blossom—doubtless a provision against the scorching sun of Egypt during the infancy of the delicate seed vessel. We found the Peas excellent for the table; in size they were rather larger than the Marrow Pea. After a year or two in Hampshire they got mildewed, and were lost. I brought a handful into Devonshire, and we grew them for some little time, and one of the Exeter nurserymen had them and sent them out

as mummy Peas, but they always seemed liable to get mildewed, possibly from debility in consequence of their prolonged sleep.

MARY, VISCOUNTESSE CHETWYND.

The purple-leaved Ivy.—Ivy leaves may now be seen in small bundles at the florists' shops, and they are much used for wreaths and button-hole flowers. The sort most in use has a light green ground, veined with bright brown—probably the wild Ivy (*Hedera Helix*) of our hedgerows. The late Thomas Williams, of Ormskirk, found a wild variety with deep purple leaves, which deepened in colour almost to black, and he used to call it *H. purpurascens*. I enclose a few leaves from the plant he gave me, and which now covers the end of a fernery. There is no leaf that I know of which accords so well with the Christmas Roses as that of the Ivy, and we always use it with that flower. Mr. Williams sold his stock of this Ivy, I believe, to Messrs. Backhouse, of York, and they brought it out as a novelty a few years back under the name of *Hedera atropurpurea*.—WM. BROCKBANK.

**** A distinct and beautiful Ivy**, admirably adapted for associating with winter flowers, particularly with Christmas Roses and other white flowers.—ED.

Removal of large Hellebores.—Mr. Brockbank in his interesting note on the large specimen of *H. n. altifolius* which I have just sold says, "I should be very much afraid that the removal of so large a plant would be a dangerous proceeding, and that the plant would take a long time to recover." On the contrary, there is no danger of injuring the plant whatever. I took it up with a very large ball, weighing, I should think, nearly 200 pounds. The earth was firmly attached to the roots, and could not fall off by any amount of shaking. I have now about a dozen large specimens of *H. n. major*, which I am going to remove from their present situation into a bed specially prepared for the purpose, and, far from injuring them in any way, I am certain they will grow with renewed vigour. Large Hellebores will bear removal as well as any plants in cultivation; this, at least, is my experience.—GEORGE STAMP, *Bishop's Teigniton, Devon.*

Planting Daffodils.—These welcome flowers of spring are just now so popular that every scrap of information as to their proper culture is eagerly looked for. Mr. Dod's remarks (p. 72) are very interesting, and no doubt, as he says, circumstances alter cases, and what is a good practice in one climate may be bad in other soils and situations. The soil most suitable for Daffodils is one in which both roots and leaves die off completely every year during July or August; in such soils the bulbs may be lifted and at once replanted every year, if need be, with advantage. On some cold wet soils, even as far south as London, this never happens, for even if the leaves die off, the roots remain fresh and do not decay simultaneously; on all such soils Daffodils die out gradually and the tender sorts fail speedily. On the contrary, Daffodils will live for centuries unmoved where the soil and climate suit them naturally.—F. W. B.

Old Man Cactus (*Pilocereus senilis*).—Looking over Mr. Boller's collection of Cacti in the Harrow Road recently, I saw a very fine specimen of this singular Cactus. It is nearly 3 feet high and its age is computed at 60 years. Doubtless the rate of growth of this kind is more rapid in its native habitat—Mexico—where it attains the great height of from 25 feet to 30 feet. A distinct and rare *Echeveria* is *E. agavoides*, a kind aptly named, as it quite resembles an Agave in miniature. *Epiphyllum truncatum* and *Bridgesi* are just now very attractive, their showy pink and crimson flowers being freely produced in this collection. Mr. Boller, who devotes considerable attention to ornamental Palms for decorative purposes, has recently erected a substantial structure some 56 feet in length and 18 feet in width for their culture. Amongst them I noticed the well-known

Latania borbonica, a kind that withstands hard treatment with impunity; *Seaforthia elegans*, *Areca Baueri*, *A. lutescens*, *Phoenix reclinata*, and others. Some very fine specimens of *Dracaena lineata* arranged down the centre of the house, with 6-foot stems and well furnished heads, had an imposing appearance—J.

GARDEN TOPICS.

Financial Report of the Gardeners' Royal Benevolent Institution.—I do not remember to have seen this interesting document before, but as it stands it reveals some remarkably "benevolent" features. For example, I see the cost of the "annual dinner" is £74 2s. 8d., and that the emoluments of the secretary—whose duties are light and only occasional—which include salary £160, "honorarium" £88 2s., "travelling expenses," &c. (what a traveller he must be!), £100 19s. 9d., amount to £349 19s. Printing, advertising, stationery, and other incidental expenses bring the total up to £671, which modest sum is spent annually in the management of a society that disburses the magnificent figure of £1372 in pensions in the same period. This is both thrift and benevolence, and what the *Chronicle* calls "eminently satisfactory" in an eulogistic leader written after the "dinner," but your contemporary withholds the financial report, which is given in THE GARDEN (p. 56), and from which the above figures are taken. Hard-working collectors who have nearly walked the shoes off their feet lately will now see how much reason there is for exertion on their part, and that when they send a sovereign it would be a benevolent act to send an extra ten or fifteen shillings along with it to pay its expenses. I have before me now the annual report of a society about fifty years old, established to promote thrift among working men, which has thousands of members, whose annual income is nearly £200,000, and the grant to the directors, secretary's salary, and other incidental expenses do not greatly exceed those of the Gardeners' Royal Benevolent—but, then, it is not a "benevolent" society. The Gardeners' Royal Benevolent clearly acts on the maxim that "Charity begins at home."

**** We give place to these remarks of "J. S. W.,"** though all know how energetically the secretary has worked for the institution for now nearly half a century, and we believe his travelling in the interests of the institution is usually productive of good. However, the proportion which cost of management bears to pensions in a benevolent institution is a legitimate subject for comment.—ED.

The weather.—If the cold wave which that weather prophet of the *Chronicle* said was slowly flowing over the northern hemisphere with ominous purpose does not look sharp, the winter is likely to escape it. February will soon be here, and so far the cold has not been in any way remarkable. In some places December recorded an average rainfall, the first copious and sufficient fall since July, and of a year in which only about half the usual average has fallen. Talking of the "thirsty ground" in December seems out of place, but the expression has a literal application in not a few places in the midlands and elsewhere, where water is still scarce and the springs and reservoirs almost dry. If the next two or three months do not make up the deficiency, we shall be worse off next summer than we have yet been.

Earthing up Strawberries.—A Mr. Goff has ascertained, at the New York Agricultural Experiment Station, that the new or annual roots of Strawberries grow out about an inch above the old ones, a fact which explains to a contemporary "why Strawberry plants appear to lift themselves up when they become old, and suggests the importance of drawing earth toward the plants in hoeing them after the bearing season." Has any of your readers noticed this "rising" tendency in the Strawberry? and has anybody practised the earthing up process? That the crowns of the plants grow higher as they grow older we know, but most cultivators prefer to trench old and leggy speci-

mens down and replanting to earthing them up, which is not a practical idea.

Growth of Conifers.—*A propos* of this question, I was told the other day that in the grounds of a gentleman in North Wales, near Bettws-y-coed, the healthiest specimens of Conifers in England are to be found. The growth of the trees, colour of the bark, and foliage are all said to indicate the perfection of health. I can believe this, because, as I once noted in THE GARDEN, I never saw the Scotch Fir exhibit such luxuriance of growth and healthy glaucous hue in the foliage as in that locality, the spines being also unusually long for that variety. Can it be that the presence or absence of ozone and other subtle elements of the atmosphere affect plants for better or worse, just as they do human beings? I think there can hardly be any doubt of it.

Nurserymen's prices.—I am not going to find fault with these, but "the trade" will admit that it would be better for both buyer and seller if some degree of uniformity and proportion could be established in catalogue prices. A would-be buyer applied the other day for prices of trees, and one "respectable firm" quoted Austrian Pines, from 18 inches to 24 inches, at 30s. per 100; Corsicans, 15 inches to 20 inches, at 70s. per 1000; while his neighbour in the same county quoted the first, 9 inches to 12 inches, at 27s. 6d. per 1000, and the last, of the same size, at 35s. per 1000, or 100 per cent. less. These examples show the disparity that exists in the prices of trees and shrubs, and those of seeds vary equally as much. In a list before me from four of the largest and best establishments in the kingdom the prices vary so greatly, as to make one think they have been put down at random. Moral: Buy the cheapest, if they are otherwise good in quality, and buy from those who have stock of their own. I know of cases where orders for trees were made up from two or three sources, all being sent first to the nursery and thence to the purchaser a long while after they had been taken up and banded, with the result that they heated and the half of them died.

White Plume Celery.—I fear Mr. Muir's account of this Celery is "ower guid a tale to be true," if I may use an old saying without any disrespect to himself. A Celery that will blanch without earthing or any trouble of that kind, or, as we are told, that becomes white over the "entire plant" and as tender and good as earthed-up Celery "possibly could be," and that "is never worm-eaten or destroyed by Celery pests," would be a boon indeed, and one would like to hear more about it. If Mr. Muir will only tell us that he is going to discontinue growing the old kind and stick to the White Plume alone, I do not see that anyone could want a better testimonial, and indeed I do not see how he can consistently do anything else now. More news, I repeat, concerning the plant would be acceptable.

Vine wood.—With a view to testing different examples of the same varieties, we have this year procured a number of lateral shoots of the Muscat of Alexandria from several noted growers, and have been struck with the very distinct differences that exist in the growth and colour of the bark in the separate lots. To look at the bundles as they stand together the most experienced would certainly pronounce them to consist of at least three different varieties. All are about equal in strength. Of the three lots one is from the vineyard at Longleat, that produced the fine Muscats that were shown in London by Mr. Pratt, and the other two lots are from Vines that have both produced good crops this season, one of which was still hanging a short time ago, the berries as yellow as amber. The Vines that produced the largest bunches—those from Longleat—have produced the longest jointed wood and *vice versa*. The Longleat wood is slightly the strongest also, but the difference is not great in that respect; whereas the internodes are twice as long as in the others, but well ripened. This shows that, however superior in quality short-jointed wood may be, it

does not produce the largest bunches. The other differences observable are probably due to soil and climate, for no one can deny that plants, whether indoors or outdoors, are affected by the climate in which they grow. There are no doubt salubrious and non-salubrious climates for Vines and other fruit trees after all that skill and good culture may effect.

J. S. W.

PLANTS IN FLOWER:

Iris flambriata is lovely with me, six spikes being on one plant. I brought it from Madeira, and I thought it the prettiest flower in that island.—A. K.

* A lovely plant indeed, and one that deserves to be grown in every warm greenhouse for winter bloom.—ED.

Galanthus Elweel.—The first flowers of this Snow-drop that have reached us this season came from Mr. Kingsmill's garden at Eastcote, Pinner, where he says "it looks none the worse for the late hard frosts."

Double Abutilon.—Flowers of this new form of Abutilon come from Messrs. Cannell, of Swanley. They are of the ordinary size and form, except that the interior of the corolla is entirely filled with small petals. The colour is a warm orange-red, striped and veined with crimson. As most all double flowers endure for a longer time on the plant than single ones do, this double Abutilon may be considered a gain.

Carnation Mrs. Keen.—We are pleased to see that this fine winter-flowering Carnation, which we figured in THE GARDEN some time since, is becoming better known. Messrs. Cannell send us a flower of it, which reminds us very much of the old crimson Glove of the midsummer border, the colour being a deep velvety crimson. Flowers of double Cinerarias, also from Messrs. Cannell, remind us of the value of these flowers for the winter conservatory.

Lachenalia pendula.—Of this handsome bulbous plant Mr. Ware sends from his Tottenham nursery some very fine spikes, each densely crowded at top with long drooping blooms of bright red tipped with green. As a winter-flowering bulb it is of great value, coming in as it does before the greenhouse is filled with the flowers of Dutch bulbs. We presume these fine spikes have been cut from plants in a cool greenhouse. Accompanying the Lachenalias are some uncommonly fine flowers of Narcissus monophyllus, a gem among Hoop-petticoat Daffodils.

Blue Primula.—Among a gathering of Chinese Primula flowers representing numerous varieties from Messrs. Cannell, of Swanley, is one that is distinct from all the rest in colour, being a kind of purplish blue, a very unusual tint in these flowers. Its uncommonness and distinctiveness, however, are its chief recommendations, as many would think it dull and unattractive compared with the splendidly coloured sorts, such as those which accompanied the so-called blue one. Most of the other sorts sent by Messrs. Cannell are the cream of their rich collection of Chinese Primulas. Some are snow-white, others of a delicate pink and prettily speckled, while others, again, are of the most brilliant carmines and magentas. The size, too, of the flowers is remarkable, as they average quite 2 inches across.

Varieties of Helleborus niger.—An interesting series of varieties of the Christmas Rose has been sent to us by Mr. Ware, which shows well the variation that exists in this species. First, there is what Mr. Ware calls the typical form; then comes maximus, which appears to be identical with altifolius; a third form is ruber, which has the mottled stems of altifolius, but is smaller and has the flowers and buds decidedly more rosy; in fact, they are as pink as the hybrids between H. atrorubens and H. olympicus. A fourth variety is named caucasicus, which is the most distinct of all, having mottled stems, small, stiff foliage, and pure white flowers. Then follows H. angustifolius, at once distinguishable by its bright green foliage and cold white flowers. The sixth and seventh varieties are unnamed, but they are evidently distinct from the rest, and no doubt if seen growing, their distinctiveness would be more apparent. It is time, we think, that some uniform system of naming varieties of H. niger was carried

out in order that would-be purchasers might be able to choose the best and reject varieties reputedly inferior. The absolutely distinct varieties are few, but it is useless to attempt to give names to forms that differ but slightly from well-marked varieties.

NOTES ON ORCHIDS IN FLOWER.

Vanda Cathcarti.—Of this handsome Orchid Dr. Paterson has sent from Bridge of Allan some fine flowers cut from a spike on which there are five. He thinks it is different from the typical form, and we think so too, the flowers being apparently larger and the colour more pronounced, but without means of actual comparison one cannot say how great the difference is. This variety is certainly the finest we have seen of this noble Vanda. Dr. Paterson also sends a nine-flowered spike of Epidendrum ciliare latifolium, a variety larger than the type, and a four-flowered spike of the distinct-looking Galeandra Devoniana.

Laelia anceps.—As illustrating what a variety of forms there is of this lovely Orchid among imported plants, Mr. Clayton sends us from Grimsdon Park, Tadcaster, three flowers representing distinct variations from the type as regards colour. No. 1 has unusually large flowers, pale sepals, deeper petals, and a broad and richly coloured labellum. No. 2 has very pale sepals and petals and a white lip broadly tipped and margined with amethyst. The third flower differs from the other two in being smaller and in having a very deep and rich lobe to the labellum. All three forms differ widely from the type, and are distinct from all the named varieties now in cultivation.

Scuticaria Steell.—An exceptionally fine variety of this handsome and singular Orchid may now be seen in bloom in the Orchid houses at Kew. At a guess we should think the flowers fully a third larger than those of the ordinary form, while their colours and markings are more striking. The sepals and petals are heavily blotched with deep purple, and the creamy white lip is likewise striped with the same colour. The flowers are almost stalkless, and proceed from the bases of the leaves, which in this species reach quite a yard in length and are thong-like. The Orchid houses at Kew contain at the present time a fine display of flowering plants, not a few of which are of unusual interest.

Percival's Cattleya.—During the week we have received several flowers of this lovely winter Cattleya. We need hardly say that no inferior varieties reach us, all being the finest forms our correspondents have in their collections. From Mr. Percival himself have come three flowers of a superb variety, cut from the large imported plant he bought at Protheroe & Morris's sale rooms a year ago. This mass has borne this season no fewer than sixty flowers. The flowers of this variety are as large as any we have seen, if not larger, and the colour is good, the sepals being a deep lilac-pink, and the broad shallow lip beautifully fringed and highly coloured. A still finer variety as regards colour has been sent by Mr. Hill from Mr. Hardy's collection at Pickering Lodge, Timperley. This form is remarkable for the exceptional colour of the lip of the flower. The throat of the labellum is of the richest velvety maroon-crimson imogioable, while a golden blotch and lines extend far into the throat. The chief beauty, however, of the lip is its very distinct pale margin, which is quite a quarter of an inch wide, being well defined, and forming a charming contrast to the deep rich hues of the interior parts. Such varieties of this Cattleya as these are unhappily not common. Mr. Hardy also sends a curious two-lipped flower of Percival's Cattleya.

A high-priced Laelia.—On January 23, Messrs. Protheroe & Morris sold at their rooms in Cheapside some plants of the white variety of *L. anceps* from Messrs. Sander & Co., St. Albans. The largest plant fetched 90 guineas, while other imported unflowered pieces went for 31 guineas, 17 guineas, and 13 guineas respectively. An established plant of *L. elegans* was sold for 25 guineas.

AN AMERICAN CEMETERY.

SOME time ago we gave an illustration of one of those beautiful garden cemeteries which are, happily, not uncommon in the United States. That to which we allude was Spring Grove, Cincinnati, one of the largest and most beautifully designed in the Union, having been laid out by that true artist in landscape gardening, the late Adolph Strauch. We herewith give an illustration of another fine cemetery, Oakwood, at Troy, New York. Our view was taken from a photograph chosen from a series kindly placed at our disposal by Mr. Court, of Chelsea, who considers Oakwood to be one of the finest cemeteries he has seen during his travels in America. The following particulars have been sent to us by a resident of Troy, Mr. A. R. Smith. "The Oakwood Cemetery," he says, "was organised under a general State law, which authorised the establishment of similar ones at any place necessary, in the year 1848. It embraces a tract of land of 290 acres in extent, and contains

have at times something left for the benefit of the church; but there is very little security to the owners of lots, for the city council or the trustees of the church may at any time pass an ordinance for the removal of the dead to other quarters, particularly if the burial ground be situated in or near a city, and has become valuable for other purposes. In that case the last resting-place of the dead is easily condemned as a nuisance, and the consecrated ground is sold for building purposes, merely for the sake of gain. Again, others are owned by one or more individuals, as is the case in Philadelphia, Chicago, and other places, and this plan has thus far given general satisfaction to the public.

The largest and most popular institutions of this kind, however, are those where every lot-holder is a member of the corporation, and the entire income is devoted to the improvement and perpetual care of the ground. Mt. Auburn, near Boston, Greenwood, near New York, and Spring

loss of time, in many cemeteries. Plans designed by inexperienced persons may look exceedingly well on paper, but when they are executed they generally produce an effect that is pitiable, unsuitable, and unsatisfactory. Large undertakings of this kind should consequently be begun, directed, and finished by one experienced person. If the grounds selected for a cemetery be wooded with native forest trees, the greatest care should be taken for their preservation, at least on those parts that cannot conveniently be used for burial purposes, such as marshes, deep ravines, and steep declivities.

Another very important, and perhaps the most important, point in the laying out of cemeteries is the proper location and construction of avenues. It must be remembered that at times very heavy loads of stone and other materials will enter the grounds, and large numbers of carriages congregate together, not only when funerals take place, but on other occasions. If, therefore, avenues be not



VIEW IN OAKWOOD CEMETERY AT TROY, NEW YORK. (FROM A PHOTOGRAPH.)

nearly 9000 graves. The family lots are bought of the association, and vary in size from a few feet square to an acre or more, and the income is applied first to the improvement of the land, which is laid out after the English style of landscape gardening, and has the effect of a park. Part of the proceeds is set apart for investment, or the income applied to the maintenance of the whole place. The lot owners, who are in a sense shareholders, elect the officers who direct affairs, and the same routine is assured by the public laws as to its perpetuity." As to its beauty from a landscape point of view, our illustration speaks for itself. It shows admirably the general effect and extent, but others amongst the photographs were equally beautiful. Any representation, however, be it ever so well executed, can give but an imperfect idea of a cemetery like this.

Cemeteries in America, as well as in Europe, are conducted on various plans. A number of these are under the control of the city authorities, and, of course, are seldom self-supporting. Others, again, are the property of religious communities, which sometimes manage to pay expenses, and

Grove are conducted on this principle, and have so far proved successful. They have, by proper management, already accumulated a considerable surplus, and there is not the least doubt that, in a few years, they will have a fund, the interest of which will be more than sufficient to keep the grounds perpetually in complete order, after all burial lots shall have been sold, and the disposition of the finances of such corporations for this special object should be steadily kept in view.

Those engaged in laying out a rural cemetery should be particular in the selection of a suitable spot, sufficiently remote from the habitations of the living, yet of easy access. The surface of the ground should be undulating rather than flat, in order to admit of proper drainage, while a sandy subsoil is desirable on many accounts. In taking possession of the land the first step should be to have a correct survey made and a general plan of improvement agreed upon, the execution of which should be in the hands of a man who understands his business thoroughly. It is the constant doing and undoing which has caused not only great waste of money, but also what is more valuable,

made of ample width and constructed in the best possible manner, carriages will invariably encroach on the Grass borders, and heavy loads will sink into the ground. It is not necessary to make as many avenues as are found in most cemeteries, for some will seldom be used, particularly if they have a steep grade, and are laid out in the so-called serpentine style, generally very popular with committees, but very expensive in making, on account of the waste of valuable ground, and still more so in keeping them in order afterwards.

Avenues should have an easy grade, graceful curves, and be so located as to give to each section a natural outline. In forming new combinations, perspectives, and groupings, we should be very cautious in the selection of suitable places for monumental structures, as well as in the planting of additional trees and shrubs. Choice shrubberies and flower borders particularly demand limitation, no matter how fashionably patronised, for, if immoderately extended, as they very often are, they only mark the triumph of luxury over elegance, and afford a poor compensation for the natural

advantage of beautiful green Grass plots, that can be kept in order with very little expense.

FLOWER GARDEN.

NOTES ON HARDY PLANTS.

PYRETHRUM ULIGINOSUM.—Now, when the various tall and late-flowering Asters are being divided and re-arranged, it would be well to let this Pyrethrum, which blooms about the same time, have a place in the arrangement, for, if not a Michaelmas Daisy, it is equally effective. It may well fill the place of a large white Aster so much sought after. I have always found fair-sized root divisions to produce a more satisfactory crop of bloom than plants left unlifted. So much top is made, that I am of opinion that the check by division is more than compensated by the fresh planting and thinning of the crowns given to the offsets; moreover, in the case of such a rampant plant as this, which does not flower until late, midwinter or even spring planting answers well enough. In any case it is a good plan to thin out the weaker Willow-like shoots as they appear, for in the long run there will be as much bloom, and the heads will be all the finer.

SAXIFRAGA BURSERIANA.—Scarcely can this Saxifrage look more charming than now, with its ruddy buds and flower-stalks studding its rigid and glossy green cushions. The flowers will soon appear, as they always do, no matter what kind of weather may prevail; but pretty and durable as they are, they not only become splashed, but fail to yield the warm effect produced by the buds. This is a real spring or winter flower, always beginning here in January and finishing about the middle of March. Is not this the earliest of our flowers? I do not suggest a comparison of it with late-blooming plants, such as some Hellebores, Croci, and Cyclamens, or erratic plants like some of the alpine Rannunculi, Primulae, Vincas, and Borageworts, from which a picking of flowers can often be had the winter through, but with the Snowdrop, or wild Primrose, the Siberian Squill, bulbous Irises, and Windflowers, all of which have hitherto been deemed our earliest comers. With me *Borser's Saxifrage* is much earlier than any of these, nor is it liable to be retarded by a severe season; on the contrary, it comes true to time. I should class this as one of the best dozen alpine plants suited for general cultivation. One hears that it fails to establish itself in some gardens. What can be the reason? It may be kept in health under almost any conditions excepting in clayey soil. On the flat or rockwork, in pots or shallow boxes, little bits in one summer grow into ball-like masses set with buds for winter. Sandy loam and leaf-mould, half and half, with a pretty good supply of grit are all it needs here.

HERNARIA GLABRA, a native herb of the dwarfest habit, is much despised by those who prefer sturdy growing things, whilst by the professional gardener it is considered almost indispensable for carpet bedding arrangements. At the present time it forms one of the brightest and most verdant patches to be seen in the garden.

MECHANICAL ACTION OF FROST.—There can be little doubt that by this many of our plants are injured, possibly many killed. The way in which the surface soil cakes and then lifts, owing to expansion, is most detrimental to some things. To give one or two examples, I may mention the *Thalictrums*. These are often beheaded; *T. adianthifolium* especially suffers. They have bulky crowns with contracted necks, which standing just above the surface are literally collared by frost. The roots, which are numerous and deep, will not allow the plant to rise in the least, so that the frost-grip is all the more deadly. *Gentiana verna*, too, is not unfrequently found to have its little tufts of leaves severed after such frosts as immediately follow a little rain, when the crust becomes largely charged with ice. Here, again, the deep roots may play an important part. *Corydalis nobilis*, *Dicentra eximia*, and some of the

Anemones that have part of their new sprouts above the surface all suffer more or less from this cause. In another way, too, the mechanical action of frost hurts our plants, those in pots most. The earth crust confined by the pot presses hard on plant collars; who can wonder that what bursts pots should crush plant collars? Some Montans and fruticose species of *Primula* have suffered in this way, as well as some leggy *Gentians*. The Montans, planted in the open when young, are often cut down at the ground line, presumably from this cause; anyway, old wood is not so affected. Irises in leaf I have often observed to "head over" after such frosts, giving way just at the surface. When there is wind the evil effects are increased; anything with a soft bark and a leafy top gets knocked about and chafed against the frozen earth. Wallflower plants are an instance of this, and many which die in winter may have their death traced to this cause. Fortunately, remedies are not far to seek. For pot plants plunged in the open Bracken is as effective a protection as anything; for the crowns of herbaceous plants coal-ashes are safer than litter, which sometimes causes rot, but litter is preferable for up-standing subjects, such as Tree Pæonies, Roses, or Wallflowers.

ÆTHIONEMAS are giving way under the present trying weather; alternate rains and frosts are most to be dreaded; plants in pots plunged in the open have but imperfect protection, and the weather, which splits the pots in a wholesale manner, often kills more plants than anything else.

OXALIS LOBATA.—This charming little Cape Sorrel will insist in having its head well out of the ground in the way of new growth by just about the time when our winter sets in, and as I never protect my stock it gets much blackened, though a week of fine weather makes it again one of the greenest spots in the garden. I can imagine, however, that the Isle of Wight, whence I had it through the kindness of Mr. Ewbank, will be a more suitable home for it than Yorkshire. True, it has flowered and increased wonderfully, and it must be perfectly hardy, but I have never been able to see the full development of its delicate green foliage in mid-winter, the season when it would evidently put it forth were this climate less changeful. To lovers of miniatures this will prove a veritable gem. A sheltered chink on rockwork, where the needful moisture will naturally settle, would be a fitting position for it, and which otherwise should be a sunny one. There is nothing of the dormant or dwindling character about it, but, so far as my experience goes, healthy bulbs start away and multiply, forming pretty cushions for the earlier half of the year. Leaf mould and sandy loam suit it perfectly.

TREE PÆONIES are now undergoing their most critical trial, for the large flower-charged buds have lost their winter scales and are become relaxed, so that the wet and cold can pierce them to the core, where for some time we would wish the floral embryo continued slumbering. Some things, however, from warmer climes than ours, notably Tree Pæonies, and others from colder countries, as *Dicentra spectabilis* from Siberia, will persist in making free growth before our winters are over. Hardy treatment of Tree Pæonies, by which early growth may be retarded, is practised by potting them. If placed on their sides and out of the mid-day sun (for even the little we have in winter stimulates them), their buds remain undeveloped, but, though there is nothing more effective when forced, to subject any which are required for hardy uses to that operation would be much against the health of the plants. Those in the open are all but unmanageable, excepting where the plants have favoured quarters. Last year we tried Bracken bent in amongst the branches, but though we were able in this way to save them from a deal of frost, growth was not checked, and I need hardly say it was damaged by being drawn. In sunny corners I have, even in York-hire, seen nearly perfect specimens without the sign of a frost-bite. In Ireland, the south and west of England, and in some salubrious

inland localities Tree Pæonies would doubtless give far less trouble; in such places they ought to be grown largely.

Woodville, Kirkstall.

J. WOOD.

NOVELTIES FOR 1885.

PHACELIA CAMPANULARIA.—This valuable new annual is botanically related to the well-known *Whitlavia grandiflora* (which is now placed by botanists in the genus *Phacelia*), but has a much more spreading and bushy habit of growth, and is therefore more floriferous; an average plant will cover nearly a foot of ground. It grows from 6 inches to 8 inches high, and its numerous branches are furnished with broadly-cordate, sharply-toothed foliage. The great attraction of the plant consists in its large and numerous flowers, of the finest deep Gentian satiny blue, of a shade rivaling that of *Salvia patens*, produced in terminal racemes of from twelve to twenty blossoms, which are developed in succession. Each flower is about an inch across, of an erect campanulate form, with a spreading five-lobed limb and short funnel-shaped tube, marked in the throat with five oblong white spots. It received the award of a first-class certificate from the Royal Horticultural Society when exhibited in the summer of 1882. It succeeds best in dry warm soils, and may be treated either as a hardy or half-hardy annual. In the latter case it should be sown under glass early in March in light soil, but without bottom-heat, the seedlings being pricked off early and gradually hardened off prior to planting out. When grown as a hardy annual it should not be sown in the open ground before the end of April or beginning of May, and for succession up to the end of May.

CAMPANULA TENOREI.—Although the Campanulas cultivated in gardens are already numerous, the present very distinct species cannot fail to be welcomed as an important addition to their ranks. It is allied to the well-known and popular *C. pyramidalis*, having foliage and flowers similar to those of that species, but differs notably from it in being very much dwarfer in habit. The stems do not exceed 6 inches to 9 inches in height, many being produced from the same root. They are furnished with smooth glossy foliage, varying in form from heart-shaped to oblong-lanceolate, an inch or more long, and bluntly toothed. The flowers are produced from July to September, and terminate the stem in a close raceme of from twelve to fifteen blossoms, which are nearly an inch across and broadly bell-shaped, of a delicate pale violet-blue, the centre being often deeper in tint. It is a hardy border species, but will also probably be found a useful rock plant. Native of Southern Italy. It has been described by botanists under the synonyms of *C. Rosani*, *C. Thomasi*, and *C. versicolor*.

ERITRICHIMUM STRICTUM.—There is so little to distinguish the flowers of this genus from those of *Myosotis*, that by the ordinary observer most of the species would be taken for Forget-me-nots. The most obvious distinction is in the smaller size of the flowers in *Eritrichium*, to which, however, there are some exceptions; *E. nanum*, for instance, has blossoms as large as many species of *Myosotis*. The seed-like fruit or nuts show, however, that they are really related to the genus *Cynoglossum*, or Hound's-tongue. Most of the species are insignificant weeds, but that just named is eminently worthy of cultivation, and the little annual now offered, though less remarkable, is deserving a place in the borders. It grows about a foot high (though some of the plants frequently assume a dwarfer habit), having a tuft of *Myosotis*-like foliage from which the stems arise, these being very much branched, and bearing long terminal racemes of small bright blue flowers in succession for a considerable period. If by cultivation the size of the corolla could be enlarged, it would add considerably to its value. It is of the easiest cultivation in any light or mixed soil, and will probably succeed treated as a hardy annual, but the seeds now offered have been saved from plants raised under glass.

LAYIA GLANDULOSA.—This very pretty Composite is the counterpart of the *Layia elegans* sent out by me two years since, from which it differs in having pure white ray-florets instead of yellow. It grows about 9 inches high, with linear to linear-lanceolate foliage, mostly entire, each shoot being terminated by a snow-white flower-head about 1½ inches across, with a yellow disc. White Composites are by no means abundant; this very neat and desirable annual should therefore be an acceptable addition to their number. May be treated either as a half-hardy annual for early blooming, or as a hardy annual, in which case seeds should not be sown before the end of April. A native of California.

PAPAVER HOOKERI.—Considerable interest attaches to this pretty novelty, both on account of its intrinsic merits as well as for the singular fact that although cultivated only for two seasons since its introduction from Northern India, it has already shown a marked tendency to become double. It approaches in its botanical characters the well-known *P. Rheas*, but is a taller and more robust plant, with larger and more finely incised foliage, and flowers nearly as large as those of the Opium Poppy. They are of the most varied colours, including many shades of crimson, purplish red, rose, &c., some of them being single, but many as densely double as the long cultivated *Pæony*-flowered and other annual garden Poppies. The flowers from their large size are extremely showy, and as further cultivation will undoubtedly give rise to numerous varieties, it is from every point of view a desirable acquisition.

PENTSTEMON RATTANI.—This is a neat Californian species of dwarf, but robust, growth, resembling in its general aspect the well-known *P. digitalis*. It grows from 12 inches to 18 inches high, bearing rather large broadly-ovate, acuminate foliage, stalked below, but sessile and stem-clasping above, repandly toothed. Flowers are produced in terminal panicles, and are of a lilac-purple colour, each about an inch in length, and in form like those of the species above named. It requires only the treatment of other border species, blooming the second season from seed.

ASTER DIPLOSTEPHIODES.—The genus *Aster* includes within its limits many plants of great value, but none of them are likely to exceed in interest this species, should it prove to be perfectly hardy, of which there is little doubt. This opinion will scarcely be called in question when we state on the authority of M. Max Leichtlin that the flower-heads are nearly 4 inches across. The plant is said to grow about 18 inches high, the stems arising from a tuft of oblong, lanceolate, entire, strongly-nerved foliage. The flower-heads are borne singly at the summit of the stems, which in a strong plant are numerous, the ray florets being of a bright violet-blue, those of the disc or centre deep yellow. It appears to be somewhat alpine in character, and succeeds best in somewhat cool soils in preference to those of a light or burning nature. The plant has, however, been in cultivation so short a time, that further trials are needed to determine its requirements. It is easily raised from seed, which will probably give flowering plants the second season. A native of the Himalayas.

DELPHINIUM TRISTE.—It occasionally happens, as in the present instance, that plants are sent into the horticultural world bearing a name which is well calculated beforehand to ensure their rejection by the amateur who may be looking out for something bright and showy. Who wants a plant of a sad or funereal aspect in his borders? And yet, its lugubrious name notwithstanding, the *Delphinium triste* cannot fail to interest any real lover of plants, if not by its beauty, at least for the singular colour of its flowers, which affords so great a contrast to that of most other plants. The species is not new, having been cultivated at least fifty years since, but the true plant is probably so rare that few amateurs are acquainted with it. It is of comparatively dwarf habit, not much exceeding a foot in height, with palmately divided foliage and flowers in terminal racemes, the entire plant being conspicuously pubescent. The flowers

themselves are of average size, and at once arrest the attention by their sooty black colour, tinged, as in the Bean Flower, with sepia. It will succeed in any mixed or even light soil, and may be raised as readily as the better-known species, flowering the second year from seed. A native of Dahuria.

DIGITALIS OBSCURA.—Although this interesting species of Foxglove has been in my collection for several years past, no special reference has hitherto been made to it. Now, however, that experience has shown its thorough distinctness from the species commonly cultivated, I think it deserves being brought into notice. It has but one drawback; it is rather tender, though it does fairly well in light, well-drained soils and upon rock-work, in proof of which it may be stated that it has borne uninjured full exposure the last three winters in a sandy border. It grows about 3 feet high, having a shrubby base, furnished with somewhat fleshy, ovate acute, entire, dark green foliage, and stems terminated by a long raceme of most effective flowers. These are smaller than in the common Foxglove, but of similar form, and are remarkable for their clear golden yellow ground shaded and veined with brown. It is in this curious combination of tint that the attraction of the plant mainly consists, but even its foliage, so entirely free from the coarseness which characterises the better-known species, is not without its influence on the total result. In raising this species from seed care should be taken to sow very thinly and to water carefully, the pot being placed on a greenhouse shelf close to the glass. The young plants should not be exposed in the open ground till the second year, when they may be planted where they are to bloom. A native of the Sierra Nevada in Spain, and is synonymous with the *D. nevadensis* of gardens.

EUCHARIDIUM BREWERI.—The "Golden State" has contributed to our gardens few more attractive annuals than the *Eucharidium concinnum* and its variety *grandiflorum*. Any new species of this pretty genus comes to the front, therefore, with all the prestige conferred by the popularity of its congener, though the *E. Breweri* has sufficient intrinsic merit to be independent of such aid. It is a dwarfer and more compact plant than the older species, but somewhat more spreading in its habit, with oblong-lanceolate foliage and flowers in terminal leafy racemes. The individual flowers differ notably from those of *E. concinnum* in having the obcordate petals so broad as to overlap and in being furnished with a narrow linear-spathulate lobe in each sinus, giving a rhomboidal or somewhat *Clarkia*-like outline, to which genus the authors of "The Botany of California" consider it should be referred. The petals are quite destitute of claws, and another noteworthy character is the conspicuous dilation of the filament near the summit, where it is broader than the linear anthers. The colour of the flower is a very pleasing rosy purple, shading off to white at the centre, but the tint varies slightly in different specimens. The culture of *E. Breweri* is identical with that of other Californian annuals, but it is liable to suffer from excessive wet, and should therefore be grown in well-drained soils. Treated as a hardy annual, unless sown very thinly, it should be carefully transplanted at an early stage, in order to obtain the best results; or while the seed is scarce and expensive, it may be sown in pots in a cold frame, the seedlings being pricked off at a suitable age and grown on under glass till the spring is advanced, like the half-hardy annuals, when they may be planted out.

GLYPTOSPERMA PALMERI.—Although this plant can by no means be termed showy or a plant likely to become extensively popular, it is sufficiently distinct and unknown to claim a brief description. It may be shortly characterised as a miniature *Asphodel*-like perennial, growing about a foot high, producing a few Rush-like leaves, and slender, wiry, branched stems, the branches terminating in a naked raceme of small six-parted flowers. The perianth is of a pinkish colour, with a dark line in the centre of each segment, opening in sunshine only, and followed by a capsule which contains about half-a-dozen blackish triquetrous

seeds. These are deeply grooved or sculptured, a feature to which the generic name alludes. It is readily raised from seed, which, if sown early, gives flowering plants the first year. It is probably only half-hardy, being a native of Mexico.

KNAUTIA MAGNIFICA.—The common indigenous *Knautia arvensis* is not entirely devoid of merit as an ornamental plant, but it must be acknowledged that there is small need of it in modern gardens. *K. magnifica* should be a much more desirable plant, coming, as it does, from that well-known horticulturist of Baden-Baden, M. Max Leichtlin. It is a hardy perennial, with radical foliage closely resembling that of *K. arvensis* and erect-branched stems bearing very large heads of pale rosy lilac flowers. It blooms the second year from seed and succeeds in any soil.

LATHYRUS SPLENDENS.—This is said to be a handsome species, producing in abundance large purplish crimson flowers in erect racemes of ten to twelve blossoms, each of which is described as being from 1½ inches to 2 inches across. Of its perfect hardiness in this climate there may be some doubt; it will therefore be advisable to retain some plants of it in pots till this point is more fully determined. It is a native of Southern California.

LINARIA ANTICARIA.—This interesting genus of Scrophulariads yields a rather large contingent of ornamental plants to our flower borders and rockeries, among which may be especially mentioned as eminently worthy of cultivation the comparatively tall *L. triornithophora*, with its singular bird-like blossoms; the brilliant *L. spartea*, with bright yellow flowers; the striking *L. triste*, with its pale sulphur-coloured corollas contrasting with the blackish brown palate; the more recently introduced *L. maroccana* and *L. reticulata aurea*, both of them valuable border annuals; the pretty, but less effective *L. multipunctata*; and lastly, but by no means least worthy of notice, the elegant *L. alpina*, now tolerably well known and cultivated as a rock and wall plant. To the dwarfer section of the genus to which the last named species belongs the *Linaria anticaria* is a very recent accession. Like the *L. alpina*, it forms tufts of procumbent shoots clothed with small linear, fleshy, greyish green foliage, the stems terminating in short racemes of whitish flowers tinged with lilac-purple and delicately veined, freely produced for some weeks. Its cultivation involves no difficulty, but light warm soils seem to suit it best. It is strictly of perennial duration, but, being apt to perish in severe winters as well as in wet ones, will be better treated as an annual.

PAPAVER CROCEUM FLORE-PLENO.—The single form of this pretty Poppy is so good, that a double-flowered variety will assuredly attract the attention of many cultivators. I have no personal knowledge of this novelty, but it comes with good credentials, and as it blooms the first season if sown early, its value will be speedily ascertained. If one may judge from a small woodcut of this plant, the flowers are quite as double as those of the double *Ranunculus*, or French Poppy. The double white-flowered form presumably differs from the above in nothing but its colour.

PRIMULA FLORIBUNDA.—Remarkable less for the large size of its flowers than for their smallness, this new Himalayan Primrose yet bids fair to become in time a popular plant, from the extraordinary abundance of its bright yellow blossoms. It appears to be closely related to the *P. verticillata*, but is entirely free from the meanness which characterises that species, the whole plant being more or less hairy. The bright green foliage is ovate in form, incised, and crenately toothed at the margin, the spreading leaves forming a tuft which commences to throw up weak flower-scapes while still quite small. At first these bear almost simple umbels, but as the plant advances in size the scapes become not only whorled, but even throw up numerous secondary scapes from their base. A strong plant will yield a succession of flowers literally throughout the year. The corolla is scarcely more than one-third of an inch across, but is of a very pleasing deep clear yellow, which

is quite effective when the plants are in full bloom. At present it has been cultivated only under glass, but is probably quite hardy. It appears to be of easy cultivation, requiring the treatment of a Chinese Primula. The seeds being very small should not be covered with soil, but a layer of Moss will be found useful in maintaining a damp surface.

SALVIA GREGGI.—This new Sage proves to be a very ornamental and almost perfectly hardy species, having resisted satisfactorily the last two winters without protection. In severe winters it might possibly be killed to the ground, but would survive at the root. It forms a large, much-branched bush from 3 feet to 4 feet high, clothed with rather small, neat, bluntly ovate, entire foliage, the branches being terminated by long spikes of pretty rosy carmine or crimson flowers of medium size, the lower lip being very broad. It commences to bloom in August, and continues to flower till the advent of frost. The foliage has so marked an odour of Rosemary, that it may be very appropriately termed the Rosemary-scented Sage. It is easily raised from seed, but will probably not flower till the second year. A native of Texas.

XANTHOCEPHALUM GYMNASPERMOIDES.—Though by no means a new plant, having been cultivated thirty years ago by me under the name of *Gutierrezia gymnospermoides*, this composite has sufficient merit to claim a brief notice. It is a tall, robust annual, growing about 3 feet high or more in rich moist soils, with a single stem branching corymbosely upwards, the branches all combining to form a single, broad, inversely pyramidal inflorescence a foot or more in diameter. The individual capitules are about three-fourths of an inch across, both disc and ray being of clear deep or gamboge-yellow. The foliage is lanceolate, tapering into a longish petiole, and sharply toothed, and is more or less pubescent, as is the entire plant. It flowers for a considerable period late in the summer when the earlier blooming composites are past their best, and is quite worthy of a place in the back of the border. Requires the treatment of half-hardy annuals, and is a native of Texas and Mexico. W. THOMPSON.

Ipswich.

A LOST HELLEBORE.

HELLEBORUS LIVIDUS.—The livid or purple Hellebore is figured in plate 72 of the *Botanical Magazine* (1789). It has a greenish white corolla tinged with purple at the edges. The buds are a deeper purple. The petioles and flower-stems are mottled with purple, as in *H. niger*, but the leaves are three-lobed or trifoliate. The description states, "It is not a little extraordinary that this plant, which has for many years been cultivated in this country, should have escaped the notice of Linnaeus. It is equally wonderful that we should at this moment be strangers to the place of its growth, i.e., its natural habitat. Having three leaves growing together, it has been considered by many as the trifoliatum of Linnaeus, but his trifoliatum is a very different plant, a native of Canada, producing small yellow flowers." Now, in the first place, Curtis errs in stating that it was not known to Linnaeus, for I find in his "Species Plantarum," in 1763, p. 784, two three-leaved Hellebores described, viz., *Helleborus niger trifoliatum*, which occurs in the group 4; *foetidus* and *H. trifolius*, which is of itself group 5—the latter being the yellow-flowered Canadian plant, to which Curtis refers as the trifoliatum of Linnaeus, which it will be seen is wrong.

Returning to plate 72 of the *Botanical Magazine*, I find it will come very well indeed within the description in Linnaeus' *Helleborus niger trifoliatum*, as it is very like a poorly flowered variety of *H. niger*, and I see no reason whatever for doubting the correctness of Curtis's plate, as it was only three years before that time when he had figured the typical *H. niger*—plate 8 of his magazine (1786)—and he must have been well aware of points of resemblance and of difference in the two specimens. I therefore come to

the conclusion that we have here an actual picture of the *H. lividus* as known to Linnaeus and Curtis, and there is every probability of its existence if we can only find it. On looking over the lists of Hellebores offered in the catalogues for this season, we find in Backhouse's supplemental list for 1884 "*H. corsicus* (*H. lividus* and *iridifolius*), very distinct and striking species, found by our collector." Here seemed to be the very plant, and I at once wrote off to Mr. Potter, of the York Nurseries, to enquire if it was truly the *H. lividus* of the *Botanical Magazine*, plate 72. Mr. Potter replied, "*H. corsicus* I believe to be true. I collected it on Monte Rotundo, in Corsica. The word *iridifolius* was a slip, which is rectified in this year's catalogue; leaf of *H. corsicus* enclosed. There were two leaves, one three-lobed and the other two-lobed, and they were such as occur on the well-known *H. argutifolius*, and are certainly not the leaves of the *H. lividus* of Curtis." Barr's catalogue for 1884 has a very complete list of Hellebores, and we have there quoted, under the ornamental foliaged group, "*H. lividus* (syns., *argutifolius*, *trifolius*, *triphylus*, *corsicus*, and *ilicifolius*), flowers bright green; foliage light rich green, very ornamental. Backhouse's *iridifolius*, Iris-leaved, is evidently a mistake for Barr's *ilicifolius*, Holly-leaved, the latter being an excellent name for the plant, but better still is *argutifolius*, leather-leaved, and I believe this is the name most generally used for the plant. Mr. Barr must see that the name he puts first, in heavy type, cannot belong to the plant at all. He describes it as green-flowered, but *H. lividus* means purple-flowered. I hope he will amend this in his next catalogue.

In THE GARDEN for August, 1878 (p. 179), is a very good and useful article on the Hellebores. The Holly-leaved Hellebore is here also called *H. lividus*, with the following excellent remarks: "The specific name of this very distinct kind is so evident a misnomer, that either of the names *argutifolius*, *ilicifolius*, *triphylus*, or *trifolius*, under which it is sometimes known, is preferable. The *H. lividus*, described by Aiton in the last century, had livid flowers, but this has no tendency to assume that colour, and probably is another plant retained under the name." It will therefore be very clear to all that the plant figured by Curtis is not the variety which now bears the name. Further, that *H. lividus* is a well marked Hellebore, and may in all probability be found and restored to its position if a proper search be made for it in the habitats named for it by Linnaeus, viz., Germania, Helvetia, Gallia, and I hope Messrs. Correvon, Froebel, and Gusmus will make diligent search for it now that the plants are in bloom.

Last season I had the pleasure of recovering a lost *Leucojum carpathicum*, which was found in plenty when attention was called afresh to the plant, and we may quite hope to find *H. lividus* also. WM. BROCKBANK.

Brockhurst, Didsbury.

Mossy lawns.—I see enquiries about these. They are, as a rule, a sign of poverty in the soil and a cold climate. Here we cannot manure the whole of the lawn as it ought to be, and the consequence is that where the soil is thin and poor, and the Grass has been long cut by the lawn mower, there is little or no Grass left, and a carpet of fine Moss has taken its place, which looks almost as well as Grass in summer and better in winter. Where mossy lawns exist they are sure to be detected about this season of the year, as the Grass disappears, leaving the Moss exposed. Top-dressings of some suitable manure will do more to remove Moss than anything else under such circumstances, and the poorer the soil and thinner the oftener the dressings must be applied. Seed might be sown and scuffed in at the same time. I notice here, in the deer park, which is high and cold, and where plenty of Moss (fog, as it is called) exists, that near the deer sheds where the animals congregate in winter to be fed, and near which the soil is well manured, that as fine and close a sward is formed as could be seen anywhere.—J. S.

Tree Poppy.—In a recent issue of THE GARDEN this name is suggested as a suitable English equivalent for *Romneya Coulteri*. Unfortunately, there is another Californian plant of the same Natural Order to which that name properly belongs—viz., *Dendromecon rigidum*, once introduced here by Messrs. Veitch, if I mistake not, but probably not now in cultivation. Why not call the first named plant the Romney Poppy or Coulter's Poppy? either of which would serve to identify it. The latter I think the best.—W. T., *Ipswich*.

Alexandrian Laurel.—To "G. J.'s" remarks concerning the Alexandrian Laurel, allow me to add a few words. I first became acquainted with it at Dyffryn House, South Wales, where, growing as it did there in an arboretum border, it had a very pleasing effect. In a cut state, too, in large vases, mixed with sprays of *Euphorbia jacquiniæflora*, or even *Calanthes* or other flowers that require to be arranged in a loose state, it has a fine appearance. Except in South Wales, I have met with it nowhere else, but if better known it would certainly, I think, be more largely grown than it is, especially where Ferns are not much cultivated.—O. W. G.

Cape bulbs.—Two persons were disputing as to the proper pronunciation of the word "neither," one insisting it was "ni-ther," the other that it was "nee-ther." They agreed to refer it to the first person they met, who happened to be an Irishman. His answer to them was, "Sorr, ye're both quite wrong inthoairely; it's 'nayther.'" I am fond of cultivating South African bulbs—an intractable lot—and eagerly look for any information as to their treatment. One of these is *Narcissus monophyllus*, and is like the rest of them. In THE GARDEN (p. 36) it is said, "It is flowering beautifully in pots in the Cape plant house, the bulbs having been kept quite dry during the summer on a sunny shelf. This is, without doubt, the treatment to give this *Narcissus* in order to get it to flower well." I had not read the above ten minutes when I saw in the *Gardeners' Chronicle* (I think) that the above drying-off treatment was the very worst that could possibly be applied to all S. African bulbs. Will some kind practical bulb grower step in and tell us if it is "ni-ther," "nee-ther," or "nayther"?—A. R., *Windermere*.

5308.—**Peacocks and bulbs.**—Allow me to inform "J. B." that peacocks are exceedingly destructive, not only to bulbs, but to garden produce generally—at least I have found them to be so to my cost. They are particularly destructive to newly-planted Cabbage plants, and to prevent them from eating whole rows of Peas, French and Runner Beans requires the most vigilant precautions. They are also literally ruinous to Strawberries, as they walk over a large plantation in a very few minutes, and take a bite out of every coloured berry with which they meet. Again, wherever there happens to be a seed bed they are certain to make themselves familiar with it, and it must be securely netted if it is to escape havoc. I notice, too, that they always keep an eye on the vineries, or rather on the Grapes, and if there is half a chance of their getting inside, believe me, they will not miss it, nor will they fail to attack every bunch of Grapes within their reach. In short, of all the pests with which a gardener has to contend, peafowls are the most vexatious.—JOSIAH JEFFREY, *Derry, Rosscarbery, Co. Cork*.

— I am a grower of some thousands of bulbs, and I must say that I have found peacocks very destructive to them. Nothing seems to please them more than to get into the centre of a Tulip or Hyacinth bed in flower, and the brighter the colours the more they seem to delight these birds. I do not think they are naturally mischievous, but colour attracts them—at least such is my experience. The farmyard is the proper place for them.—H. HARRISON, *Stour House, Dedham*.

Swamp Pink.—Will any American reader of THE GARDEN tell me what this is? It is one of the very few names of plants I cannot find in Miller's Dictionary. I would also like to know what is the Heartleaf, which, however, I suppose to be *Villarsia*.—THOREAU.

ORCHIDS.

BULBOUS CALANTHES.

It not infrequently happens that when the treatment found to answer best for any particular plant has been so far proved by growers collectively as to be looked on as beyond doubt, someone makes the discovery that the plant in question can be made to thrive with directly opposite treatment, and the treatment thus newly discovered generally turns out to be something which the consensus of practice has proved to be wrong, or indifferent in its results compared with the generally accepted course. Of this character evidently is the cold treatment of *Calanthe* bulbs recently advocated. The varieties of *C. vestita* are natives of Burmah, and have been in the country nearly forty years. *C. Veitchii* is a hybrid. Their merits for winter-flowering cause them to be largely grown by many who cultivate few Orchids and by almost all who have collections of them, and I should suppose that there is scarcely an old hand amongst Orchid growers who has succeeded in growing them up to the mark who has not tried and noticed the difference between bulbs kept in a warm house after flowering and others kept cool, and who is not convinced of the advantages of warm treatment; the latter favours the growth of better and larger bulbs than are forthcoming after keeping the old bulbs after blooming cold. It is well to note that the ability of *Calanthes* to flower is regulated by the size of their bulbs. Where the treatment was such as the plants require, I never yet saw an instance of big bulbs failing to produce proportionately more flowers than smaller ones. From the all but unequalled usefulness of these *Calanthes* for the decoration of a warm stove or Orchid house and the time their spikes of bright flowers last, either on the plants or when cut, they, from the first, were particular favourites with me, and during the many years I grew them I tried all I could to do them well, and was so far successful, that I have had bulbs of the red-eyed variety of *C. vestita* strong enough to enable them to produce spikes bearing 120 flowers each.

Those who have a knowledge of the intensely and continuously hot climate of the country from which these *Calanthes* come will not feel surprise at their doing best kept warm, even during the time of comparative rest, for they may be said to be never wholly dormant; as soon as the flowering is over the growth buds for the following year at once begin to swell if the bulbs are in a temperature warm enough to help them to do this. When grown strong they increase more than doubly as fast as if the bulbs are comparatively small. With the treatment I gave them I soon had a large stock, which enabled me to try them in different ways. After blooming I have kept the bulbs in different temperatures—from that which was cold enough to cause them to decay up to that of the warmest stove, and in every case the warmest quarters gave the best results. If keeping the bulbs cold effected any saving in the attention required in the cultivation of the plants, or anyone was enabled by the cold treatment to grow them

who otherwise could not, something might be said in favour of it; but where there is enough heat to grow *Calanthes* well (and they like as much heat as any plant will bear, provided they are kept close to the glass), the bulbs are just as easily kept in the stove in which they are grown through the rest of the year.

I have tried *Calanthes* in different kinds of soil, and could not see much difference in the results, provided other essentials in their cultivation were present. Some I put in turfy loam, others in fibrous peat, and others in a mixture of peat and loam, with in each case about one-fourth rotted manure that had been exposed on a Vine border or an Asparagus bed, with a little sand and some pieces of charcoal or crocks, and there was little or no difference in the size of the bulbs or in the quantity of flowers they bore. I found them to

until the growth is completed, when much less must be applied, or the roots decay before their time, the consequence of which will be that the leaves also die off sooner than they otherwise would do, interfering much with the appearance of the plants when blooming.

From the rapidity with which *Calanthes* increase when well managed a sufficient stock for ordinary requirements is soon available. When enough are at hand, anyone disposed to grow big bulbs capable of producing an exceptional amount of bloom may do so by the following means: After being treated in the way described for a couple of years, with the plants kept close to the roof through the growing season, the stock will be stronger than such as are ordinarily met with. When the blooming is over the individual pieces will usually consist of two or three bulbs of the

previous summer's growth attached to the old bulb which has produced them; remove the smallest, letting the largest one still remain attached to the old bulb, which will generally remain sound another season, giving more strength to the single bulb to which the ensuing summer's growth is to be confined than if it was removed. Kept warm, as I have already advised, the bulb of the preceding season will in the course of a month or so after the flowering is over push two or three buds from the base and sometimes one or two from the eyes near the top; reduce these to one, the strongest at the bottom, removing the others as soon as they are big enough to be got at; the old back bulb will frequently push a bud or two the second season, which also rub off. Each piece, now consisting of two bulbs as described, should have a 7-inch pot, or two pieces may be put in a 9-inch pot. In potting, keep the old bulb well against the side of the pot, or the young one next forthcoming will not have room to swell as it may be expected to do. Most likely more buds will be formed at the base or top of last year's bulb soon after the strong one left begins to push into growth; rub these out directly they appear, so as to concentrate all the strength in the one retained, by which means it should reach double the size of that of the preceding season which has produced it. Follow a similar course the next year, confining the growth to one bulb; each plant by following this course will attain



Finely-flowered plant of *Calanthe vestita*.

get much stronger when hung up over the path, with their leaves all but touching the glass, than in any other position, always using a thin shade when the sun came with any force on them. They attain a larger size with two or at most three bulbs put in a 7-inch or 8-inch pot than if more together; 2 inches of drainage is enough; when strong they root profusely, filling the soil full of their fibres. They should be potted just as the young roots are seen ready to issue from the base of the young shoot which is to form the new bulb; if the potting is delayed later, the young, tender rootlets already protruding are almost sure to get injured, which so far interferes with the season's growth, that, like most Orchids, when the roots have their extremities injured they have not the power to at once make good the injury like other plants. Care must be taken not to make the soil too wet during the short time intervening between potting and the roots getting hold of the material; after this, as the leaves attain size, water must be given freely

a very large size, producing flowers in abundance. The strongest may now be expected to produce as much as three spikes from the base with one or two on the shoulder of the bulb, and not unlikely one at the extreme top. I have let half a dozen, which were produced as above from a single bulb, go on to bloom, but the number thus allowed lost something in the size of the individual flowers, which were considerably larger where the spikes springing from the bottom of the bulbs were alone allowed to remain; moreover, when so many were allowed to go on, it took a great deal out of the bulbs, for, as will be easily understood, the roots from their natural disposition to perish early, even when all that is possible is done to prolong their existence, are not in a condition to contribute much to the development of the thick succulent stem and the flowers it carries, which collectively are in a great measure so much drawn from the strength stored in the bulb.

The leaves of this section of *Calanthes*, being so much thinner than those of most Orchids, are easily injured by either insects or too much exposure to the sun. It is scarcely necessary to say that where an attempt is made to grow large bulbs, care must be taken that the foliage does not suffer in any way, or the bulbs will not attain their full size and strength. When the plants are hung up overhead in the way recommended, not only are they benefited by the abundance of light they get, and without which it is impossible for them to attain a maximum of strength, but it admits of the syringe being better brought to bear on the leaves, by which means they are kept free from the attacks of red spider, thrips, and aphides, all of which if ever allowed to have a footing quickly interfere with the season's growth. The yellow-eyed variety of *C. vestita* is not quite so strong a grower as the red one, neither is *C. Turneri*. The beautiful varieties of the hybrid *C. Veitchi* can be grown similarly strong in the way described, by which means the colour of their flowers is considerably intensified.

T. BAINES.

EPHYPYAL ORCHIDS.

THE limited extent to which Orchids are dependent on the soil for the food which they require is evident in the case of the epiphytal section, a circumstance which has not infrequently led to a supposition that this section of the Orchid family does not require anything more in the way of sustenance than such elements as are present in the moisture of the atmosphere with which the structure in which the plants are grown is supplied and in the water given directly to them; that most of the species of epiphytal Orchids can exist for a time and make fair growth when merely attached to a bit of wood or other material of a like nature from which they cannot obtain any appreciable amount of food anyone who has grown Orchids will have proved in actual practice; but with a few exceptional kinds, such as the *Barkerias*, when so treated the plants do not attain near the strength which others possess that have vegetable matter in some form or other as a medium for their roots to extend in, and from which they derive sustenance. The roots of these plants when existing naturally in their native wilds are, as a rule, to be found clinging to the stems of the trees that support them, descending until they reach the ground, where they find an unlimited amount of food in the rich mould there deposited; neither are the roots wholly without the food supplied from decaying vegetable matter during their descent to the ground, as between the forks of the branches they will meet with small deposits of this material; even the bark of the trees to which they cling, the outer covering of which is itself ever undergoing a process of decay, will yield something if only little nutriment. But all this affords sufficient evidence of the need which most epiphytal Orchids have for more food than they can get from the atmosphere alone. Still, as might be expected from the widely different conditions under which they exist naturally, there is much difference in the requirements of different species, a fact which is confirmed by every-day experience in their cultivation.

The roots of some genera, amongst which may be mentioned the *Cattleyas* in particular, show that they have a marked dislike to being in a body of wet matter, such as is present if the peat and Sphagnum which these and most other Orchids are potted in are used in too thick a mass. This has led many growers to use only a very thin layer of the material over the drainage which the pots were all but filled with, thus reducing the food-yielding matter to the lowest point. Until the system of potting *Cattleyas* with very little material that could hold water came into fashion, those who adopted the over-shading, half-dark course of treatment, combined with a maximum of moisture and a minimum of air—a method long and persistently looked on as the orthodox way of growing Orchids—found that they could not keep the roots from rotting except by the use of soil that

barely more than covered the crocks. A more rational system of treatment in giving more light and air, whereby the roots, like the rest of the growth, have more substance and solidity in them, enables them to retain their vitality very differently from what was possible under the close, dark, sweltering course of management.

From trials which I have frequently made in potting *Cattleyas* and other epiphytal Orchids in a thin layer of material such as described, and others of the same species in two or three times the quantity, or about as much as is required to fill two-fifths or one-half of the depth of the pots, I found I could get stronger growth, as shown by the greater number of flowers which the bloom spikes contained, and still more by the more double breaks which the plants made when more potting material was used. There is no more conclusive evidence of strength and well-doing in Orchids than the plants making double breaks and finishing them up full sized, and thus I never could get *Cattleyas* or their near allies, the *Lælias*, to do when very little material was used. The system of using so little potting material was doubtless one way of lessening the mischief arising from premature root decay, but it was applying a palliative to the effect instead of the cause which in most cases was attributable to the semi-dark, airless condition of the houses in which the plants were grown, which resulted in roots, bulbs, and leaves alike having no staying powers in them.

It will be easily understood that where a large body of material is used water will not require to be given so often, a matter that is of some moment where a large collection has to be attended to. A circumstance connected with the natural economy of Orchids as they exist in a state of nature, and which has a direct bearing on the question of their requiring vegetable matter for support, is that their roots are short-lived, a large proportion dying yearly. From their spongy nature they decompose quickly, and in this state are available for food for the fresh crop of roots annually forthcoming from the same source—the base of the young growth, and which, following the same course travelled by roots that have preceded them, naturally come in contact with those in a state of decay. Orchids in a cultivated state potted frequently, as they generally are with the old dead roots removed as usual at the time of potting, are thus deprived of one of the sources from which, in their natural state, they have food ready at hand.

T. B.

WHITE FORMS OF *LÆLIA ANCEPS*.

IN your last week's number you speak of the lovely *Lælia anceps Percivaliana* as white, which it is not. Pure white forms are *L. anceps Dawsoniana*, *Hilliiana*, and *Williamsiana*, of which I send specimens. *L. anceps alba*, which Mr. Bull received some years ago, and of which some plants were sold at Mr. Day's sale, is also pure white. The variety *Percivaliana* beside these would seem far from white. Seen alone, it is nearly, but not quite white, having a decided tinge of pink or lilac; it is what we used to call French white. I do not think this detracts from its beauty. I send two other forms, very light, but still further removed from pure white than *Percivaliana*, viz., one called delicate and one recently imported by Mr. Horsman and described as white forms. Both these are beautiful varieties, though to my mind the dazzling pure white of the variety *Dawsoniana*, coupled with its broad petals and the lovely violet colour of the blotch on the lip, make it the best form of all. *Hilliiana* is equally white, with a very faint pink tinge on the lip. *Williamsi* is likewise equally white, and the lip is also pure white, except that it has streaks in the throat. By way of contrast, I send a dark form from a plant belonging to Mr. Winn. This has great substance and lasts longer in flower than other varieties.

E. HARVEY.

Aigburth.

. With this Mr. Harvey sends flowers of the five varieties of *L. anceps* which he mentions, all of which are very beautiful, the queen of the

gathering being *L. Dawsoniana*. Mr. Horsman's variety, a lovely kind, we do not remember having seen before.—E.D.

Culture of *Calanthes*.—I should feel obliged if "J. C. C." would say what variety of *Calanthe* is so well grown at Powderham Castle under the cool resting process. I grow a number of *C. vestita rubro-oculata* for winter decoration, and I failed when I gave them the cool resting process. My soil and way of growing them is as follows, and I never fail to have very fine spikes of blooms: I grow them in wire baskets about 8 inches across, suspended from the roof of a stove, and about 2 feet from the glass, in a compost of lumpy peat, old cow manure, charcoal broken about the size of small nuts, and Sphagnum Moss. After blooming, I shake them out of the baskets and immediately re-basket them, placing five or six bulbs in each, according to size, and hang them up in their places again, giving very little water until they begin to push out roots. As they gain strength, I increase the water supply, and during the summer I give weak guano water once a week, which I find vastly improves them, their foliage being ample, stout, and of a dark green colour, the bulbs often throwing up three spikes, two from the base and one from the top, often measuring 3½ feet in length and bearing 40 flowers on each. If they will bear cool resting, I do not see why they would not stand in a conservatory when in bloom, which I find they do not with me, and bloom well the next season. But I find the flowers stand well in a cut state and are very useful.—HY. McCRAW, *Belle Vue, Passage West, Cork.*

TREES AND SHRUBS.

FORSYTHIA SUSPENS.

AMONGST hardy deciduous shrubs few are more attractive when in flower than this *Forsythia* or more useful. It is one of the best of wall plants, as it grows very quickly, and the slender shoots hang down naturally in a graceful manner or may be tied in loosely as thickly as may be desired. The bright yellow flowers are borne in the greatest profusion in spring throughout the whole length of the preceding summer's growth, and the slight protection afforded by a wall is of material importance in protecting them from spring frosts, the plants themselves being quite hardy. Some placed singly amongst shrubs of an evergreen nature in various prominent positions of the flower garden or pleasure grounds produce a charming effect in spring, and are by no means unattractive in summer, the leaves being of such a bright shining green. Again, any spare plants kept in the reserve ground or lifted from the open shrubbery about this time and placed in large pots may be had in perfection in the greenhouse a month in advance of those outside. Before touching *Forsythias* with a knife, a knowledge of their habits and mode of flowering should be possessed by those about to use it. To cut and nail them in when most other deciduous wall plants are attended to, say in February, would of course mean the destruction of nearly all the flowers: yet it is questionable if this is not a practice of annual occurrence, even in the case of many whose position should entitle them to the credit of having more than ordinary intelligence. It matters not how thick the shoots are, they should every one be allowed to remain at this season and until flowering is past, when pruning may be attended to without delay, by removing the whole of them nearly close back, unless they are required for enlarging the size of the plant as a bush or for covering more space on a wall. No leaves appear until the flowers begin to decay; consequently the young shoots may be encouraged from the first without detriment to those of the previous year, i.e., if the latter are removed at the proper time. These remarks on pruning apply to the plants wherever grown, but their application is too frequently neglected in the case of those in the outside shrubbery border. *F. viridissima* has more of an erect, slower growing habit, and is inferior in

every way to *F. suspensa*. It has one point in its favour, namely, that of flowering later, and so continuing the season. The flowers are not so plentiful, neither are they so evenly distributed along the shoots as in *F. suspensa*, but individually they are both very similar. These desirable shrubs are natives of China and Japan, and were introduced to this country about forty years ago. A later introduction, named *F. Fortunei*, is synonymous with *F. suspensa*, or is at least insufficiently distinct to merit a separate specific name.

J. G. K.

AUSTRALIAN TREES IN ARRAN.

The Rev. D. Sandsborough, of Kilmarnock, has contributed to a recent meeting of the Edinburgh Botanical Society an interesting report on the Australian and New Zealand trees and shrubs that are being grown on the east coast of Arran. This island, as Mr. McNab long ago stated in the columns of THE GARDEN, enjoys a climate in which the severity of winter is as little felt as in any part of Britain. The east coast is especially mild, as here cold frosty winds are tempered by crossing the sea, while their force is destroyed by the high mountains of the Goatfell range, rising immediately from the coast to a height of 2866 feet, which so lift up the wind that trees along the coast, instead of being scourged, actually in full luxuriance overhang the sea at high tide. On this side of the island the following measurements were taken in the beginning of August, and unless otherwise mentioned, were made 5 feet from the ground.

GUM TREES have done remarkably well, and are assuming goodly proportions. An example of the Blue Gum (*Eucalyptus globulus*) at Lamash has attained a height of 30 feet, and has a girth of 1 foot 7½ inches. A specimen of Almond-leaved Gum (*E. amygdalina*) at Corrie is 23 feet high, and has a girth of 11 inches. A tree of the White Gum (*E. coriacea*), planted in the spring of 1879, has a girth of 4 inches, and is 14 feet 6½ inches in height. Mountain White Gum (*E. Gunni*) has attained a height of 3 feet 10 inches at Lamash, and the alpine Gum (*E. alpina*) has attained a height of 3 feet at Corrie. Not a leaf of the White Gum was even browned in the winter of 1879-80.

CABBAGE PALMS, as the *Cordylines* are popularly designated, grow in Arran in the utmost luxuriance, and have never been even browned by the frost. Some of the most noteworthy specimens are *Cordylina australis*, 9 feet 7 inches high, 11 inches in girth at 12 inches from the ground; leaves 3 feet 7 inches long and 1½ inches broad. *C. indivisa*, 12 feet 10 inches high including the leaves, 1 foot 5 inches in girth at 18 inches from the ground; leaves 3 feet 10 inches in length and 2 inches in breadth. *C. Veitchi*, 9 feet 11 inches in height, 1 foot 4 inches in girth at 12 inches from the ground; leaves 2 feet 7 inches in length and 1½ inches in breadth. As they are all in perfect health and growing rapidly, it is expected that they will bloom ere long. The specimen of *C. indivisa* was raised from seed sown in 1872, and the others were raised at a later date.

TREE FERNS have succeeded admirably; the island of Arran, indeed, is stated to be the only place in Britain where Tree Ferns, altogether unprotected, grow luxuriantly in the open air. Three species have been tried—viz., *Cyathea dealbata*, which stood a winter, but was stolen in the following summer; *Dicksonia antarctica*, and *D. squarrosa*. The specimen of *D. antarctica* is 1 foot 11 inches high, has a girth of 2 feet 3 inches, and a crown of sixteen fronds, each about 5 feet 6 inches in length and 1 foot 8 inches in breadth. It was planted in 1867, when very small; in fact, not larger than an example of *Cystopteris fragilis*, and a period of ten years elapsed before its stem began to increase in height. *D. squarrosa* is 7 inches in height and 10 inches in girth; the fronds are 2 feet 8 inches in length, by 1 foot 3 inches in breadth. It was planted in 1877, and had then a stem about 4 inches in height. The situation occupied is colder than that in which *D. antarc-*

tica stands and the plant was accidentally injured in the previous summer. Dwarf Ferns, consisting of *Todea superba* and *T. hymenophylloides*, grow well.

BEEFWOODS are being tried, and the results are such as to encourage further experiments. The He Oak (*Casuarina equisetifolia*) was planted in 1882, when it was 8 feet 6 inches high; since then it has increased considerably, and is now 10 feet 10½ inches in height. It is proposed to try also the She Oak (*C. quadrivalvis*) and the Cork Oak (*C. suberosa*).

THE AUSTRALIAN BRAMBLE (*Rubus australis*) deserves special notice for its distinct character. It was planted this year in the Brodick Castle High Garden against a north wall, where it is growing admirably, and has a more tropical appearance than any plant in the garden. Its leaves are even finer than those of *Aralia Veitchi* and much more curious, as they are studded over with little white prickles; they would form a beautiful fringe to a bouquet. If abundant in Australia, its innumerable prickles must render it a perfect torment in the bush, for they are sharp and turned back, and will catch and hold and tear.

WATTLES have done well. The Blackwood of Australia (*Acacia Melanoxylon*), so valuable as an ornamental timber in Australia, had not a leaf browned by the severe winters four or five years ago. It grew most luxuriantly, which proved its destruction, as it was blown over by the storms of last winter. A young plant of the Golden or Broad-leaved Wattle (*A. pycnantha*) at Lamash is uninjured. The Black or Feather-leaved Wattle (*A. decurrens*) at the same place is a beautiful plant about 5 feet in height.

MISCELLANEOUS PLANTS other than from the Antipodes include several of great interest. *Camellias* bloom freely; *Myrtles* flower most abundantly; *Buddleia globosa* is very beautiful; *Desfontainea spinosa* is 7 feet 6 inches high and covered with flowers; *Photinia serrulata*, *Elaeagnus reflexus variegatus*, *Euonymus latifolius aureus*, 4 feet 9 inches high; *Coccoloba verticillaris*, *Platanus orientalis*, 3 feet 8 inches in girth; *Schizostylis coccinea*, which blooms most abundantly every year; and the Chinese Broad-leaved Fir (*Cunninghamia sinensis*), planted by the late Mr. Townley about 1858.

Azalea amoena.—There are, I find, two forms or varieties of this in cultivation. Some years ago I had plants from two different sources, and one is very much superior to the other. The best has rather large flowers approaching a bright crimson in colour, while the other has much smaller blossoms of a decidedly lighter hue. The only way to make sure of getting the best variety is to select the plants when in flower, and there is so much difference in the quality of the two, that it will prove profitable to do this.—J. C. C.

Dacrydium Franklini.—Strolling through the Edinburgh Botanic Gardens down to the rock garden, I was much struck with the beauty of this Conifer. It was planted by the side of the walk in front of some Evergreens of taller growth. Its graceful pendulous habit and the beautiful tracery of its greenery were exquisitely beautiful. There was not a brown leaf or evidence of ill health about it. This would seem to show that it would be perfectly hardy on any moderately sheltered lawn. To many tastes it must be as beautiful as variegated Cypresses or *Cryptomeria elegans* with its mahogany colouring.—C. A. M. C.

Ceanothus rigidus succeeds well in our southern and western counties, but whether it will do equally well in the north I do not know. Where, however, it can be relied upon there is no more distinct or serviceable plant for warm walls than this Evergreen is.—J. C. C.

Chianthus puniceus.—I grew this plant here some few years ago out-of-doors. It covered a wall 16 feet high and as much in width, and one year in particular it was a glorious mass of flowers; but a cruel winter followed and killed it to the ground, notwithstanding the fact that it was covered with movable frigid domes. Except that we did not cover it with glass, it had every care. Our disappointment was too great to attempt to grow it out-of-doors again.—J. C. C.

RE-DRAINING OLD GARDENS.

DRAINING a garden is an operation that often seems to be looked on as if, once done, it is done with ever after. At all events, the present condition of many old gardens that at some time or other since their formation have been drained would lead one to suppose that this is the impression. Yet such an idea is far from being correct; draining is an operation that, even if carried out on sound principles and the work well executed, cannot be reckoned on to last for ever, even when the subsequent uses to which the land is put are favourable to the drains continuing to act. It is scarcely necessary to say that a good deal depends on the crop or crops that are grown, as they have no inconsiderable influence on the lasting properties of land drains constructed principally with a view to the removal of surface water. For instance, in pastures or meadows there is scarcely a possibility of the pipes getting silted up in the way that is more or less ever going on in arable land, leaving out of the calculation stoppage by the roots of the crops grown on the land, and—what is much worse—the roots of trees and shrubs such as are always to some extent present on lawns and pleasure grounds; and to their encroachment may be attributed the wet condition of these in old gardens often noticeable in moist weather. In kitchen gardens where the soil is of a nature to require draining, some of the freer rooting crops grown strike low enough to reach much of the shallow drainage often present, to say nothing of the roots of the numerous fruit trees usually to be found located in this department, and to which in the dry summer weather, when most active, the moisture about the pipes naturally acts as an attraction. To this cause the wet state of some old gardens that once were sufficiently dry is traceable. But it is oftener in old pleasure grounds that the superabundant moisture shows itself on the spaces devoted to Grass, which, after spells of moist weather, may be seen remaining much longer than they should in a condition that does not admit of their being walked on with any degree of comfort, or where the Moss-grown surface is such as to indicate the presence of too much moisture over a great part of the year. Only a little reflection is necessary to show that ground devoted to such purposes, and which was ever wet enough to require draining, is all but certain, in the course of time, to have the drains choked by the presence of trees, the multitudinous roots of which stretch out in search of food to distances that would scarcely be credited by the non-observant. Such species as Lime, Ash, and Elm, besides producing a profusion of small fibres that occupy almost every inch of the soil within their reach, extend far; in the case of the last-named tree—Elm—they will stretch out to a distance of 50 yards, and in localities where the rainfall is light they seem to have something approaching animal instinct in making for spots where moisture is present. It thus becomes nothing more than might be looked for that the drainage in many old gardens is often found reduced to a useless condition. The various and frequently opposite theories that have from time to time been advocated by those who professed to act as qualified teachers on the subject have done a good deal in leading to wrong impressions as to the best means of carrying out such work in gardens, as well as in ground devoted to other purposes. Fifty years back comparatively little had been done in land drainage; then the ordinary earthenware pipe of the present day was only coming into use, following the horseshoe-shaped tiles that had before done duty in localities where there was a scarcity of stone, which in one shape or other was the material most used where available. Eighteen or 20 inches was looked on as the right depth for the spur or gathering drains, which were almost always placed so as to run directly across the fall of the land, or nearly so; as a matter of course the main drains which carried the water from the spurs were placed in line with the descent of the ground. The defects of this arrangement, with the collecting drains running across the descent, was that they could do little more than draw off the water from the land on the higher side of each

as that on the opposite lower side could not possibly be made to run up hill; hence it was that the land on the lower side of drains so placed was only benefited to the extent of 2 feet or 3 feet by the drain above it, a circumstance so obviously inevitable as to cause surprise that it was so long unnoticed.

Drains placed as they now usually are—running in line, or nearly so, with the descent of the ground—collect the water evenly from each side, thus causing its more effectual removal from the land, and also admitting of the drains being placed further apart. Another fault of the too shallow system of draining that used to be all but general was that such drains manifestly could not do more than remove the extreme top water as it fell from the clouds or found its way to the surface from adjacent land; none of the superfluous water lying deeper could be carried off by them, and which, consequently, often laid stagnant, keeping the soil cold and sour during much of the year, through which cause trees and deep-rooting shrubs frequently were unable to make the progress they otherwise would. Under like conditions early vegetables are adversely influenced; in fact where the land holds too much water early crops are an impossibility; the chilled state of the ground prevents its getting warm enough to promote growth until the season is far advanced and time allowed for the superabundant moisture being removed by subsidence, aided by evaporation from the surface. After the shortcomings of the shallow system of draining became apparent, the opposite extreme of sinking them 4 feet or 6 feet down into the clay was declared the only right course to follow. Many adopted this advice, the result of which was that in most cases the work, like the money expended in its execution, was so far buried as to give little trace of its effects on the surface at times when most wanted, as in heavy soils, where draining is usually most required, it took too long, after heavy rainfall, for the water to find its way down to the drains. The simple facts relating to land drainage are that to name any fixed depth for the execution of the work in soils of all natures is so far impossible, that, should the advice be followed, much of the work will be so far unsatisfactory as to be of little use. In the same way, no uniform distance apart can be named as the best for all localities differing to the extent which both the surface and the subsoil does in different parts of the kingdom, a difference that necessarily exerts a powerful influence on the quick or slow percolation of the water through it. But it is well to err on the safe side, and it is better to put the drains a little closer than absolutely needful rather than underdo the work by having them too far apart, particularly in gardens, either such as are being newly made, or with old ones that require the work re-doing. The advisability of this course can scarcely fail to be seen when account is taken of the comparatively small cost involved in draining a limited area, such as that occupied by even a large garden and grounds, compared with the advantages obtainable by the well-doing of the various things grown therein, and the amount of pleasure derivable from dry lawns and paths thus made fit to walk upon in all weathers. In the draining of gardens and to secure the work lasting, it is well worth while to go to a little further expenditure in material than simply putting in the ordinary pipes and filling them over in the usual way, for where this alone is done, unless the drains are shallower than they should be, the water is not drawn off quickly enough either in kitchen gardens or pleasure grounds. I should advise the drains being something deeper than in land used for ordinary purposes. Supposing the top soil to be of fair average depth, the pipes may be laid from a foot to 20 inches into the clay or whatever material the subsoil is composed of, filling in above the pipes with burnt ballast, clinkers, or brick rubbish, that will let the water through it, up to the bottom of the porous surface soil. In this way the water cannot fail to find its way quickly down to the pipes; in addition to which, the roots of trees and other plants will be much less likely to find their way into the pipes; and even if such should

happen, and they were to get blocked up, the open material above will continue to take off the water for many years.

T. BAINES.

Excessive church decoration.—"J. G." misrepresents the case when he says last week (p. 65) that the art of church decoration must be of the most "primitive kind" where "Northern" resides. He and other readers will perceive, if they read my former remarks attentively, that the "smother" of Evergreens I cited as an example was that furnished by "J. G." himself, in which he admits to smothering the font (usually ornamental and sculptured) out of sight, the window-sills, the groins and arches, the pulpit, the columns, the altar, and the reredos! Not content with a few flowers and sprigs on these, he particularises how they were literally smothered with Moss and tall plants, the pots alone of which would require a barrowload of litter to hide them. I only gave his example as one of many, and his description of his own handiwork in that line shows that the word "smother" was fitly applied. He particularises a list of a dozen or more varieties, exclusive of "foliage plants," and one is driven to the conclusion that he must have had a waggon and two horses engaged in the business. It is true, as he states, that cut flowers are now worn by everyone, but that is quite another matter, and then "everyone" does not smother his person with flowers, like "J. G.'s" church. Personal and house floral decorations on festive occasions are often overdone, and I expect we shall soon have to do as the Americans do now—have printed on funeral and other cards "no flowers," presents of that kind having, we read, lately become an encumbrance in that country. I do not object to decorations themselves, but to their abuse, and I maintain that the description quoted by me was an example of that sort. In one or two churches with which I am acquainted the decorations are frequent and liberal, but not one pot plant is used, only cut flowers and sprays of Evergreens, and these are disposed so as not to give the object decorated an "overladen" appearance or hide it in any way. There are very few people who can be trusted with the execution of such work; hence the necessity of all decorative plans and devices being submitted first to someone with some taste in such matters. As for the "softening and humanising influence" of flowers as "J. G." writes, that is an old text, the truth of which no one disputes, but the gentlest nature would resent having to carry a burden of floral decorations on all occasions when a button-hole bouquet was all that he required.—NORTHERNER.

5306.—**Woodlice.**—These can only breed and exist where conditions are favourable, which they are where there is warmth and dryness; and therefore if the places in which they hide are made wet their increase is at once stopped, and they make off to seek more comfortable quarters, or they may be trapped readily after being disturbed. The way we got rid of ours in a large indoor fernery was to give a lot of water behind the rock and down amongst all the fissures where the heat came up from the pipes, from which places they turned out in quantity and were killed as fast as they showed themselves; after that we trapped constantly by having a lot of flower-pots baited with boiled Potatoes, and Beet, and Turnip scooped out, the pots and Beet and Turnips being filled loosely with wisps of hay, which were renewed from time to time when they became wet. By looking at the traps every morning and emptying out the woodlice, their numbers became so reduced, that we only found a few during the week, and now I do not think we have one in the house. I have heard that Battle's Vermin Killer will destroy woodlice, and if so, they may soon be got rid of, as, like crickets and beetles, they will eat almost anything, and poison ought to make short work with them if they can get it. Arsenic being tasteless, it is most likely they would take that if mixed with cooked Potatoes or meal, but these things require much care in their use, and to be put where nothing but the woodlice can eat them.—S. D.

GARDEN FLORA.

PLATE 477.

THE CULTIVATED GENTIANAS.

(WITH A FIGURE OF GENTIANA ANDREWSI.*)

To no one genus in the whole range of hardy alpine plants are we probably so much indebted for varied and vivid colouring as to the Gentians. The intervening forms between the handsome, almost stemless *G. bavarica* and the stately *G. lutea* are numerous. Their distribution, too, seems to be as varied as their characters, extending as it does from the limit of almost perpetual snow on Cotopaxi to our own charming and much-admired *G. verna*, lowly nestling in Irish bogs—in early spring a carpet of the deepest blue. With Gentians, as with most alpine plants, one condition at least is essentially important, and that is when once fairly established, they must be left undisturbed. Many of them, like *G. lutea*, have long tap roots, and ill withstand transplantation. Such annual species as *G. Amarella*, *G. Moorcroftiana*, and a few others are not to be despised, but those of perennial duration are so numerous and handsome, that we can well dispense with annual kinds in most gardens. In the Himalayas alone over forty distinct species of Gentian occur, some of which are said to possess considerable beauty, and yet, singular as it may appear, it is a fact that not a dozen of them are in cultivation at the present time, and those only in a few gardens. Shade as well as sunshine is recommended for the majority of Gentians, but this to a great extent depends on the soil. In localities where the latter is shallow and of a light sandy character shade is absolutely necessary, even where the supply of water is unlimited, but where the soil is deep and retentive they will flourish in full sunshine with the exception of the Himalayan species, which thrive best on north exposures and in a variety of soils. Although many of these Gentians may be increased by division of the roots, *G. acaulis* is the only one not injured by the operation, and as they nearly all ripen seed in this country—even the late-flowering *G. Andrewsii*—their increase is easily effected in that way. The seeds should be sown as soon as ripe, either outdoors or in shallow pans, and placed in a cool frame, the latter where practicable preferred.

The kinds of Gentians in general cultivation, and which are the most useful and durable, are as follows:—

G. acaulis, the *Gentianella* of gardens, is probably the first, or at least amongst the first, that was introduced to this country, and certainly the first commonly grown. Its introduction dates as far back as 1629, and with little or no intermission, in the north especially, it has held a foremost place as an edging or carpet plant. A good retentive soil is that generally recommended for it, but atmospheric conditions have also probably got something to do with its success; where these have been favourable we have seen it grow luxuriantly, even in different or only ordinary light garden soil. In localities in which its cultivation is difficult, a good plan is to give it a rich top-dressing early in spring or as soon as it begins to send out its young growths; and success has also been attained by claying the bottom of the bed and filling up with good, rich, lumpy soil. Choice of situation is always important in the case of this species; the spot where it grows should be cool, but not shady; sunshine and a plentiful supply of water in summer are also essential. In planting, it may be broken up into small pieces and placed at short distances apart; thus treated, it will soon form dense cushions or edgings of a permanent cha-

* Drawn at Munstead, Godalming, in September.



racter. Being of dwarf habit, it seldom attains, even when in flower, more than 2 inches or 3 inches in height; the leaves are smooth, oval-shaped, and pointed, and of a dark, shining green. The flowers, which are about 2 inches long, rise directly from the base on very short stalks; they are a beautiful deep or streaky blue, and appear early in May and June in such quantity as to entirely hide the leaves. It is a native of the European Alps, Pyrenees, &c. The variety *alba*, though said to be abundant on the Alps, is yet comparatively rare in cultivation; *G. a. Clusii*, a variety found in the Pyrenees, differs but little from the type except in size and in the intense blue of its flowers. *G. a. excisa* is by some quoted as a distinct species, but it is hardly distinct enough for the garden. *G. a. alpina* is another form with much narrower leaves. Other and newer varieties are *pallida*, *cœrulea*, *albo-marginata*, *cœlestina*, *alba cœrulea*, *azurea*, *albida*, and others not generally in cultivation.

G. ASCENDENS.—Of this two varieties are published in the *Botanical Magazine*, but practically they differ but little, except in colour. *G. ascendens* produces many weakly stems, decumbent at first, but rising afterwards at a short distance from the crown. The flowers, which are blue, are in some of the forms intense, and, but for the peculiarity of its calyx and lateness in flowering, it might be taken for *G. asclepiadea*, which it very much resembles. The stems rise from a tuft of lanceolate leaves, those on the stem being narrower than those at the base and produced in pairs, generally facing one way. The flowers, which are blue, are produced in terminal clusters and in the axils of the uppermost leaves. It requires a deep soil, owing to its forming long tap roots, and thrives best in a shady position. It commences to flower in July, and continues in bloom until September. It is a native of Siberia. *G. decumbens* is said to be a form of this, but of dwarfer growth. The variety of *G. d. Pallasi*, figured in Regel's *Gartenflora*, is very handsome and desirable. Its flowers are deep blue, and the plant has the lowly habit of *G. Walnjewi*.

G. AFFINIS, a handsome species of recent introduction, bids fair to become common. It is much in the way of *G. septemfida*, and varies in height from 6 inches to 1 foot. The leaves are oblong or narrow lanceolate and of a pretty light green. The flowers, which are few, sometimes almost solitary, are an inch in diameter, funnel-shaped, with lobes spreading horizontally, and of a fine deep velvety blue. It often attains a trailing or decumbent habit, and is well suited for rockeries, where it seems to flourish best on an east exposure. It flowers early in summer, and is a native of California, Sierra Nevada, and the Rocky Mountains.

G. ALGIDA.—This Siberian species was first described by Pallas in his "Flora Rossica." It is allied to the European *G. Pneumonanthe*, though it is dwarfer, very robust plants being only about a foot high. The flowers are about 2 inches long, white or yellowish white, spotted and streaked with blue. Pallas found it growing with *Rhododendron chrysanthum* in alpine situations, and it has since been found to have a wide range. This must be a fine showy species, and it is satisfac-

tory to know that it is in cultivation, though still rare.

G. ANDREWSI, of which the accompanying plate is a coloured representation, is one of the few American plants that make themselves quite at home in our bog gardens. When once properly established it is one of the handsomest of the Gentians in cultivation, and one which never fails to produce a profusion of its clear amethystine flowers. It is upright in habit and grows from 1 foot to 2 feet in height; the leaves, which are lanceolate, have rough margins, and grow on the

large patches it makes a first-rate border plant, thriving well even in ordinary garden soil. Its leaves, which are oval-lanceolate, run to narrow points and are of a fine lively green with five veins, which meet at both ends. The flowers, which are bell-shaped, are bright deep purplish blue with darker spots inside, from twelve to sixteen being on each stem. It is a native of Southern Europe, and flowers in July and August. The variety *G. a. alba* has a habit much the same as the type.

G. BAVARICA.—This, though one of the smallest, is also one of the most variable. Specimens of it from the Valois are less than an inch in height, whilst those from the little plain of Zermatt are over 6 inches, and quite lose their pretty rosette habit. It seems to be also variable as regards requirements, being as much at home in prepared gritty soil as in a peat bog. It, however, prefers a place among the *Droseras*, where it flourishes in perfection. In early spring and summer it cannot get too much water, and daily showers from a watering-pot may be given with safety. It is essential, however, that the drainage be perfect. Its flowers, which are terminal, are produced one on each stem; they are large in proportion to the plant, velvety, and of an intense Prussian blue; the leaves, which have a yellowish tint, are smaller and more oval than those of *G. verna* and are in opposite pairs. It comes from the alpine meadows of Central and South Europe, &c., and flowers in July. (Syn., *G. serpyllifolia*.)

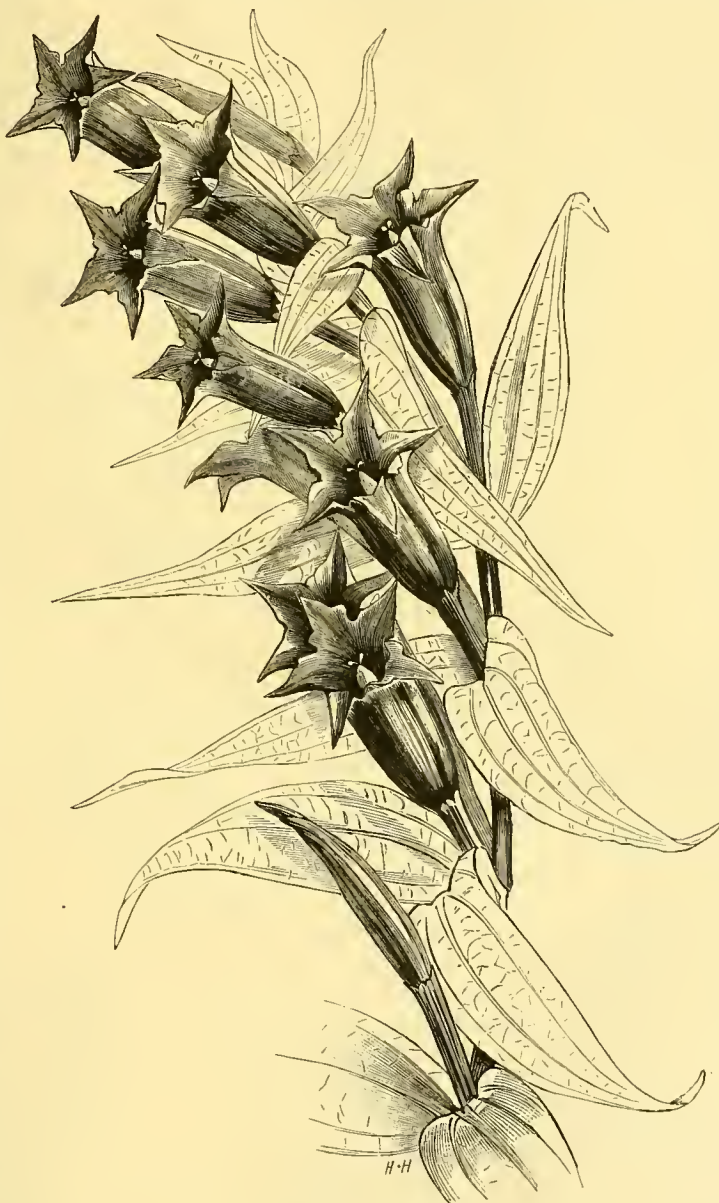
G. BURSERI.—A handsome Gentian from the Eastern Pyrenees, said to be a hybrid between *G. lutea* and *G. punctata*, which is probable, as it partakes of the characters of both. It produces tufts of long elliptical leaves, from the centre of which rises the stout flowering-stem from a foot to 18 inches in height; the flowers, which are yellow, are spotted with purple, campanulate, in dense terminal clusters, produced in July, and last a considerable time in beauty. It thrives best in a peaty loam and requires plenty of room, as it sends out young shoots from the base of the previous year's growth.

G. CILIATA.—This is a pretty species, and one which is useful on rockeries, as it adapts itself admirably to the fissures, &c., between large stones and thrives well in such dry positions; the stems are about a foot long, producing pretty, solitary, fringed flowers, blue or lightish purple in colour. The leaves are linear-oblong and pointed, and the flowers are produced in July and September. It is a native of Southern Europe and Siberia.

G. CORONATA.—A Himalayan species and exquisitely beautiful, but rare, if indeed the true plant, be in cultivation at all. It produces

many wiry, decumbent stems, thickly beset with neat, ovate-acute leaves in opposite pairs. The flowers, which are produced in autumn, are a lovely azure or sky-blue, corolla shaped, and in terminal bunches of from six to nine in a head.

G. CRINITA.—A pretty Gentian, though unfortunately only of biennial duration. It generally grows about a foot in height, and the stems, which are much branched, terminate with large clusters of deeply fringed indigo-blue flowers; the leaves are lance-shaped, cordate at the base, and clasping the stem. It thrives in a moist, peaty soil, and is a good companion to the closed Gentian. It flowers in September, and is a native of North America. (Syn., *G. fimbriata*.)



Gentiana asclepiadea.

stem in opposite pairs; the flowers, which are barrel-shaped and produced in terminal clusters, and also half way down in the axils of the leaves, are always closed at the mouth, the lobes being obliterated, and represented by broad fringed or notched appendages; the calyx is reflexed or recurved—one of the main distinctive characters between this and its near ally, *G. Saponaria*. It is a native of N. America, and flowers in September. (Syn., *G. Saponaria*.)

G. ASCLEPIADEA (the Swallow-wort) is a tall and very handsome species which requires to be grown, as at Wisley, by the square yard in order to develop its real beauty. It grows from 1 foot to 3 feet high. Its stems are rather weak, but in

G. CRUCIATA (the Cross-wort).—Common in gardens, and one of the easiest to cultivate. It grows well in any moderately dry border in good loam, but seems from its straggling, loose habit much better adapted for the rockery. The stems are from a foot to 18 inches in length; the leaves in pairs, each pair crossing the next alternately, broad, lanceolate, and often curled. The flowers, which are in whorls, contain only four instead of the usual five segments. They are deep blue and produced from May until August. It is a native of Central and Southern Europe.

G. FRIGIDA.—A species as yet rare in cultivation, but, from its singular flowers, worthy of more attention. It thrives well in borders in rich, moist soil, and is also useful for rockeries. It is of rather humble stature, being rarely more than 6 inches high. It has narrow, thickish, linear leaves in pairs, and sheathing at the base. The flowers, consisting of from one to three together, terminate the stem; they are funnel-shaped, about 2 inches long, of a yellowish white tint beset with purple dots, and very pretty and lasting; they are pro-



Gentiana lutea.

duced in August and September. It comes from the alpine regions of the Rocky Mountains.

G. KURROO.—This is one of the most beautiful of the Himalayan Gentians, and also one of the easiest to cultivate, accommodating itself to circumstances in a surprising manner. In the south of Scotland a large clump of it in an ordinary border is not considered remarkable, but then alpine Indian plants find there a congenial home. Grown near London on a rockery having a north aspect, it has flowered profusely, eclipsing, indeed, everything else for the time being. The compost in which it grows is a rich peaty mixture, and it receives copious waterings during the summer months. It forms a tuft or rosette of smooth, lanceolate leaves about 3 inches long, from the base of which rises the flower-stalk, and from the upper



Gentiana Pneumonanthe.

joints spring short stalks producing single flowers an inch broad and of the brightest azure-blue. The time of flowering lasts from July to August. It is a native of the Western Himalayas, and is common about Kashmir at elevations of from 5000 feet to 11,000 feet.

G. LODERI.—This is another beautiful Himalayan species lately introduced by Mr. Loder, whose name it bears. The seed is said to have been collected about the Lidar Valley. Its flowers are large, blue, fringed between the larger lobes, and very pretty. The leaves are oval and opposite. In habit it is straggly and unlike any of the others in cultivation.

G. LUTEA being very well known in gardens, little need be said about it. It is essentially a border plant, its large, bold habit rendering it very striking. It seems to be partial to a rich, moist soil, the tap root descending in many cases very deeply. It grows 3 feet or 4 feet high, and produces whorls of flowers at the upper joint, about an inch broad and of a good yellow colour. It flowers in July and August. It is a native of the Alps and Pyrenees.

G. MACROPHYLLA.—This differs from cruciata only in having much longer leaves and in being without the accessory segments to the corolla. It forms tufts of broad lanceolate foliage, sheathing at the base. Its stems are at first prostrate, but gradually become erect. The flowers, which are terminal, are collected together in whorls, dark blue, and produced in July and August. It is a native of Siberia, where it is found in elevated meadows.

G. ORNATA.—This handsome little Himalayan Gentian seems to be quite at home in the Edinburgh Botanic Garden. There I remarked a large patch of it on the rockery, where, judging by the innumerable brown flower-stalks with which it was beset, it flowers profusely. It will be found to do well in a peaty mixture, and in the sunny south should be grown on the shady side of a rockery. It forms little tufts of numerous stems 3 inches or 4 inches long, spreading from a common centre. The leaves are small, oval, and pointed. The flowers, which are produced singly at the ends of the branches, are funnel-shaped and intensely blue. It flowers early in May and June, and is a native of Sikkim, where it occurs at elevations of from 13,000 feet to 16,000 feet.

G. PANNONICA, a rare species, and nearly allied to the more common *G. punctata*. It grows from 1 foot to 2 feet high. Its leaves are oval, lanceolate, and beset more or less with sheathing scales at the base. The flowers are both terminal and axillary in clusters; tube, yellowish, dotted with purple, and dense at the mouth. It flowers in June and July, and comes from the European Alps. It has been referred to *punctata* and to *purpurea*.

G. PNEUMONANTHE (the Marsh Gentian) is a British plant, and though not plentiful over a wide area, it is far from being scarce on the moors around Bagshot. It is seldom met with in gardens, but this is more owing to its aquatic or semi-aquatic requirements than to its lack of beauty. It may be had in perfection in an artificial bog, where, when doing well, it is truly handsome. It grows about a foot in height and has numerous slender upright stems, terminated by clusters of rich blue flowers and often striped with white. They appear in August and September.

G. PUNCTATA is a handsome species, not uncommon in gardens. It grows about 2 feet high; its leaves are shorter and more ovate than in *G. pannonica*; the flowers, which are in clusters at the extremities of the stem, are pale yellow, spotted irregularly with purple. It flowers in June and July, and inhabits the high mountain ranges of Europe.

G. PURPUREA.—This is said to be a variety of *punctata*, though the flowers are distinct, their colour being different from that of any other Gentian. It grows about 2 feet in height. Its leaves, which are broad and oval-shaped, are in pairs, sheathing at the base; its flowers, consisting of from four to eight together, are terminal, bell-shaped, and of a curious dark, dingy purple colour. It thrives best in partial shade in rich, well-drained loam, and flowers in June and July. It is a native of the European Alps. There are both rose and white varieties of it, but not, we believe, now in cultivation.

G. PYRENAICA.—This little Pyrenean alpine gem grows only 2 inches or 3 inches high. Its flowers, which are large, are deep blue, with fine

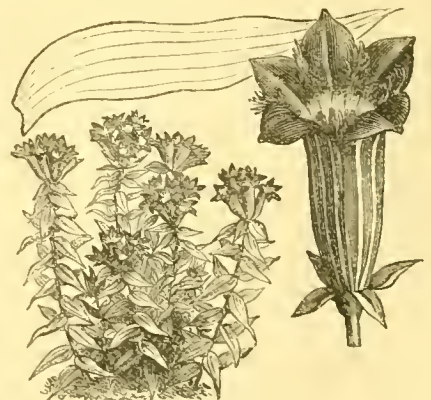


Gentiana cruciata.

prettily fringed appendages between the lobes and produced singly on each stem; the leaves are few and narrow. It flowers in June and July.

G. SAPONARIA (the Soapwort) is with us one of the most accommodating of American plants, although it seems to be most at home in situations similar to those which suit *G. Andrewsii*. It produces many upright stems about 2 feet in height, and is well furnished with long pointed opposite leaves, spreading horizontally. The flowers are terminal, and also in the axils of the upper leaves; they appear in August and September, are pale blue and very handsome, club or barrel shaped, and partly open at the mouth. It is a native of moist woods in North America. (Syn., *G. Catesbaei*.) The variety named *linearis* is in cultivation under the name of *Froelichi*, and differs but little from the type.

G. SEPTEMFIDA is a universal favourite, and one that adapts itself to the most varied circumstances. It grows alike well in sunshine or shade, provided it is supplied with occasional moisture. It varies very much according to the situation in which it is placed, thus giving rise to numerous imaginary forms. One of these forms, figured in Paxton's *Magazine of Botany* under the name of *G. gelida*, seems to be permanent in character, and therefore is figured in the *Botanical Magazine*, t. 6497, as *G. s. var. cordifolia*. *G. gelida*, a yellow-



Gentiana septemfida.

flowered kind with five instead of three-veined leaves, is not in cultivation, and although this fact has been previously published, a Gentian is still sold under that name. *G. septemfida* grows from a foot to 18 inches high, often trailing, but sometimes sturdy and upright; leaves ovate, pointed, and somewhat stem-clasping; flowers large, bright blue, whitish in the throat, fringed in the inter lobes, and terminal. It flowers in August and September, and is a native of the Caucasus.

G. TIBETICA, although a species of recent introduction, has already added much to the confusion which exists in this genus, owing to its having been circulated under the names of *affinis* and *macrophylla*. It grows about 2 feet high and has little to recommend it but its large beautiful



Gentiana alga.

leaves. The latter grow about a foot long, 3 inches broad, and are bright shiny green. The flowers are greyish white. It flowers in July and August and is a native of the Himalayas.

G. VERA.—Although this is a native, and presents no real difficulties as regards cultivation, it is remarkable how seldom it is met with in gardens. If there at all it is generally in the shape of small bits. There is, however, little doubt that it might be had in perfection in most gardens if growers could at once hit on the exact position suited to it. After many failures we have it forming dense tufts in a stiff loam on an east exposure and unshaded. It does all the better if surrounded with small stones half buried, and a cool bottom and plenty of moisture in spring and summer are essential points. As received from the Alps it seems to vary a good deal, some of the forms having leaves almost the size and texture of those of *G. acaulis*. It grows from 1 inch to 2 inches high, forming tufts of shining oblong, blunt, firm-textured leaves; the flowers, which are hardly an inch long, are funnel-shaped and of a rich blue colour, with white throat. They generally appear in April and May, but at Kew it is now in flower. *G. brachyphylla*, a small form of this, comes from the Alps and Pyrenees. D. K.

Planting Roses.—In lifting a quantity of Roses lately for potting—some that had been laid in temporarily, and others that had stood all the summer in the same position—I found that those lifted in autumn and laid in as just described were much more active at the root than those that had remained undisturbed. A well-known writer on Roses stated in *THE GARDEN* some time ago that root disturbance promoted root activity; the statement was received with incredulity, but I find from several instances that have come under my observation since then that such is substantially correct. This seems to confirm the advantages attributed to early planting or transplanting, and that the latter is of benefit to Roses if done early in the season there can be little doubt. I have frequently seen beds of dwarf Roses said to be worn out restored to health and vigour by simply lifting and replanting them. I would recom-

mend anyone having beds of dwarf Roses planted several years, and that are deteriorating, to lift them early next season, say in October and November, and trench up the bed two spits deep, adding some good rotten manure and fresh soil; then re-plant rather deeper than before, and mulch the surface with some half-rotten manure to keep the roots in an equable state as to moisture and from sudden fluctuations of temperature. Thus treated, they will not only start into growth more strongly, but will increase in vigour as the season advances. I feel sure, indeed, that if the practice of lifting and replanting was generally adopted, we should hear less of Rose failures than we now do.—J. G.

KITCHEN GARDEN.

BEST SORTS OF VEGETABLES.

As people will now be getting in their season's supply of seeds, a few words as to the best sorts of vegetables may be of use to many in making their selections, and save them from being over-burdened with varieties that differ little or nothing from others, except in name. Taking them alphabetically, we will begin with

ASPARAGUS.—The best are the *Argenteuil* and *Conner's Colossal*, kinds that grow to a great size, the former being extensively cultivated for the French and English markets, in which huge heads may be seen, and the latter being a favourite among gardeners in this country, most of whom have beds of it now. The middle of March is quite time enough for the sowing, which should be made in deeply trenched, highly manured ground, in rows a yard apart, that is, if the plants are intended to stand, which is the better plan, as, however carefully lifted, they are sure to suffer a check at transplanting, and the putting in two or three seeds at 18 inches asunder saves this, as all but the strongest in each place may be pulled up and discarded.

BEETS.—Of these there are many sorts, the best among them all being *Dell's Crimson* and *Nutting's Dwarf Red*. *Dell's* has medium-sized roots of a rich deep crimson, which, when cooked, are very tender and of excellent flavour. *Nutting's* is also a fine Beet, possessing the same good qualities, but is distinct in its foliage, which is small and not so deep bronzy a shade as *Dell's*, the leaves of which are very rich and high coloured. The land for Beet should be in good tilth, but not fresh manured, unless the manure put on is quite rotten,

BORECOLE OR KALE are very useful, especially the tall and dwarf *Green Curled*, both of which are very hardy, and have a sweet, tender flavour. These are the finest for winter, but for spring there are none equal to *Asparagus Kale*, which yields a great number of the most delicious sprouts, melting and marrowy when they are cooked. For garnishing, a few of the variegated Kale should be grown, as the leaves, besides being curled, have beautiful markings or suffusions of colour, varying from white up to rich crimson.

BROCCOLI are in almost endless variety, and should be divided into early, second early, and late sorts, the finest among the first being *Veitch's Protecting Autumn*, which comes in immediately after their grand *Giant Cauliflower*, which it somewhat resembles, and lasts on, if sharp frosts keep off, till *Snow's* or *Back house's* follow. The last mentioned, when it can be had true, is a fine kind, forming very close white heads, which are well protected by the leaves folding closely over the hearts. For cutting in spring none are better than *Veitch's Spring White*, *Dilcock's Bride*, and *Penzance*, the latter being the sort which is so extensively grown in Cornwall and sent from thence to London and other markets in such quantities all through the latter part of the winter. *Veitch's* is an early kind, having medium-sized heads that are pure white and well protected, and *Dilcock's Bride* is large and of the same desirable colour. For late use *Model* is the best, as it is very hardy, and bears close handsome heads that are hearted over and preserved from spring frosts. *Cattell's Eclipse* is also an excellent kind that has hard woody stems, which enable it to stand the severest of winters, its only fault being that the heads are not quite so white as the others. *Sander's Protecting* is a fine variety that comes in about the end of April and lasts in cutting for nearly a month after if the plantation is large. The way to grow Broccoli is to plant them 4 feet apart and have a row of Potatoes between, as the latter crop being cleared off early allows them plenty of room with full light and air, when they not only develop themselves properly, but become firm and large in the stems, which may be earthed up and made proof against frost. If they are planted nearer, it should be in hard land that has not been dug, for though they may not grow so big, they will be more consolidated and harder than when their progress through summer is rapid. Another thing that tells against Broccoli standing the winter is sowing too thickly, which causes the plants to become drawn and long in the leg, in-



Gentiana verna.

as when in an undecomposed state it is almost sure to make them fangy by preventing the downward course of the tap roots, and this obstruction causes them to branch out at the sides. The time for sowing is the middle of April for the first pulling, but if the main crop is in a month afterwards, it is soon enough, as the seedlings are tender.

stead of which they ought to be dwarf and stocky at the time of planting, and to get them in this desirable state it is a good plan to prick them out in rather poor soil, after which they will, as a rule, be found to lift with plenty of roots and large balls, when, as a matter of course, they suffer little or no check on removal.

BRUSSELS SPROUTS.—The tendency of late years in the case of these is to have size, which is a mistake, as small, close-hearted, firm Sprouts are far better than the large loose ones, most of which are strong and of inferior flavour. If a fine selection of the Imported be sown, they are sure to give satisfaction on the table, but if those in favour at shows must be had, then Veitch's Exhibition or the Aigburth should be ordered and grown. Whichever is chosen ought to be sown at latest by the middle of March, and it is a good plan to get the first lot up under glass, as it is only by having fine strong plants early that large stalks full of nice sprouts can be got. Some sow their Brussels Sprouts where they are to stand and thin out, so as to save transplanting, under which system I have seen them quite a yard high and stout in proportion. As the plants are gross feeders, the land for them cannot well be too rich, and it is important that it be deeply worked, that the roots may find their way down, or the check will be great during dry weather.

CABBAGES.—Although there are many kinds of these, three or four are quite sufficient for any garden, the two best for coming in first being Ellam's Dwarf and Wheeler's Imperial, both of which are small, close-hearted sorts, that are tender and first-class in flavour when cooked. To succeed these none are better than Enfield Market and Fulham, which are large and fine in quality, with few outside leaves when they turn in. The time to sow is the middle of July and again in August, the plants raised in the latter month lasting on as long as Cabbages are cared for in summer. Ellam's and Wheeler's may be planted in rows 18 inches apart and the same distance from plant to plant, but the larger growers require more room. Like all the Brassicas, Cabbages require plenty of manure, and in dry weather are much benefited by a good soaking of sewage. Couve Tronchuda must not be forgotten, as it is a most delicious vegetable, tender and marrowy in texture and flavour. To have it fine, the seed must be sown early and the plants got out by the middle of May, and if this is done, the heads will be fit to cut in October, when they should be used before being injured by frost. Chou de Burghley is said to be a cross between a Cabbage and a Broccoli, but, however raised, it is a valuable vegetable, as it forms a very large, long, conical heart, and comes into use all through the winter, and is of a very mild, agreeable flavour.

CARROTS.—There are two sorts of these that are very desirable, the one being the French Forcing and the other James' Intermediate, the first named for sowing on a gentle hotbed in sandy soil or on a warm border, to be pulled and used when young, and James' for the general crop in the open. As a dressing on the ground for Carrots, soot is the best material, and this should be scattered on and dug in before sowing the seed, when it will be a great help in preventing the attacks of wireworm, to which Carrots are particularly subject, and are often quite spoiled by their ravages.

CAULIFLOWERS.—Early London is usually relied on for first cutting, and very good it is, the best for succeeding it and affording a supply during summer being the Walcheren, and for autumn none are equal to Veitch's Giant, which produces very large, close, heavy heads that come beautifully white and well protected with leaves. The time for sowing the Early London is the middle or end of August, and when the plants are large enough to handle they should be pricked out close under a wall on a warm border, where they will winter in safety. If handlights or glass can be spared, they may be planted or potted singly and kept in cold frames, which is a good plan, as then they may be turned out in the spring without feeling a check. To have the Walcheren all through the season referred to, successional sowings must be made, commencing in March and ending in June, but for Veitch's the end of April is quite late enough, as plants of that variety take a long time to turn in. Deep cultivation and rich soil are the things needful for Cauliflower, and during summer a little shade and a cool position are desirable, and if the ground along the

sides of the rows can be mulched, that will be a great help to the plants.

CELERY.—If this is wanted for salads or to be used in an uncooked state, the best to grow is the Sandringham, which is very dwarf and solid in leaf-stem and the finest of all for crispness and flavour. Not only is it superior in the points referred to, but as it is so dwarf and stocky, it requires but little earthing to blanch it, and it is easily protected during the winter, as there is then so little of its top exposed to the weather. For culinary purposes the larger sorts are desirable, and among these none are better than Major Clark's Solid Red and Wright's Giant White; to get these of full size they should be sown in gentle heat about the middle of March, and as soon as the plants are large enough it is necessary to prick them out in rich light soil on a half-spent hotbed or a hard bottom, where they can be kept close under glass for a time to give them a start, when they should be freely watered, as any check through dryness or other causes will make them bolt. This being so, it is important at the time of planting to lift them with good balls and give them a thorough soaking as soon as they are in the trenches, which ought not to be deep, but heavily manured, and the manure well mixed up with the soil.

CUCUMBERS are so numerous and so good, that it seems invidious to pick out just two or three; but those who grow Telegraph or Tender and True for summer and Sion House Improved for winter are sure to be satisfied, as their bearing qualities and flavour are first rate, and Tender and True is so handsome in shape, as to be one of the very best for show purposes. To have them free from bitterness, crisp, and juicy, they must be quickly grown, which can only be done by giving them fresh, rich soil and a brisk moist heat, either from fermenting material or hot water, or, better still, a combination of the two, as then a more genial atmosphere can be maintained and the temperature kept regular under any state of the weather.

ENDIVE.—Of this two kinds are enough, the green curled and the round-leaved Batavian, and if these are sown about the middle of July and planted out when large enough, they will be large and fine for lifting to blanch in sheds or frames late in the autumn.

LEEKs are becoming much more used than they were at one time, and as the quality of all is about the same, size is a point that has most to be considered, and in this respect Ayton Castle Giant has it, but to get even this variety to its full dimensions early sowing must be resorted to, and the best way is to raise the plants in heat at the end of February or beginning of March, and afterwards treat them the same as advised for Celery, as they require trenches and blanching to have them with big edible stems.

LETTUCES.—These come in two classes, Cabbage and Cos, the Cabbage being used principally for cooking and the Cos kinds for salads, for which latter purpose none are superior to Veitch's Superb White, and the Paris White for summer; and for standing during winter Hick's Hardy Cos and the Bath Brown Cos are quite unvalued. Among the Cabbage varieties, the Victoria and Neapolitan are the most desirable, and these may be sown at intervals from April, according to the demand, and the same with the White Cos; but the Brown and Hick's should not be put in till the middle of August, unless they are wanted for cutting early in autumn. To have Lettuces sweet, crisp, and succulent they must have rich ground and be quickly grown, and to save transplanting, which causes such a check to young plants during the summer, it is a good plan to sow in rows where they are to stand and thin out, so as to leave them standing at the distance required.

ONIONS.—The varieties of these are ever increasing, but few, if any, will beat the good old Reading and James' Keeping to sow for winter use, and to come in before these are ready the Giant Rocca is one of the best, and this should be sown in August and the other two about the middle of March.

To obtain fine large bulbs the land for them must be heavily manured and deeply worked, as it is surprising what a way the roots go down; but though Onions like a loose bed below, it is necessary to have it firm and solid above, or instead of bulbing properly they are apt to grow with large necks, and are then of no value for storing. The best kind for pickling is the Silver Skin, and this should be sown on very hard, poor soil, when the bulbs, if the plants are not thinned, may be had about the size of marbles, in which small state they are prized.

PARSNIPS.—Of these there are two worth growing, the Hollow Crown and The Student, the first of which is large and good, and the latter small and of excellent quality and flavour. Loose light land is the thing for Parsnips, and they cannot well be sown too early, the middle of February being a good time if the land is then in fair order.

RADISHES.—For forcing, the early scarlet and white Turnip and the French Breakfast are the best, but for summer use Wood's Frame and the Long Scarlet stand the heat better; to get them young and good, frequent small sowings have to be made.

SPINACH.—The round is the sort to grow for summer use and the prickly for winter, but it is difficult, even under the most skilful management, to keep up a supply during hot weather, and as a substitute then the New Zealand should be cultivated, or the Perpetual Beet sown, as with either of these in the garden there is always plenty to pick at. The first sowing for spring gathering may be made as early as February and the round for winter by the middle of August, a warm sunny position being necessary to keep it in growth. In starting with the New Zealand it is necessary to raise the plants in pots in heat and turn them out towards the end of May, and if this is done on an old spent hotbed, the yield will be great.

TOMATOES are now coming very largely into use and the last addition to the many fine sorts is the best. This is the Hackwood Park Prolific, which is an early variety, bearing handsome, large-sized smooth fruit, in long clusters that show freely all up the stems. Hathaway's Excelsior is also a remarkably fine kind that produces heavy crops, but to enable any of the Tomatoes to set their flowers it is necessary to keep them well supplied with tepid water and to mulch over the roots, or the blooms fall. As the season at best is short for ripening them, the plants should be raised early by sowing seed in February. Get the plants up strong and hardened ready for planting out by the last week in May, when they ought to be protected during the night by having some kind of covering in front, or placed round or over them if they are out in the open; where so planted, they must have a hot sunny position, or the fruit will not be ripe by the autumn. Where it can be spared a light house is the place to grow Tomatoes, as there they may be kept in large pots or planted out and run up under the roof, and if thinned out, when the shoots need that attention, the crop will be heavy.

PEAS.—These are becoming much too numerous, and it is, therefore, a most difficult matter with many to know which to select, but those who have had experience with them keep to a very few varieties, for after all there are none to beat the sterling old kinds; Veitch's Perfection among the dwarfs and Ne Plus Ultra among the tall sorts have never been beaten. Although these are so good, and the very best that can be obtained for summer, we must have some that are earlier for a first gathering, and if these are to be grown in a frame or under glass, Chelsea Gem or American Wonder are the ones to choose, as both are remarkably dwarf and very prolific. For sowing on borders none are better than Kentish Invicta and William I., and to follow on immediately after these a row or two of Day's Sunrise or Advancer should be put in, and these ought to be succeeded by the two first-mentioned above. Almost any land of fair average quality will grow early Peas, but to produce them in quantity during the summer the ground must be specially

prepared by digging trenches and manuring the bottom, when they should be nearly filled in again with soil and the Peas sown. These rows ought not to be nearer than say from 6 feet to 10 feet, according to the kind of Peas grown, as they bear far better wide apart, and Celery may be planted between, which position is just suited for it, as during the hottest weather it delights in half shade. Sparrows, which are so troublesome in most gardens, may easily be kept off the rows by running three or four lines of black cotton along, which, if just clear of the heads of the young Peas and strained tight, alarm them greatly, and they flee from the unseen danger at once.

POTATOES.—The name of these is legion, but for all that there are only a limited few that are of really first-rate quality when cooked for table, although there are plenty of fine shape and very handsome appearance. It is not these, however, that most growers want, and to suit the generality of people none are better in the kidney class for first use than the good old Ashleaf, which possesses good flavour. Myatt's is a variety of it, and is nearly equal and much more prolific, but a fortnight later in coming in. Welford Park is a valuable kind that has a future, and Magnum Bonum is the best for a general crop. Among the rounds, Paterson's Victoria, Bedford Prolific, Schoolmaster, and Vicar of Laleham are the finest, but these, as do all others, vary a good deal in different soils, which have great influence on Potatoes; those from fields composed of sandy poor land are generally superior to those cultivated in gardens, from which highly manured ground they are mostly close and unpleasant in flavour.

TURNIPS.—At one time it was a difficult matter to compass the season with a supply of these esculents, as long before spring-sown ones came in the autumn bulbs had started to run up to flower, but with the Extra Early Milan a month is saved, as this kind is quite that time in advance of all others. To succeed this the Snowball is the best, and to follow on during the summer and autumn, Veitch's Red Globe is superior to any, as it is free from that rank, hot flavour peculiar to most others during the seasons referred to. For the first sowing a warm, sheltered border is the best place, but for succession a cool spot should be chosen, the land most suitable being that in good tilth and not freshly manured, as when over-rich the Turnips run more to leaf than is desirable.

VEGETABLE MARROWS are not at all numerous in sorts, the best among them being the Custard, unless this is beaten by the new comer named Pen-y-Byd, which has the merit of being a small round kind and very prolific in habit. The shape of the Custard is taking, but the others being long or oval are not useful for dishing. To have Marrows early, a hotbed is necessary, and on it some rich soil should be placed and the plants turned out under hand-lights early in May or before, and if kept close for a time till they get a good start they will soon fruit and be ready for cutting. J. S.

The most profitable Peas.—I see (p. 69) that "W. I. M." says he has grown Telegraph, Telephone, Stratagem, and Pride of the Market as long as any private gardener in the country. I, as an amateur gardener, can make a similar statement. "W. I. M." asks us to explain why we should grow four such Peas as those just named. My reason is, first, because I think there are no four Peas that have a stronger or more robust constitution; second, because they are four Peas that will suit all tastes—Telephone and Stratagem for

sweetness, and Telegraph and Pride of the Market for those who do not like sweet Peas; third, for their productiveness and exhibition qualities. They are, moreover, Peas that all market gardeners should grow for this reason: some customers like a sweet Pea, and others do not, and, of course, a market gardener has to study all tastes. "W. I. M." says we make two sowings of Telephone at an interval of a fortnight—a long row of each; but why a long row of each if it is only fit for exhibition? As regards stakes, allow me to tell "W. I. M." that market gardeners in this neighbourhood stake nearly all their second and late varieties; they consider that it would not pay

of Ne Plus Ultra, and is especially valuable where the soil is light and tall stakes not easy to procure. There is no doubt about the quality of this or any other variety allied to Ne Plus Ultra being first rate.—W. I. M.

WINTER SALAD PLANTS.

THROUGHOUT the summer and during genial weather it is an easy matter to have a good and constant supply of salad plants in gardens of all sizes, but as winter comes on the supply, both in quality and variety, shortens, or in many instances ceases altogether. Sometimes the severity of the weather causes this; in other cases it is the fault

of the cultivator in not doing his utmost to extend the salad season as long as possible. The most tender kinds of summer Lettuces do not grow well late in autumn or early winter, but there are special winter varieties which, if planted in a sheltered position late in summer, will continue to grow and keep fresh and good until far into winter. Those who possess a few frames or handlights with water-tight roofs may keep Lettuces good during most of the winter. They should be lifted before frost injures them and planted closely together in ashes. So long as they can be kept moderately dry they will remain good. On fine days the lights should be taken quite off them, and in wet weather they should be kept constantly shut. The broad-leaved Batavian Endive is hardier than any Lettuce and one of the very best of winter salad plants. It becomes one broad mass of firm leaves, and should never be tied up for blanching until a fortnight or so before it is wanted. So long as the plants are left untied there is not much danger of their decaying, but when tied up in wet weather the inner leaves soon rot. It will bear a few degrees of frost, and should only be taken under cover in quantities consisting of a few dozens at a time. If lifted with good balls of soil and planted in a frame amongst ashes and then covered over and kept in the dark and from wet, they will blanch nicely without being tied up. This variety may also be blanching in the open by tying it up or placing a flower-pot upside down over each plant, with a broad slate or tile on the top to keep out wet. We have placed quantities of it in a dark shed, but there it soon decayed. Chicory, or Witloof, as some choose to call it, is a useful winter salad plant. Roots of about nine months old are the best for forcing. They should be taken up and potted as closely as they will stand together in 10-inch pots. Then plunge them in a bed of leaves or other fermenting material, and tender, creamy growths will push up in abundance. All the green points may be cut off in potting them, and the whole may be cut over when ready for use, as a second crop will push up in a short time. This is one of the easiest of



Gentiana affinis.

them to grow late Peas without stakes. I have seen from one to two acres of Peas all staked, and that with bought stakes, too. "J. C. C." says (p. 69) that he has to study quality, and that, in his opinion, Telephone is only fit for exhibition. Will he kindly give us the name or names of the Peas that he finds much better in quality than Telephone?—HENRY MARRIOTT, *Prospect House, Skirbeck, Boston, Lincolnshire.*

Pea Omega.—Mr. John Roberts (p. 47) speaks very highly of this variety, and is surprised I omitted to include it in my list of profitable Peas. I am sorry to say it does not grow satisfactorily on our heavy land, but on lighter soils it is found to be very serviceable, especially for late crops. It is correctly described as a dwarf form

plants to cultivate and the surest to give satisfaction. Radishes are never-failing salad plants. The China Rose variety, sown in October, will bulb now and onwards throughout the winter, let the weather be what it may. This is the only Radish worth growing for winter. It is as hardy as a Houseleek, and as tender as if of May production. We have pulled them up about the size of one's fist, and they have been as tender then as when only a quarter the size. Those who grow this Radish will always have at least one kind of salad vegetable in winter. Mustard and Cress, which everyone values, are easily grown if a little heat can be given them. They are the only things which can be got up quickly to supply some deficiency, as they can always be grown to be fit for use in

ten days. Sometimes the seed can be sown on the surface of a Vine border, or a little soil may be put into shallow cutting boxes. Sow in these, and put them into 60°, and give plenty of light. The soil should be very firm, moderately moist, and the seed should not be covered over. Water, too, may be withheld until the plants are up, and when about 2 inches high move them into a cool place and keep them there until used. Beetroots are excellent additions to winter salads, and they may be kept fresh and good if stored in any outhouse or cellar throughout the winter. J. MUIR.

NEW V. OLD SEEDS.

BEFORE obtaining sufficient new seeds for the year it is customary with many to overhaul what are left from the preceding season—a wise proceeding, as doubtless in many cases it is a means of curtailing expenditure, which most of us are called upon to study now-a-days. At the same time, in the matter of purchasing seeds we may be too parsimonious, and I venture to remind employers especially that it is the reverse of economical to refuse their gardeners reasonable latitude in this matter. We require good varieties and seeds of the best quality, and without them we ought not to be expected to keep pace with those who do get them. As it happens, many of the best sorts of vegetables are rather the dearest to buy, and many are tempted to order cheaper sorts, and yet, perhaps, will be the first to complain if the result is not quite satisfactory. Collections of seeds are particularly tempting. In one sense they are cheap, and in another they are dear—cheap, because in no other manner can such a bulk of seeds be so cheaply purchased, and dear, because great quantities of them are either not wanted, or the sorts are not suitable for all gardens alike. I hold that it is true economy to spend a larger sum on a lesser quantity with the certainty that these are of good sorts and perfectly sound, and this any respectable seedsman will admit. Besides, it is of the greatest importance that the majority of the seeds should be nearly or quite new, but if the surplus seeds each season are not burnt or otherwise destroyed, what becomes of them unless the purchasers of collections get them? If I give a fair price for seeds, I expect all or nearly all of them to germinate; if they do not, and if I felt satisfied that they received fair treatment, another seedsman would have my next year's seed order.

New seeds always germinate more quickly and stronger than old ones do, and there are some kinds that are comparatively useless after being kept one year. Many old seeds will germinate well in heat, and yet would have perished in cold ground, or at any rate have produced but a very poor plant; consequently seedsman's trials are frequently misleading. Sound seeds of Peas, Broad, Kidney, and Runner Beans, Carrots, and Parsnips that have been kept in a dry place for another season will germinate fairly well in heat, but in the open they are very unreliable. The same may also be said of seeds of Onions, Leeks, Salsify, Scorzonera, Mustard and Cress that have been kept two seasons. Artichokes, Lettuces, Endive, and Tomatoes kept three seasons, and Broccoli, Cabbage, Kales, Brussels Sprouts, Savoy, Spinach, and Turnips kept four seasons, while Parsley, Beet, Celery, Melon, and Cucumber seed may be kept six or more years, the two last, indeed, retaining their vitality for a much longer time.

If we could depend upon being supplied with new and sound seeds, we might venture to rely upon many kinds we have saved, but as seedsman know better than we do, perhaps, how long they may safely keep seeds, we may reasonably assume that we are not unfrequently supplied with some old ones; consequently, whenever we sow old seeds we must in any case take extra pains in the sowing, and yet be prepared for a partial or complete failure. If the ground is in a cold wet state, it is a mistake to sow even sound new seeds at a certain time, and doubly so if old seeds are to be sown. We must wait till the ground has become warm and in good working order, or else the seeds must be covered or surrounded with light, fine soil,

such, for instance, as may be had by sifting over a heap of old potting soil. In any case, even where the ground is light and warm, it is advisable to sow old seeds much more thickly than new ones, this being the only way to secure an even plant. Those who have heavy land to deal with will do well to sow old seeds of nearly all kinds of choice vegetables either on slight hotbeds or in boxes, pans, or pots of fine soil, placing these in a little warmth. Peas, Beans, Onions, Asparagus, Sea-kale, Rhubarb, Globe Artichokes all transplant readily, and the four last named are best raised in heat, while it is possible to secure more plants of Brussels Sprouts, Broccoli, Cauliflowers, Lettuces, and such like in a pan or box of soil than are frequently obtained on a good sized open piece of ground. These methods, however, necessitate much extra labour in the shape of pricking out or transplanting, and I merely mention them for the benefit of those who must rely largely upon seeds of an inferior description. A mixture of old and new seeds is sometimes advantageous, especially in the case of Turnips and other members of the Brassica tribe. The new seeds, being the first to germinate, may be destroyed by one of the many enemies common to gardens, and the older seeds, coming up later, escape. As a rule, I prefer new seeds and also those bought to any that we can save, with the exception of Peas and Beans. As most of the seeds of the two last named are saved in the open fields and on unstaked plants, there is naturally a great difficulty experienced in properly ripening them during wet seasons. Seeing that we can now purchase good sorts of all kinds of vegetables at a fairly cheap rate, I consider it a mistake for gardeners to attempt to save many seeds of their own, and which can rarely be relied upon.

W. I. M.

Varieties of Broccoli.—New strains of Broccoli from trustworthy sources ought always to be tried, for if most diligent care is not taken, the strain soon gets mixed and loses its distinctive character. The first year's seed of a new Broccoli is almost invariably good and the plants true to one type. But of how few can this be said after a lapse of say ten years? Perhaps the varieties that have the greatest share of popular favour are Snow's, Leamington, and Cattell's Eclipse. Of the first and last it has been a difficult matter to obtain seed true, but now the seed supplied by the leading firms of these two varieties is much better. Likewise the seed supplied of three somewhat recent varieties grows up very true to name, to wit, Self-protecting Autumn Broccoli, Model, and Late Queen. Model is to my mind unsurpassed as a late variety. Its small, delicate white heads are the most delicious treat the Brassica tribe affords. Those who wish to grow that excellent variety Lauder's Late Goschen would do well to procure their seed from Edinburgh, as it is a very popular variety with the market growers there.—M. C.

American White Plume Celery.—If this Celery has not some good properties more than seem to have yet been claimed for it in becoming white or blanched without earthing up, or unless it is capable of resisting frost to an extent that the ordinary varieties of this vegetable hitherto in cultivation are not, it is not likely to be much, if any, improvement on them. If it is not in a fully blanched condition before November, frost often comes soon after that time keen enough to do serious injury to any part of the stems not protected by the soil as it is usually placed in the ordinary process of earthing up. The stems of Celery that have been frozen through begin, from the time they have been so frozen, to decay as far down as the frost has reached, the rotting process generally extending, if slowly, lower down than the point where frozen. Albinos, or even the white parts of variegated plants, are usually less able to bear extremes of any kind, either of exposure to the sun or of frost, than green forms, and unless this Celery is one of the few exceptions in this respect, it can scarcely be supposed to stand more frost than the ordinary green varieties. If

the new variety has any really good properties non-existent in the older sorts it is so much of a gain, and it will not fail to meet with full appreciation; but if novelty in colour is all that can be said in its favour, it is only one more added to our sadly overgrown list of vegetables, and the reverse of a gain.—T. BAINES.

INDOOR GARDEN.

GREENHOUSE CHRYSANTHEMUMS.

THE Chrysanthemum has become within the last few years one of the most popular of exhibition plants, a purpose for which it is well adapted, and it is owing in a great measure to the multiplicity of exhibitions that the Chrysanthemum has become so popular and the improvement in the flowers so rapid. Chrysanthemum exhibitions in gloomy dark November are like glimpses of sunshine to pent-up citizens in large towns, and they tend to bring this useful flower more and more into favour. Thousands of people who would not think of taking either plants or cut flowers to an exhibition like to admire them in their own gardens at home. The question indeed how best to grow plants or flowers for exhibition must be held to be subordinate to the more important one of growing Chrysanthemums so that the best display should be obtained from them for the greenhouse or conservatory as well as a plentiful supply of blooms for room decoration. For the latter purpose good, well-formed flowers must be grown, because if fine blooms are most esteemed at an exhibition, they are equally valued at home. I do not mean to say that they should be placed on boards and firmly fixed in tubes, but large, well-formed flowers may be cut with some bright green foliage attached to them and surrounding flower-buds, and placed singly in small glasses of water, where they will remain fresh for a couple of weeks.

THE TIME TO PROPAGATE Chrysanthemums is about the end of November or early in December. All cuttings then ready may be taken off and potted singly in small pots. There are two kinds of cuttings, those formed on the old stems near the base and root suckers, that is shoots that grow from the roots near the base of the stems. If the latter can be obtained, the others should not be used, as stem cuttings sometimes run to flower as early as May, and such plants are of no value as good flowering specimens in November. Cuttings taken off in November and December should be placed in frames with the lights drawn close over them. The small pots containing them should be plunged up to their rims in Cocoa-nut fibre refuse. Some will form roots sooner than others, and will begin to grow. Such as have rooted must be taken out, else they will become drawn up weakly, owing to want of air. The rooted plants require to be placed in a pit, frame, or light airy greenhouse where a constant circulation of air can be admitted and be kept there until May; by that time they will be good-sized plants in 6-inch or 7-inch pots. As to the form in which the plants must be trained, I may remark that the bush shape is the most natural. Some, however, like the pyramid or cone form, and at some exhibitions prizes are offered for specimens trained in this way. I have seen plenty of specimens exhibited, but none of them that I would like to place in any greenhouse or conservatory of which I had charge. Another style encouraged at exhibitions is the Mushroom form. In order to obtain this the shoots are tied down one over the other, the flowers projecting from the concave surface like pinheads from a cushion. I have seen a specimen trained in this way 2 yards across and not more than 2 feet high from the surface of the pot. Being unnatural, this, as well as the cone style, should be avoided. Standards are formed by training the plants, in the first place, to a stem about 3 feet high; the point is taken out, and the shoots, four or five in number, grow out from the top. They are trained to a round head, and when well managed, make good decorative objects in certain positions.

SPECIMEN PLANTS should be formed by pinching the top off the young plant when it is about 6 inches to 9 inches high. This will cause four or five shoots to branch out; these, when 4 inches or 5 inches long, should be tied down to slender sticks inserted in the pots. When these lateral growths are about 9 inches long their points should be pinched out. This will be about the third week in June, and about a week afterwards repot into the flowering pots. They might have their final shift earlier than this, but when potted too early the leaves are more likely to become yellow, and drop off before the flowers are fully open. In May they should be placed out-of-doors and given plenty of room. Large-flowered varieties and the Japanese require much the same treatment. The largest plants should be grown in 11-inch pots, the smaller ones in 10-inch. Pompones may be grown in 7-inch and 8-inch pots. Their treatment is simple enough. The shoots require training out to sticks as they grow, not tied down. The pots should be plunged half their depth during the growing season, and plenty of light and air will preserve healthy foliage down to the base.

SMALL PLANTS may be obtained by striking cuttings in May and flowering them in 6-inch pots. Some plant out their specimens in the open ground, a system which saves a great deal of trouble when work is pressing during the hot summer months, though I do not wholly approve of it. They should be dug up and potted as soon as the flower-buds are set, but at that time they receive a very serious check, which they never quite overcome.

LARGE EXHIBITION BLOOMS.—The production of these has hitherto been confined almost exclusively to those who grow for competition at flower shows. The plants which produce them, as usually seen when in flower, are not very attractive, having stems from 6 feet to 9 feet in length, with from one to three flowers at the end of them. There is no room for such plants in an ordinary greenhouse or conservatory, and if there was, their flowers are so high up, that they could not be examined without the aid of steps. As I act as judge at many of the principal Chrysanthemum shows, I have frequent opportunities of comparing the relative merits of different methods of culture to obtain certain results, and last season's exhibitions furnished conclusive evidence that large, well-formed exhibition blooms can, however, be obtained from plants that are at the same time well adapted to furnish a good display of bloom in the greenhouse or conservatory. The first prize at Kingston for a group of plants was awarded to Mr. C. Orchard, of Kingston-on-Thames, and these plants were furnished with blooms quite as good as the usual run of those seen on stands at exhibitions. I had some conversation with Mr. Orchard about them, and he admitted that if he had to grow his plants to obtain single blooms to exhibit for competition only, that he would cultivate tall plants; but his object is the decoration of the plant houses at home and to furnish an effective exhibition group. The ordinary system of culture is followed up to June 1. At that time the plants may be in 6-inch pots and about 2 feet high or so. Between the 1st and 6th of June Mr. Orchard cuts down the late varieties to the hard wood, *i.e.*, to within 6 inches or 9 inches from the base, and he continues to cut down a few plants almost daily up to the third week in that month. It is evident that this radical cutting down effects somewhat of a revolution in the time of flowering. The plants take a long time to start from the old wood, and when they do start they do not make a very long growth; on the contrary, they make a dwarf and substantial growth sufficient to produce large handsome flowers. Doubtless the cutting down of such late kinds as Princess Teck, Yellow Perfection, Mount Edgumbe, Grandiflorum, Ethel, &c., say about the end of June, will throw the blooming of these late varieties still further into the winter, and thus a good late supply is assured, not as at present by chance, but by a well regulated system of culture. Mr. Orchard's plants were grown in 9-inch and 10-inch pots. We can now, by this simple method of cutting down, ob-

tain handsome flowers that can be admired on the plants—the plants themselves being very effective decorative objects in the greenhouse or conservatory, while the flowers can be conveniently cut at any time without having to climb for them, as the plants do not average more than 3 feet high. To keep the foliage in a healthy state and of a deep green colour, frequent applications of a weak liquid manure should be applied as soon as the buds are set, which is about the end of August. After this time keep the plants well supplied with water, and before taking them into the house about the second week in October, dust the leaves with flowers of sulphur whether there is any trace of mildew upon them or not. J. DOUGLAS.

TECOMAS AND THEIR CULTURE.

A DESCRIPTIVE account of cultivated Tecomas will doubtless prove a useful supplement to the interesting paper on garden Bignonias which accompanied the plate of *B. Cherere* in the last volume of THE GARDEN. The two genera have always been confused with each other, both by gardeners and botanists, although the characters by which the two are distinguished are sufficiently well marked to prevent their being mistaken for each other—at all events this holds good so far as the cultivated species are concerned. All the Bignonias have trifoliate leaves, but in most of the leaves, instead of the terminal leaflet being a blade, it is altered to a long, branching hook-tipped tendril, by means of which the plants are enabled to climb. The Tecomas have pinnate leaves, the number of pinnae to each leaf varying from seven to nine or eleven. They do not possess any tendrils, nor do the shoots of the climbing species twine; they develop instead short, sucker-like roots all along the branches, exactly similar to what is seen in Ivy, and they climb by means of these roots as Ivy does. In addition to these distinguishing characters, the seed vessels of the two genera supply differences in form, &c., by means of which they are separated from each other by botanists. In the genus *Tecoma* there are many species, according to the "Genera Plantarum," and of this number the seven hereinafter described are or have been in cultivation in English gardens. There remain several good ornamental kinds to be introduced.

For their cultivation Tecomas require a little extra attention if their beautiful flowers are to be enjoyed, no plants being less floriferous when carelessly treated. They grow rapidly and vigorously under ordinary treatment, but unless the wood of those species which flower on the ripened shoots be properly matured by exposure to the influences of sunlight and fresh air, few or no flowers are produced, whilst for those kinds which flower on the young shoots exposure to bright sunlight is a necessary condition to their flowering. All the species prefer a strong loamy soil, good drainage, so that water may be liberally supplied during the most active season of growth, and that rest by the withholding of water may be enforced after growth is completed. When grown under glass the strongest shoots of Tecomas should be cut back to within a few inches of the main branches; but species of slender growth require little or no pruning, except what would be essential to the full admission of light. When planted out-of-doors, *T. radicans* and *T. grandiflora* ought not to be pruned much, or the flowers will be scant. The weakest shoots may be cut away, and the strongest ones cut in a little if growth has been exceptionally vigorous, but at least 2 feet of these should be left, as it is from the short branches pushed from the strongest shoots of the previous year's growth that flowers are developed. Trained against a wall with a south aspect, and in as sheltered a position as can be found, the hardy kinds often prove free flowering enough—at least in the warmer parts of England and in Ireland. For the distinctly tropical species stove treatment during the summer, to be followed by a short period of exposure out-of-doors in the autumn, would most likely prove a surer plan for their flowering than leaving them indoors all the year round.

T. AUSTRALIS (Wonga Wonga Vine).—A common plant in Eastern Australia, where it is a native, and is represented by various forms both in the size and colour of its flowers and also in the shape of the leaflets. The variety grown in English gardens is the finest of these forms and is a vigorous growing climber, requiring for its cultivation a warm greenhouse. The flowers are borne generally early in summer, after which to ensure a crop of bloom in the season following it is necessary to treat the plant liberally, giving it plenty of water both at the root and overhead and allowing it all the sunlight possible. By the end of summer the new growth should be sufficiently strong to allow of its being ripened by the admission of plenty of air and withholding water; during winter no water should be given. In a low temperature or a too shaded position the flowers, if produced, are small and sickly, sometimes dropping off before expanding. The shoots grow rapidly, are smooth, twining, and bear pinnate leaves of a shining green, the leaflets being ovate and toothed. The flowers are borne in panicles on the ends of the branches, forming a large cluster of Gesnera-shaped flowers, the tube of which is about 1 inch deep, half an inch wide, with spreading lobes, the whole being white, tinted with rose on the outside and streaked with purple in the throat. *T. australis* is an old garden plant. It is figured in the *Botanical Magazine* as *Bignonia Pandorea*, t. 865.

T. CAPENSIS (Cape Honeysuckle).—A handsome climber with stout branches of erect habit; it may be trained on a trellis or rafter, or, by careful pruning, made to form a compact bush. It thrives in a greenhouse, either planted out or in a large pot, flowering in September. The leaves are Ash-like, smooth, toothed, and dark green, and the flowers are borne in large erect racemes on the ends of the ripened branches, forming a handsome bouquet of scarlet trumpet-shaped blossoms, each measuring 2 inches in length, with a wide mouth and spreading lobes. All the sunlight possible is required to make the shoots strong and floriferous. In India and other tropical countries this species is a favourite garden plant, where, owing no doubt to the amount of light it gets, it flowers frequently and abundantly. With us it is seldom seen, though there is no doubt of its possessing good useful characters to recommend it as a greenhouse plant. In a stove temperature it grows very freely, but seldom flowers. A native of the Cape and other parts of South Africa, from whence it was introduced to Kew in 1823, and was figured in the *Botanical Register*, xiii., t. 1117.

T. GRANDIFLORA.—A beautiful species and widely cultivated. In the greenhouse it seldom fails to flower freely during summer, whether treated as a climber and pruned on exactly the same principle as is practised for Vines, or grown as a standard, as advised by Mr. Gumbleton, whose plants are 8 feet high, with large heads, and which flower freely in September, each plant bearing over a dozen racemes of fine Gloxinia-like flowers. In the warmer parts of England this species succeeds well planted out-of-doors on a south wall or trained up the headless trunk of a tree. Unless the position is exceptionally favourable, however, flowers are rarely produced by this plant out-of-doors, although it is apparently perfectly hardy and grows freely always, even in positions unfavourable to its blossoming. In the Chelsea Botanic Gardens, in various places in Kent, and in other southern counties *T. grandiflora* is most successfully grown as a hardy plant. The shoots should not be cut in as short when out-of-doors as is advisable for plants grown indoors. No doubt root-pruning would be found conducive to the production of flowers on plants which grow freely, but do not bloom. It is a robust-growing climber, with a thick stem and long, flexible, rod-like branches, which when ripe are brown and resemble the canes of a Vine. Like several other species of *Tecoma*, the branches of this one bear clusters of short aerial roots, with the aid of which the plant attaches itself to a wall, tree, or other support, as the shoots do not twine or develop tendrils.

The leaves are pinnate and dark green, the leaflets being toothed and long pointed. The flowers are half as large again as in *T. radicans*, to which they otherwise bear a close resemblance, and are not



Tecoma capensis.

unlike those of *Bignonia Cherere*, figured in THE GARDEN, plate 471. They are borne in large terminal panicles on the young shoots in summer if grown under glass, and late in autumn if out of doors. It would be difficult to find a grander picture than is presented by a large well-flowered specimen of this plant, its brilliant orange-red, trumpet-like flowers, which are clustered together in large loose panicles, each flower lasting in perfection for several days and opening in quick succession, having a most attractive appearance even amongst the brightest of summer flowers. During the winter indoor plants of this species must be kept as dry as possible, and of course the more air it gets the better. Like *T. radicans*, it sheds its leaves in autumn. It is a native of China and Japan, where Fortune met with it forming one of the most popular of garden plants. It is figured in the *Botanical Magazine*, t. 1398, as *Bignonia grandiflora*, and there described as being without stem-roots, which is an error. A variety of *T. radicans* called major is sometimes known under the name of *Bignonia grandiflora*.

T. JASMINOIDES (Bower Plant).—A tall, glabrous, woody climber resembling luxuriant specimens of *australis*, but with much larger flowers. It is one of the many beautiful plants introduced from Australia by Allan Cunningham about forty years ago, but owing to its shy-flowering nature it is rarely cultivated, though an exceptionally handsome flowering plant when successfully managed. The best flowered specimen I have seen was treated as follows: Planted out in a house along with *Camellias* and *Azaleas* which during the summer were turned out of doors, the *Tecoma* had covered one side of the roof, and as the roof was formed of sliding lights, it was thought that by removing the lights and exposing the plant to full sunlight and air it might be induced to flower. In September the lights were replaced, and in less than a month afterwards the *Tecoma* was clothed with hundreds of racemes of large *Gloxinia*-like flowers. From this it will be apparent how essential to the



Tecoma grandiflora.

flowering of this plant exposure to sunlight and air during the summer must be. The above specimen was planted pretty close to a flue, which, being warm during winter, would soon dry the soil about the roots of the *Tecoma*. The leaves of *T. jasminoides* are pinnate, dark green,

smooth, shining, and with entire pinnae. The flowers, which are produced in autumn, are developed on the young ripened shoots, and are in large compact racemes or panicles; they are over an inch long, bell-shaped, with wide-spreading lobes, and are pure white with a deep red throat. The resemblance of these flowers to a common variety of *Gloxinia* flower is most marked. It is a native of Queensland and New South Wales, and is figured in the *Botanical Magazine*, t. 4004.

T. RADICANS (Trumpet Flower).—This is very similar to *T. grandiflora*, but is not so strong a grower nor quite so large flowered. It is an old garden plant, having been grown by Parkinson in 1640. For its cultivation the same conditions as for *T. grandiflora* prove suitable. It flowers in August and September when grown out-of-doors, where it is not so shy a bloomer as *T. grandiflora*. The flowers are in terminal panicles, trumpet-shaped, $1\frac{1}{2}$ inches long, and are of a deep orange-red colour. A variety called minor is distinguished by its smaller flowers, and a second one, called major, by its larger and deeper coloured flowers. It is a native of North America, and is figured in the *Botanical Magazine*, t. 485.

T. STANS.—This is truly a splendid plant of shrubby habit, and when about 6 feet high flowers abundantly. It grows freely in its early stages, but rather slowly as it gets older. Notwithstanding its early introduction (150 years ago), it is still a rare plant in gardens, most likely on account of its being slow to flower with us. It is apparently a sun-loving plant—at least such would appear to be the case, judging by its not flowering in the few gardens where it is cul-



Tecoma radicans.

tivated in this country. In tropical countries it is a popular garden plant, and in them it appears to be an almost perpetual bloomer. In Trinidad, Jamaica, Calcutta, and other places it is frequently reported as being a most beautiful plant. There seems no reason why with special treatment its good qualities might not be enjoyed in English gardens. It forms a graceful shrub, with pinnate leaves and leaflets 4 inches long, notched and long-pointed. The flowers are of the ordinary *Tecoma* type, and are of a golden yellow colour;

they are developed in autumn. It is a native of Mexico and the West Indies, and is figured in the *Botanical Magazine*, t. 3191.

T. FULVA.—A handsome-flowered shrubby species with purplish branches and narrow, pinnate, green leaves, from the axils of which, near the ends of the shoots, spring leafy panicles of Pentstemon-like flowers with a slightly curved tube. In colour they are yellow with a broad streak of red on the upper side of the tube. This plant was introduced from Peru by Messrs. Veitch & Sons in



Tecoma australis.

1855, by whom it was first flowered, but I am not aware that it is in cultivation at the present time. It is figured in the *Botanical Magazine*, t. 4896.

Under *Tecoma* we must now include the *Campsidiums*, of which two species are grown in gardens, as botanically there is no difference between them and true *Tecomae*. For garden purposes there exists in the habit of the *Campsidiums* a good distinguishing mark, namely, in the stems being distinct twiners and in their being without the sucker-like aerial roots which are always present on the stems of true *Tecomae*. In other respects the two so-called *Campsidiums* do not differ very much from the characters general to *Tecomae*; their leaves are pinnate, with a dozen or so of pinnae, and the position and form of the flowers are exactly the same as in that genus.

T. (CAMPSIDIUM) VALDIVIANA.—A handsome climber for a cool unshaded greenhouse, graceful in habit, a quick grower, with leaves dark green, pinnate, and rather crowded along the stems, which, under conditions favourable to their growth, sometimes reach to a length of 40 feet. The flowers are borne on the ends of the weaker shoots and are in drooping racemes, orange-scarlet in colour, about an inch long, urn-shaped, resembling the flowers of *Correa cardinalis*, but broader in the limb; they are usually produced in April. For the introduction of this plant we are indebted to the Messrs. Veitch, who obtained it from Chili about ten years ago, where it is said to grow under the same conditions as *Berberidopsis corallina*, both being found wild together. (Syns., *Campsidium chilense*, *T. mirabilis*, *T. Gnarnum*.) Figured in the *Botanical Magazine*, t. 6111.

T. (CAMPSIDIUM) FILICIFOLIA.—This plant is at present only known to us as a pretty stove climber, with elegant, deeply-cut, Fern-like foliage and slender habit. This graceful character is, however, only present in young plants, old woody specimens, such, for instance, as may be seen in the Palm house at Kew, assuming a less graceful habit, the leaves being larger and coarser and resembling Ash leaves. The Kew plant is quite

25 feet long, and is trained along the side glass for some distance, from whence it stretches across the house by means of a wire, round which the young growths twine like Woodbine. The above name is merely provisional, though there seems little doubt of the accuracy of the generic name; the other cannot, of course, be decided till the plant has flowered. It was introduced from the Fiji Islands eight years ago. In the Kew herbarium there is a specimen of *Campsidium* from Fiji, the leaves of which resemble exactly those of *T. filicifolia* on the large plant at Kew; should the two prove to be identical, we have in this plant a very large-flowered, richly coloured *Tecoma*, quite as handsome as *T. grandiflora* in its flowers, and even more so in the character of its foliage. To bloom this *Campsidium*, I suspect a high summer temperature with plenty of moisture would be the most likely treatment for it when making its growth, after which, complete rest in winter, by lowering the temperature to that of a greenhouse and withholding water altogether, would cause the wood to ripen and probably result in the production of flower on growth recommencing. Whatever the species, this *Campsidium* is almost certain to prove a beautiful and distinct flowering plant, and as it appears to be pretty well known and grown, this fact should induce those who possess plants of it to treat it for its flowers instead of for its Fern-like leaves, as has hitherto been the case.

W. W.

Caragana sanguinea.—This has flowered again with us this winter, but I cannot report favourably of it under the influence of dark English winter days. The scarlet leaves or bracts surrounding the flowers have been only spotted with red, and during my absence, instead of spreading, the red spots have now almost disappeared, rendering it of no value for an average English winter. I had hoped it would have done better, and shall give it another year's trial—E. H. W.

Repotting Lilies.—In confirmation of Mr. Cornhill's statement that we often repot Lilies when unnecessary, I may add that, once having some rivalry in the growth of *Lilium auratum*, I planted bulbs in the largest pot I could obtain. The result the first year was good, one stem producing, I think, eleven flowers. I did not turn the bulbs out the second year, but, laying the pot on its side, removed the soil down to the crowns and filled up with rich, fresh compost. The result was very good; one stem was $2\frac{1}{2}$ feet high from the rim of the pot and produced over fifty flowers. I have now *Arum* Lilies in a mass in half an old petroleum barrel and they look well.—C. J. NAYLOR, *Kerry, Montgomeryshire*.

Strelitzia Regina.—You have done good service by directing attention to this far too little known plant. As you say, a warm greenhouse or temperate plant house is necessary for it. This secured, it will thrive with but little attention beyond the customary waterings and an occasional shift (say once in one or two years) into fresh soil, giving it moderately increased pot room. Under such treatment it will flower annually, and its blossoms are exceptionally quaint and highly original in form and colour. Like all plants possessed of large roots or rhizomes, *i.e.*, underground root branches, it can be increased slowly, but certainly, by division. Its leaves are always ornamental. If it has any drawback, it may be said to consist in an inherent liability to be affected by scale. This, however, in judicious hands is readily disposed of as it occurs, if not altogether prevented.—WILLIAM EARLEY.

Ficus elastica variegata.—There are two forms of this plant, one of which is much superior to the other in point of variegation. The better one is distinguished by its broad, irregular band of creamy white running all round the outside of the leaf, a second band of greyish green being between the white and the dark green inner portion. The midrib of this form is also creamy white. When grown in a warm, moist house and afforded a position near the glass the variegation

comes out well, some of the leaves, especially those made in summer, being as much white as green. There is a plant of the finer variety in the stove at Kew, where apparently it grows quite as freely as the ordinary green form, and in which the variegation is striking and beautiful in character. As an ornamental foliage plant this variegated form of the old *Ficus elastica* is a good addition, and is deserving of a place wherever foliage plants are in favour. Messrs. Kerr & Sons, of Liverpool, were the first to introduce this plant. The second and inferior variety is very little better than the ordinary green form, from which it differs only in having a band of greyish green surrounding the darker green of the leaf. Both forms originated as sports from the old green India-rubber plant.—B.

Freessias.—Will some one of the growers of Freessias in Guernsey inform us how the earliest batches of these plants are managed there? I saw a bunch of Freesia flowers about a fortnight ago which had come from Guernsey, and which were of such extraordinary size and so deliciously scented, and borne on branching racemes quite 18 inches high, some of them even more, that I failed to recognise them at once as Freessias. It would be difficult to find any winter flowering plant of greater value than the white-flowered form of Freesia when grown as it is grown in Guernsey. Those of us who are at their wits' end for choice and pleasing flowers in mid-winter would most likely be able to fill up large gaps in the decoration of plant houses as well as indoors, if we could only succeed in growing a few dozen potsful of Freessias as well as they are grown in Guernsey. I obtained a beautiful spike of those I saw and placed it in water in a room, where it lasted for about ten days, and continued to emit a strong fragrance till the last flower had opened and withered; I therefore repeat, will some of our Guernsey friends give us the details of the treatment which results in such excellent flowers so early in the year?—B.

Spotted Mimuluses.—In order to secure a rich display of these beautiful flowers, they should be treated as biennials. Seed sown in a shallow pan and on very fine sandy soil at the end of October and placed in a frame or greenhouse near the glass will germinate in a week or two without the aid of heat. In a month or five weeks the seedlings will be large enough to dibble out thinly into other pans or shallow boxes, or, if thought preferable, into small pots singly. Such plants shifted into larger pots during the month of February or afforded more space by dibbling out into a frame will yield a grand show of bloom in pots in April, or if the leading shoots be pinched out and the base shoots made to push up evenly, a superb display may be had outdoors in May. The *Mimulus* is a plant that likes cool treatment and good soil and a moderate amount of moisture. If thus induced to flower during May and June, the results are far in advance of what can be obtained by spring sowing, as the plants are so much earlier, stouter, and more firmly rooted. My own stock of seedlings is now dibbled out in beds in a cool greenhouse, and each plant is about 2 inches across. They suffer nothing from slight frosts, and if the night promises to be a severe one, a couple of newspapers laid over the plants keep them quite safe. No flowers producing such gorgeous blooms can be so easily raised as spotted *Mimuluses* thus are. They seed freely, and a little saved from the best flowers will enable a regular supply of plants to be always maintained. For pot culture the most suitable soil is turfy loam, well-decayed cow manure, and a little sand. Growers will find some variation in the height of the plants, but where fine flowers are found a stout compact habit should be secured also if possible.—A. D.

Tree planting in London.—Lord Brabazon has offered a contribution of £100 towards the expense of planting trees in the thoroughfares of Lambeth. The subject was referred to a committee of the local vestry, but that body reported against accepting the offer. The vestry, however, itself appears to be of a different opinion, for it

has decided to refer the report back to the committee. Canon Pelham, the rector, made a strong speech in favour of the planting of trees in Lambeth, and he was supported by several of the leading members of the vestry, one of whom urged that if trees did not always flourish in our streets, it was because the proper kind of tree was not tried. The gardens of Lambeth Palace afford sufficient proof that trees may continue to exist in the midst of a highly deleterious atmosphere.

FRUIT GARDEN.

A FEW GOOD PEARS

PEARS differ greatly in quality according to the locality and soil in which they are grown, and therefore, although the following selection has been made with every care and from my own experience of the several varieties, they will not be found to do equally well in all districts. Taking them in the order in which they ripen, the first to come under notice is Doyenné d'Été, which, though small, is very handsome and good, and of value on account of ripening so early, as it is ready for table by the end of July or beginning of August. To succeed this none are equal to the Jargonelle, as it is large and showy and of first-rate quality, but, like most of the summer Pears, will not keep many days without going to decay or losing its flavour. Williams' Bon Chrétien is a general favourite and more largely grown than any other kind, especially in market gardens, and it well merits that attention, as it is large, melting, and juicy, with a rich and powerful aroma, besides which the tree grows freely and is very prolific. To follow on, Beurré d'Amanlis is the best, and of this there are two varieties, the one striped with brown and the other plain, the latter being the most desirable, as the fruit is superior. Beurré Superfin is a good Pear to succeed the last named, and so is Fondante d'Automne, which is large, melting, and delicious, with a nice agreeable perfume. Louise Bonne of Jersey is a fine October Pear, the fruit being very handsome and high flavoured and the tree remarkably prolific, as it often bears a crop when other sorts fail. Comte de Lamy must not be left out, as it is a high-class kind, the fruit being exceedingly rich and sugary, but it will not keep more than a fortnight or so after being gathered without becoming mealy or soft in the middle. The Seckle is a delicious little Pear that ripens in October and does well as a pyramid on the Pear stock or double grafted on the Quince, which mode of working suits a good many. Doyenné du Comice is so superior, that it should be in the smallest collection, as it is good at all points, the fruit being large, high-coloured, juicy, melting, and deliciously flavoured. Durandau is also a large handsome kind and almost equally desirable, coming in at the same time as do many others of high merit, one being especially noteworthy, *viz.*, Marie Louise, which has stood the test of years and is unrivalled in its season, which is during October and November, when it becomes a rich yellow and the flesh buttery and melting, without the least grit. Duchesse d'Angoulême is likewise deserving of cultivation, as it is a large, showy kind, full of aroma and rich juice, but comes gritty unless the tree is planted in a warm position and has light, dry soil for the roots. Van Mons Leon le Clerc comes in well to succeed the last named, and is very large and handsome, melting and high flavoured, but ripens quickly during November, and is soon over. Hayshe's Prince Consort comes in about the same time, and is a fine kind, after which Passe Colmar is the best, and one that lasts long in season, and bears abundantly medium-sized fruit that is more juicy than any other I know. For midwinter, none are equal to Glou Moreau, but to grow it really good the tree must have a warm situation, when the fruit comes very clear and smooth in the skin, with soft buttery flesh, that is remarkably rich and full of sweet juice. Winter Nelis is another high class Pear that ripens just after the last named, and when this is over there are but few desirable sorts, as, excepting Josephine de Malines, Easter

Beurré, Beurré Rance, Ne Plus Meunis, and Bergamot Espéren, all others might with advantage be discarded, for they seldom ripen fit for the table, and to have these last named in that condition it is necessary to grow them on a sunny wall, or if as pyramids, in dry soil and very favoured positions, or the fruits never come up to the mark, as they require a long season with plenty of solar heat to finish them properly.

To form large fan or horizontally trained trees, the Pear stock is the best; but if to be grown as cordons or pyramids, the Quince must be made use of, as that has a dwarfing effect by greatly restricting the formation of wood and favouring the setting of flower-buds. Cordons answer well for small gardens, as by having them many more sorts may be grown than space could otherwise be found for, as the cordons, having only one, two, or more stems, take but little room, and may be trained to strained wires fixed along by the sides of walks or across the quarters, so as to form divisions of the ground, in either of which ways the trees get full exposure to sun and air, and the fruit under such favourable circumstances always comes of a high colour and flavour.

Where it is intended to form a Pear garden, or even only to plant a few trees, the soil should be trenched, and if light it is a good plan during the operation to work in some clay, which should be in small nodules, that it may be better mixed or become incorporated as the work of trenching proceeds. If manure is used at all it is always advisable to keep it well down, so as to have it away from the roots, which find it when they most want it, and that is when the trees come into fruit. To give these a good start at first, each should have some fresh loam, that from an old pasture or turfy sods from any waste place being the best, and the fresher and more fibry the sod, if the soil is sweet and good the more suitable they are if chopped up rough and used in that state, as then the roots revel in the open material. In planting, the roots should be spread regularly out at different depths according to the position from which they emanate, after which the covering them with turfy loam should follow immediately and a mulching be given to keep the frost out. What injures freshly planted trees more than anything is wind-waving, as it does no end of injury by constantly straining the roots, and not only that, but the motion chafes off or damages the tender fibres by the friction against the earth, and the tree under such conditions has little chance to get hold. Planted against walls or trellises trees are secure from such danger, as they may be tied or nailed, and support ought to be given to pyramids by securely staking them, so as to render them immovable however boisterous the weather may be.

Before closing I would just reiterate my remarks against the cutting back of the branches, and decry the pernicious system again, as it serves no useful purpose, but does a great deal of harm by crippling and retarding the plant that is treated in such a barbarous manner. Instead of cutting back, the shoots should all be preserved full length, and only those that are misplaced taken out; by pursuing this course of treatment, trees may be made to cover their allotted space in half the period they used to take, and be much more healthy and strong, as any check in infancy always shows itself and is felt ever after. It is quite time enough to employ the knife when the trees have attained their full size, and it is to be hoped that young gardeners will have this pointed out to them and impressed on their memory.

S. D.

Coe's Golden Drop Plum.—Mr. Grieve's account of the origin of this Plum is extremely interesting. It is an instance of the luck that sometimes accompanies hap-hazard hybridisers. The Golden Drop, however, seems to have been a self-sown seedling. If the same raiser is responsible for Coe's Late Red, his good fortune is equal to that of the raiser of Cox's Orange Pippin and Pomona Apples. Perhaps Mr. Grieve will be kind enough to say. It is a matter to be thankful for that the greatest improvements and the most ster-

ling novelties do not always proceed from great men in the craft. Indeed, success so often falls to the comparatively unknown, that nobody, however small a garden or greenhouse he may have, ought to despair of permanently benefitting the gardening world. Hardly anything in gardening is more engrossing than hybridising, and if well managed the reward for a really good thing is great. Mr. Grieve apparently desires some information as to the hardihood of Webster's Gage. At Newton Court, near Bury St. Edmunds, it fruited very freely one year on a north wall; and I had it from Mr. Webster himself not three weeks ago that he considered it a high-class hardy Plum.—C. A. M. C.

WORK DONE IN WEEK ENDING JAN. 27, 1885.

JANUARY 21.

FROST having again set in, the work has been shaped accordingly. Having completed the wheeling of soil and manure in kitchen garden, the next best work we have on hand for such weather is the clipping of hedges—Privet, Thorn, and Laurel—and grubbing up stumps of copse wood and trenching the ground to plant afresh. The leaf heap has also been turned over and built up in a smaller compass, and the rubbish-heap fire has been well supplied with all the clippings and clearings of hedge ditches. Indoor work has been the sorting of stock roots of such kinds of Dahlias as are required in large numbers, potted them and placed them in heat for the production of cuttings. Single and pompon varieties are our favourites. The show varieties are of but little account for the flower garden proper. Began potting Ferns, as our entire stock is required for vase and basket furnishing in the mansion. Small plants are of most service; consequently those that are large and will divide, such as the common *Adiantum*, are cut up into small pieces for potting in 5-inch and 6-inch pots. *Adiantum cuneatum*, *A. pubescens*, *A. formosum*, and *Lomaria gibba* are amongst the best for house furnishing that keep in good condition for the longest period. To retard or keep them in flower as long as possible, Hyacinths, Tulips, Lily of the Valley, and Christmas Roses have been shifted from the early vinery to a later one, and others have been put in heat. The temperature of the early Peach house (now in flower) is kept at 50° by night and from 55° to 60° by day, and at midday the pollen is distributed by a shake of the trellis and a gentle touching over with a camel's-hair pencil.

JANUARY 22.

Hard frost; outside work has been in every respect the same as yesterday. Put in cuttings of several kinds of bedding plants, *Lobelia speciosa* amongst the number. Seedlings are not to be depended on, at least not if uniformity of growth, colour of flower, and season of flowering be desired. Besides, it is just as easy to raise the plants from cuttings as from seeds, and by this means all risk of disappointment is avoided when once a good strain has been secured to propagate from. We strike them in the Melon house in a prepared bed of leaf soil and sand, over which glass fits tightly, and soon as rooted they are transplanted into boxes or pans somewhat thickly till the weather gets warmer, when they are again transplanted into cold pits, there to remain till the final planting out. Cuttings of *Mesembryanthemum cordifolium variegatum* have also been put in; these we strike in shallow boxes of sandy loam and leaf soil. The boxes are placed on bricks standing over the hot-water pipes in the forcing houses, no covering of glass being required. The cuttings are placed at 3 inches apart each way, as they have to remain in the boxes till planting-out time. Sowed *Pyrethrum Golden Feather*, *Cannas*, and *Helianthus major*; the latter is quite hardy, and makes an excellent sub-tropical plant. Increased stock being required, a large plant of *Phormium tenax variegatum* was lifted from the open ground, and split up into suitable pieces for potting into 8-inch pots. They have been placed in gentle warmth to get them into growth for flower garden use in May. This and the

common green variety *tenax* and the dark foliaged variety *Colensoi* are all excellent for winter planting of flower-beds. Put more Seakale into forcing quarters and Asparagus in manure frames. This is not valued here till the season is well advanced to ensure its being well flavoured and of a purplish green colour; consequently earlier forcing is not attempted; blanching being considered both unnatural and unnecessary, a great depth of soil is not required. We use leaf-soil only for planting in, and the beds are made up of two-thirds leaves and one of stable litter. Sowed Mustard and Cress, potted a few more roots of Mint and Tarragon, and sowed a box of Chervil.

JANUARY 23.

Frost is still severe, and the same description of outdoor work continues as for the last two days, Holly cutting having been added. We have many very old specimens that were neglected as to cutting when in a young state, but which for the last few years have been well cut back, and the improvement is most marked, a fact that points to the importance of shrub pruning, and more particularly of Hollies when in a young state. I would not be understood to mean by pruning close shearing, but simply knifing out leading shoots or such as may be causing the plant to look unevenly furnished or one-sided. Coniferous trees we serve in the same way, namely, all shoots that cause the trees to look lop-sided are cut back—at least, all that can be conveniently got at—and every specimen is kept to one principal leader. Cleared late Muscat Vines of bits of loose bark, and painted them over with the usual solution as a preventive against the attacks of insects; gave the borders another watering, and being covered with wooden trellising, the house can now be utilised for bedding Pelargoniums, Fuchsias, &c. Potted Ferns and stove plants; shook out and repotted *Lilium auratum*. We grow them in pots for the purpose of standing them about the flower garden in July and August. Their strong odour is most appreciated in such positions, being far too powerful for house and conservatory furnishing. Watered Fig house border; the water being warm—90°—a slight remulching of litter was afterwards given to keep in the warmth thus imparted. The dull cold weather makes forcing uphill work. Strawberries have made little advance for a fortnight past; indeed those in flower now are not setting so well as others did three weeks ago; hence we are keeping them cooler till more favourable weather conditions set in.

JANUARY 24.

Weather still unchanged, so that out-door operations have also been much the same as for several days past. Swept up roads and walks, sifted leaf-soil for potting and forcing purposes, and renewed linings to forcing frames. The houses have all been extra well cleared up, as is usual, on Saturdays. Some of the *Bouvardias* that had done flowering have been cut down, and so has *Plumbago rosea*. This latter we train to Melon trellis for winter-flowering, and the space is now needed for Melons. Picked over all bedding Pelargoniums. Primulas and Cinerarias have also been freed of bad flowers and leaves and re-arranged in second Peach house. Grapes in bottles are examined twice each week to cut out bad berries and fill up the bottles if needed. Apples are still plentiful and keep well; all bad fruits have been removed and the room cleaned out. Pears are scarce indeed, there being only a few *Bergamotte d'Espéren*, *Ne Plus Meunis*, and *Beurré Rance* left. The last named kind with us is seldom usable as a dessert fruit, but it is equal to the best for culinary purposes, and it never fails to bear a full crop.

JANUARY 26.

Thaw; slight showers; shrub pruning continued. Trenching Potato ground, and also ground for Parsnips and Carrots. Soot and wood ashes are the only dressings applied to the soil for these roots, but it was well manured for the Pea and Onion crops of last year; depth, rather than richness of soil, is best for these, and also for Beet, Salsafy, and Scorzoneria. Plants in cold pits that

have been covered up as long as the frost lasted and more affected with damp; all decaying stems and leaves are being picked off, and as much ventilation given as the weather permits. Primroses and Christmas Roses that were potted a few weeks ago and stood in cold pits have not suffered by their enforced darkness, except that here and there a flower has damped off, but the great bulk of them really appear brighter than they did prior to the frost. Put another batch of bulbs into heat and a half dozen more *Spiræas* and *Deutzias*. Potting stove plants; completed the painting of late Muscat Vines, retied them to trellis, and thoroughly washed the glass and woodwork of the house.

JANUARY 27.

Occasional showers; rolled walks and turf that was lately laid; pressed down spring flowers and put more mulching (*Coccol fibre*) on some of the beds; removed protecting covering from Celery, Broccoli, Lettuce, and Cauliflower plants; pruning Peaches; planted Rhubarb and began to make a new plantation of Horseradish. The ground has been deeply trenched, and straight pieces 6 inches long are dibbled in at 9 inches apart in the row and 18 inches between each row. Work about and in the houses has been the clearing away of litter used as extra covering and rearranging plants in frames, taking cuttings from *Lobelias*, *Heliotropes*, and *Petunias*; washing the foliage of *Gardenias* and *Eucharis*, and putting more Strawberries in frames, and taking others that were in flower from frames to the Strawberry house. *Chrysanthemums* have all taken root and have, therefore, been taken out of handlights, where they have been struck, and stood on shelf in second Peach house, and will be potted off in a few days.

HANTS.

FRUITS UNDER GLASS.

MELONS.—Where early Melons are wanted in May, seeds of some favourite green-fleshed kind will have been sown about the beginning of January. To succeed with these there should be full command of top and bottom-heat, and the young plants should be kept close to the glass where they can have an abundance of light. Having myself tried many kinds, I can safely say the Improved Victory of Bath and Eastnor Castle have not yet been beaten for early work. Sow two seeds in 3-inch pots; if both grow, select the strongest and shift into 4-inch pots as soon as the roots touch the side; plunge close to the glass and prepare the stations for the fruiting pots, which plunge to the rims in the fermenting beds. If there is danger of the pots sinking and strangling the plants after they are tied to the trellis, build up dry brick pedestals and cap them with a sod of good calcareous turf, grass side downwards. The turf, impregnated with ammonia, will form an excellent feeding medium for the roots, the brick pedestals will secure ample drainage, and, the pots being stationary, renovation of the plunging material can be carried on at pleasure.

Compost.—Although the Melon will grow in almost any kind of fresh soil, strong calcareous loam from an old sheep pasture suits it best. If cut last autumn and protected from the weather, all that is needed is to chop it to pieces and add one-fourth of old lime rubble to keep it open. An abundance of water being an important element, crock well, fill the pots, loosely at first, and leave them to get warmed through by the time the plants are ready for turning out.

PINES.—*Fruiting plants.*—If not already done, the first batch of Queens may now be drawn from the pit in which they have been resting, and placed in the fruiting house for yielding the early summer supply. Space in all well-managed places being limited, it may be necessary to remove the plants, now swelling and ripening winter fruit, into a smaller structure, when the usual cleansing of the fruiting house proper and the renovation of the bed will of course precede the disturbance of the plants in the resting pit. When the heat in the bed has declined to 90°, select a few of the most promising early starters, *i.e.*, those with thick stems and a number of small pointed leaves in their

centres. Plunge lightly at first, and watch the bottom-heat thermometer, as a sudden rise after they are plunged might seriously injure the tender roots clustering round the insides of the pots. Water moderately at first, damp the paths and other surfaces to produce atmospheric moisture, but avoid overhead syringing, and gradually raise the night temperature to 70° by the time the soil in the pots is properly moistened and the roots show signs of renewed activity. The day temperature must in like manner be raised until on bright clear days it touches 80°, or a little more after the chink of air which has been given is taken away. As many of the plants left in the resting pit will make a growth before they fruit, no change in their management will be needed just at present.

Successions.—The large pot system of growing Pines having seen its day, nearly all growers now shift from the 6-inch or 8-inch pot into sizes some 4 inches larger, and find, as a rule, that the smallest pots give the best results. Where good strong September suckers have done well, the time is now at hand for giving all the most promising their one shift into fruiting pots. Cleanliness being such an important factor in all matters horticultural, pots and crocks must be washed and dried. Composts must be dry and warm, and the structure intended for their summer growth must be properly cleansed or painted. If new tan or leaves be used for bottom heat, let them be thoroughly worked, fermented, and tumbled to get rid of violent heat and injurious gases before the operation of shifting is taken in hand. Now, as all these preliminaries require time, advantage must be taken of every favourable opportunity, otherwise there will be delays when dispatch is of the utmost importance.

Preparation of the plants.—Next to over-potting the worst step that can be taken is potting too early in the season. Therefore, when early in February increasing daylight admits of giving a little more heat and moisture, slightly moisten the surface of the bed and give a little water to induce the formation of new rootlets before the plants are taken out of their winter quarters. When this change from rest to activity has been secured, give a little more water to moisten every part of the ball, shift in the usual way, the best plants into 11-inch and the seconds into 10-inch pots; plunge to the rims in a bottom heat ranging from 85° to 90°, and withhold water until fresh roots have taken hold of the new compost.

THE ORCHARD HOUSE.—If this useful structure has been used for plants during the time the pot fruit trees have been out-of-doors, it must now be made ready for the reception of its legitimate occupants, as it is now high time they were under cover. In cold districts it is not perhaps advisable to turn Peaches and Nectarines out at all, certainly not to allow them to remain out after Christmas; but in favourable localities, where the wood gets well ripened, full exposure to the elements for a time is advantageous. So far, this winter has been highly favourable to exposure, as the weather has been dry, and of late sufficiently cold to keep the buds thoroughly at rest without injury to the most tender varieties. When the house is ready, let every tree be laid on its side and carefully washed with soap and water; also scrub the pots, and see that the aperture at the bottom is clear before they are taken in. Place the trees on the borders as much as possible out of the keen draught from the front to the top ventilators, and let them be properly attended with water. It is just possible that they will not require frequent watering, but when needful, each tree should be liberally supplied, as one mistake on the dry side is sure to lead to the loss of many of the flower-buds. If the house is not heated, let the trees have the fullest exposure to air, otherwise the buds may get too forward and suffer in the spring. Defer pruning until they begin to burst into growth; then cut back the strong shoots to a promising wood-bud, but carefully preserve the points of weaker growths, as it often happens that the terminal and one at the base are the only wood-buds, and the loss of the terminal would render the intervening blossom-buds useless.

CUCUMBERS (Winter).—*Bottom heat.*—The cold, dead, sunless weather which has prevailed for some weeks is not favourable to winter Cucumbers subjected to constant dry fire-heat for the maintenance of maximum temperatures. Under such conditions red spider revels without molestation, as the syringe can rarely be used, and the mildest insecticides applied to the tender foliage are rather dangerous. The best antidote is fermenting material consisting of Oak leaves, to which a few basketfuls of fresh Mushroom manure may from time to time be added as the work of renovation proceeds. Hot-water engineers tell us there is nothing like an abundance of 4-inch piping, and their advice is sound; but we want something to counteract the effects of dry fire-heat through the dull months, when the syringe is laid aside, and this will always be found in fermenting decaying vegetable matter, particularly where the pots are permanently fixed on hollow brick pedestals, and the whole mass can be turned over to the bottom of the pit without upsetting them or disturbing the roots. Many people having plenty of fire-heat do not pay so much attention to this natural mode of obtaining heat and moisture as they might do, and they very often find the seed standing still when early salmon without Cucumbers is the forerunner of unpleasant remarks. Let me, then, advise all young beginners to collect and harvest plenty of Oak leaves, not only for winter, but for all the year round use, and they will find them a most valuable and economical aid to fire-heat.

Manipulation of the growth.—The grower of summer Cucumbers pinches the points out of the shoots at the first joint beyond the fruit, sometimes close to the fruit, and so vigorous is this tropical annual, that its productiveness is increased thereby. But treat a winter fruiter in the same way, and ten to one it will not survive the month of February; therefore, from the time syringing is partially discontinued until it is resumed, the young growths should be allowed to extend regularly all over the trellis. If fruit is wanted, a few of the most promising may be allowed to swell, but superfluous "shows," together with the male blossoms, must be constantly removed. As days increase in length and the sun keeps up the maximum heat, a few of the old unsightly leaves will give way to advancing growths. The points will be pinched out of the strongest of the latter, unless they have considerable space to fill, when extension will be preferable, and daily syringing will again be resorted to. From this time forward the management will be comparatively easy, as Nature will be with, instead of against, the cultivator; more heat, more light, and more stimulating food being at command, plants so managed should give a plentiful supply of fruit throughout March, the most critical month in the whole year.

CUCUMBERS (Spring).—Where circumstances render it desirable to get an early supply of fruit from spring plants and suitable accommodation is at command, the first week in January is a good time to sow the seeds. A good strain of Telegraph is not easily surpassed for all general purposes, although some who recollect the handsome black spined varieties still prefer them for summer use. The conditions under which early plants should be raised and brought forward in no way differ from those given for Melons, but when ready for turning out the compost, either for pots or hills, should be much lighter than that recommended for Melons. Light rich turf, cut and stacked last autumn, three-fourths, flaky leaf-mould one-fourth, and a liberal mixture of old lime rubble or burnt earth will form a compost in which spring plants will make healthy growth, and produce an abundance of fruit before they require feeding with stimulants. W. COLEMAN.

Eastnor Castle, Ledbury.

Asphalte walks.—We find these to be of the greatest service here, and annually form one or more new ones. At one time, when only gravel walks were in use, every heavy storm of rain washed the greater portion of the binding gravel to the lower end of the garden, but now we only experience a difficulty in keeping the Box edging

alive. Imperishable tile edging is much the best for asphalt walks, and then there are no barbourers for slugs and the walks are always clean. We can wheel over them in all weathers, as if found to be slippery a few sifted ashes quickly obviates this difficulty. In very hot weather the newest walks sometimes soften and smell somewhat of tar, but much depends upon their proper formation, and the nuisance, if nuisance it is, is after all only a slight one. My impression is that well-formed asphalt walks are the cheapest and best for the kitchen garden, and many of the walks at a distance from the dwelling house might also with advantage be asphalted.—W. I. M.

RAINFALL IN 1884.

I SEND you the rainfall in 1884 at Belvoir Castle, Lincolnshire, and at Belvedere House, Mullingar, West Meath. Belvoir Gardeus are 237 feet above sea level, and Belvedere Gardens are 367 feet. Both inland stations.

BELVOIR.

Month.	Total depth.	Greatest fall in 24 hours.	Number of days on which 01 or more fell.
	Inches.	Depth.	Date.
January	1.83	.28	24
February	1.23	.52	2
March	1.12	.45	4
April	1.43	.15	5
May	1.16	.48	3
June73	.31	9
July	4.19	.83	11
August92	.30	14
September	1.40	.69	1
October94	.23	9
November	1.04	.25	3
December	2.18	.59	1
Total	18.21	—	—

—W. INGRAM.

BELVEDERE.

Month.	Total depth.	Greatest fall in 24 hours.	Number of days on which 01 or more fell.
	Inches.	Depth.	Date.
January	4.54	1.8	13
February	3.26	.54	20
March	2.69	.55	30
April	1.32	.50	4
May	2.97	.93	14
June	1.08	.32	1
July	3.39	.50	24
August	2.21	.75	11
September	2.92	.85	6
October	2.15	.75	31
November	3.12	.65	11
December	4.76	.60	7
Total	34.41	—	—

—JAMES BAYLISS.

At Belvoir, in Lincolnshire, there were only 18.21 inches registered with 177 days on which rain fell. In the county of West Meath 34.41 inches were registered with 139 days on which rain fell. The rainiest months at the two stations were December and January, when 1.83 and 2.18 inches fell, and at the Irish and English stations during the same months 4.54 and 4.76 inches fell, or 3.93 inches against 9.30 inches. April, May, June, and July were dry months in both places, the rainfall in England for those four months being 7.51 inches, and in Ireland 8.76 inches.

BRINSLEY MARLAY.

QUESTIONS.

5311.—*Marinelli Cherry*.—Can any reader of THE GARDEN tell me if this delicious Italian Cherry has been successfully grown in England?—F. B.

5312.—*Custard Apple*.—I have some seed of the Custard Apple (*Annona*). Can the fruit-bearing variety be raised from seed? and if so, what treatment does it require? Is it possible to grow the fruit to perfection in an ordinary stove among a collection of plants?—J. P. B.

5313.—*Hawthorns*.—I have a handsome old pink Hawthorn. It was a well-grown tree twenty-five years ago and used to flower profusely, but of late years it has greatly deteriorated. Can any of the readers of THE GARDEN suggest any remedy? Last autumn I manured it richly. Would pruning be injurious? If not, it would give more light and air to the flower-beds round about.—T. W. F.

NOTES OF THE WEEK.

Proposed Orchid conference.—We understand that it is in contemplation by the Royal Horticultural Society to hold an Orchid conference at South Kensington during the ensuing season. We have little doubt, judging from the popularity which Orchids now enjoy—notably the cool kinds, embracing, as they do, some of the most beautiful varieties now in cultivation—that this conference will be a decided success. It is to be hoped that the promoters may meet with hearty support and that their labours will result in the same happy and useful way as those of the Daffodil conference held last year.

Our vegetable supply.—At the anniversary of the re-opening of Columbia Market on Saturday last, Mr. George Brown, of Gaysham Hall, said that while all the vegetables required by a million of people had to be brought to one spot, and so have a toll put on them at the will of a private individual, East London can never be properly supplied with vegetable food. Whilst such a state of things existed, it would be like putting a rent of 5s. per acre on all land that has any pretension to grow vegetables. Bad as that is, however, it is tiding in comparison with the injury done to the consumer, for it is quite impossible to feed such a great number of people properly from one spot by small carts from and to remote distances. The consequence is that prices have to be put so high that the public does not get half enough. Only last year he had ploughed into the ground 40 acres of vegetables, which he should have brought to market if he could have realised nearly one farthing per pound, and at that very time the consumer was paying 1d. per pound in London for precisely the same class of vegetables as he had to destroy. I have no doubt, he said, that much larger quantities of vegetables would be consumed if they could be properly conveyed to the consumer in sufficient quantities at reasonable prices, and I think the best way to increase and distribute such food would be to introduce railway communication direct into market. It is not generally known that if green vegetables do not reach the consumer on the same day that they are brought to market their value goes down from 50 to 100 per cent., so that in forty-eight hours they are worthless. It is monstrous that in this day our horses should be compelled to drag all vegetables 6 miles through London, and then other horses drag them back again, all in consequence of a foolish charter. In the present state of the law I can see no help for it, except Columbia Market breaks through the monopoly in East London.

The National Chrysanthemum Society.—This society, which adopted its national character last year, recently held its annual general meeting, and was able to make a most satisfactory report as to its doings during the first year of its enlarged work. The number of members had doubled, the finances were satisfactory, and the annual exhibition held at the Royal Aquarium in November last was the largest and best yet held. The officers were all re-elected, and a general committee of thirty-six members appointed. A meeting of this latter body was held on Monday evening last, and it had under consideration certain suggested new classes for the schedule of prizes. One novel feature was the provision of classes for late-flowering Chrysanthemums, Mr. W. Cullingford having offered the sum of ten guineas for the purpose if an exhibition could be arranged about the middle of January next. Other offers of assistance were forthcoming, and it was arranged that a special exhibition should take place at the Royal Aquarium in January next, and that prizes should be offered for twelve incurved Chrysanthemums, twelve Japanese sorts, twelve blooms of any other type, a collection of Chrysanthemums, and also for six incurved blooms and six Japanese kinds. It was resolved that all varieties in good form at that time should be accepted as late-flowering varieties, and the prizes are to be awarded by the floral committee of the society. Mr. T. S. Ware and others having

offered special prizes for single Chrysanthemums, a class was added to the schedule as follows: twenty-four bunches of cut single Chrysanthemums, not less than twelve varieties, and not less than three trusses in a bunch. This should bring a good representation of this class. A class was added for six Japanese varieties, the prize to be competed for by those who have not hitherto taken a prize at the society's exhibitions. The expediency of creating a class for undressed blooms of Chrysanthemums was considered on the reading of a letter from Colonel Mallard. A proposition was submitted to Colonel Mallard that in order to demonstrate the best method of exhibiting blooms of Chrysanthemums without cups, a class be made for not less than twelve blooms of incurved varieties, distinct; that any means of setting up may be adopted by the exhibitor; that boards may be used or not, but that the right of withholding the prizes should be reserved until a method of general practical value is demonstrated. The exhibition committee enlarged to meet the requirements of an extended show was appointed, and the floral committee was enlarged from eight to fifteen members. Mr. W. Holmes, the secretary, announced that this body would now meet at the Royal Aquarium, and at 2.30 p.m. instead of in the evening as heretofore.

NARCISSI SECTIONS AND POPULAR NAMES.

THE GARDEN proposed some time ago that wherever at all possible flowers should get popular names, easily remembered and identified with some peculiarity likely to impress them on the memory. This principle might be commendably applied to the names of the sections of popular flowers in place of the words of "learned length and thundering sound" sometimes used by botanists, and which not one in ten thousand could possibly remember. Narcissi will be of abiding interest to the majority of your readers for the next four or five months, so, with your permission, I transcribe from Messrs. Burbidge and Barr's new manual thereon the following popular distinctions of the several divisions:—

- 1.—Native or foreign varieties of *N. pseudo-Narcissus* may be called Trumpet or Flat-leaved Daffodils.
- 2.—*N. Bulbocodium* (*Corbularias*) in all forms, Hooped-petticoat or Rush-leaved.
- 3.—*N. poeticus* (*Poet's Narcissus*), pure white perianth segments, with red or purple rim to corona.
- 4.—*N. Jonquilla* (*Jonquils*), any *Narcissus* with bright green Rush-like leaves.
- 5.—*N. Tazetta*, properly speaking, includes all forms of the *Polyanthus* section.
- 6.—*N. incomparabilis*, including *N. biflorus*, may be called the Peerless *Narcissus*.

Mr. Burbidge, in his lecture before the Royal Horticultural Society last April, alluding to this, then adds: "Hence those popular names, which confuse so much when loosely applied, if used rightly and carefully, serve to distinguish the well-marked sections of this beautiful genus."

Colonel.

W. J. M.

Willows.—Try Mr. Scaling, Basford, Notts.

Laelia anceps (W. J. B. B.).—The flowers you sent arrived too much damaged to enable us to speak of their merits.

Chimonanthus fruticosa.—While staying in East Yorks I saw a fine bunch of *Chimonanthus fragrans* in full flower, and also covered with ripe seed-pods from last year; as I have never seen it in seed before, I mention it in case it is as unusual as I fancy it to be in England.—EDWARD H. WOODALL.

Names of plants.—E. M. N.—Not the Madeira Holly, but a silver-edged variety of the common Holly (*Ilex Aquifolium*).—T. C.—5, apparently a hybrid between *Helleborus atrorubens* and *H. olympicus*; 7, *H. colchicus*; 8, *H. olympicus*.—J. C.—1, *Polystichum aristatum*; 2, *Pteris quadriaurita*; 3, *Nephrodium molle corymbiferum*; 4, *Asplenium ebenense*.—Subscriber.—*Helleborus atrorubens*.—J. T. (Preston Hall).—*Solanum betaceum*.

Names of fruits.—T. Cripps & Son.—106, Blenheim Orange; 157, Winter Hawthorn (of Paul); 120, not known; 131, Brabant Bellefleur. —E. F. Griffen.—1, Franklin's Golden Pippin; 2, Gasconne's Scarlet Seedling. —Torrington.—Bedfordshire Foundling; others not own.—Oxon.—Hambleton Deux Ans.

"This is an Art
Which does mend Nature: change it rather: but
THE ART ITSELF IS NATURE."—Shakespeare.

ROYAL GARDENS, KEW.

It is found at Kew that it is difficult to get young men sufficiently skilful to carry on there the improved gardening of the present day. The authorities have therefore revised the rules relating to the admission of young men, and have slightly raised their pay in the hope of getting a better class of young men in future for the gardens, and with that view they have issued the following circular:

"Applicants for admission as gardeners into the Royal Gardens are furnished with a copy of a paper, which when filled in must be signed by their present or last employer and returned to the curator, accompanied by a letter in applicant's own handwriting. The wages are 18s. per week, with extra pay for Sunday duty. Applicants must be at least twenty, and not more than twenty-five years of age and have been employed not less than five years in good private gardens or nurseries. Preference will be given to men who have had most experience in the cultivation of plants under glass, and no application will be entertained from men who have not had some such experience. Where obtainable, testimonials from known practical gardeners should accompany the application. The applicant will be informed if his name has been entered for admission, and on a vacancy occurring he will receive notice to that effect. Should there be no vacancy within three months from date of application, it must be renewed if employment at Kew is still desired. If not renewed, the applicant's name will be removed from the book. Gardeners who remain at Kew a year, and whose conduct is satisfactory, will be eligible, as vacancies arise, for the positions of sub-foremen, and will be recommended, according to the capacity they display, for employment in other first-class gardens either at home, in India, or in the colonies.

"J. D. HOOKER, *Director*.

"J. SMITH, *Curator*."

* * We gladly welcome any attempt to improve the condition of the young men at Kew, and have only to remark on the above rules that the words which we italicise are unfortunate. The want of the time is, men who take a true interest in the outdoor garden and know what to do in it. This is a want felt more than ever now when people begin to see that they can have very beautiful conservatories without the aid of the glazier and the stoker. We often find the want cannot be readily met, though any number of men who know "all about glass" and little else can be had, and what a pitiful business it is when such men take charge of a place and do not know the trees that grow upon it, and the various forms of hardy plant life that may adorn it! The paradise created by elaborate and costly glass sheds and heavy coal bills is not the only one that English gardens will show for the future. The neglect of good kitchen gardening, in which every old gardener was well versed, will not be tolerated now by owners of gardens. Kew cannot teach that, but it should encourage all kinds of outdoor gardening, and above all tree culture. To know trees and shrubs well, and to have a knowledge of hardy plants and fruit culture, should be as ready a passport to admission to Kew as experience in the culture of plants under glass.

We should only expect such an injunction if the document had emanated from some factory-like glass garden, where people have eyes for

nothing but what is in their "houses," but not the gift of even seeing what is frequently ugly in these. In days when our philosophers preach the virtue of manual labour to the rich, the idea that the gardener is to enconce himself in the houses and leave all the fine healthy outdoor work to labourers is absurd. It is his duty, and it should be his pleasure to do and to know how to do every kind of manual work out-of-doors, and it is a misfortune that our chief botanic garden should in any way encourage the stupid and vain notion that the trained gardener is intended only for a "conservatory" existence.

Then we should count with the new ideas which Kew itself might gain if a broader way of selection were the rule. We know that for a number of years certain departments which in the country generally assumed much importance were neglected, and fell back in interest at Kew. Where is there a more likely way of selecting men for their improvement than by admitting young men trained in our best open-air gardens? There is no surer road to success as to the training of the best men than, other things being equal, apprentices from James Backhouse's or Mr. Whitehead's rock gardens, from the arboretum at Bicton, or the American plant grounds at Knaphill; such men would surely turn out as well as youths who have begun to learn the horticultural housemaid's work in a suburban garden with a quarter of an acre of glass sheds and 2 perches of lawn.

The crying evil of the day among owners of gardens is that they experience the greatest difficulty in obtaining gardeners who know anything beyond a smattering knowledge of indoor plants. Complaints often reach us from gentlemen of the scarcity of young men who are qualified to intelligibly attend to a choice garden, and the ignorance that prevails among young gardeners, nay, and old ones too, of trees and shrubs is most deplorable. Even head gardeners complain that the young men whom they employ have a paucity of knowledge of their work beyond that relating to hot-house plants. We have always regarded the system at Kew of confining the young gardeners to the glasshouses as most objectionable. In nine cases out of ten they know very little more at the end of their two years' employment there than they did on the day on which they entered the gardens. The right course would be to allow the young men to spend a part of their time in the outdoor garden, so that they could obtain a knowledge of trees, shrubs, and hardy plants. Under the present system the work in the outdoor department is considered only fit for ordinary labourers, the consequence being that young men remain in ignorance of the commonest operations connected with the open-air garden. If the many young gardeners who go to Kew obtained an intimate acquaintance with the multitudes of fine exotic trees there, our country seats would show something beyond the very commonest of trees. The very motive of sending a young man to Kew should be to obtain a knowledge of its rich open-air flora; hothouse plants can be studied in other gardens. It is a great mistake to suppose that for necessary operations in hothouses intelligent young men are needed. On the contrary, the very character of some of the work, such as bug-hunting, pot-scrubbing, path-cleaning, could be better done by common labourers. It is a notorious fact that these routine operations, which have to be done by intelligent gardeners, do more to disgust them with Kew than anything else.

Again, who is better fitted to act as a constable in looking after the public in the houses than a stalwart labourer? The very atmosphere of the houses enervates young men, and oftentimes initiates in them lazy habits; and it is a matter of fact that nurserymen, as a rule, decline to employ young men who have spent a time at Kew. If Kew is to be the educational garden it professes to be, the system adopted there of dealing with young gardeners will have to be radically changed. It is, perhaps, too much to expect a young man confined throughout the day in the close atmosphere of hothouses to devote himself to healthy study afterwards. It often means ruin to their constitutions.

It is a real loss to horticulture that all the young men who go to Kew do not get a chance of knowing the many fine outdoor things there. Stoves and greenhouses abound, but such collections as those at Kew are rare, and obviously one main reason for their existence is that our young gardeners should there learn to know the various types of vegetation that thrive in the open air with us.—ED.

FREESIAS IN GUERNSEY.

"B." enquires (p. 95) how we treat *Freesias* for supplying early cut bloom. We have had fair experience with these plants, and usually commence cutting just before Christmas, a season at which the blooms are doubly valuable—first, on account of their own intrinsic beauty, and secondly, because of the general scarcity just then of delicate flowers. For the first supply we find the following treatment best suited: We put twelve bulbs in a 6-inch pot, using a compost consisting of loam, sand, and thoroughly decomposed manure in equal parts. These bulbs do a good deal of work in a comparatively short time, especially considering their size; consequently, they are fond of good living. Early in August is a good time for potting the first batch, and relays at intervals of about three weeks; by these means a supply of flowers can be continued from the end of December to the end of March. It should be borne in mind that the bulbs are not particularly fond of an excess of water during the early stages of their growth. We rarely water them more than once from the time of potting till the foliage begins to push up. When this stage is reached all danger is over; therefore we recommend keeping the pots comparatively cool until root-action has become well established. When the foliage is about 6 inches in height small dressings of guano or of Standen's manure and occasionally weak ordinary liquid manure, by way of a change, will prove of great benefit. There should be no hurry in introducing them to artificial heat; we think it scarcely safe to do so before the flower-spike begins to push up. An important feature in their culture, as is also the case with so many allied plants from the same habitat, is plenty of sunlight and air. Keep the pots in a light position near the glass. If this is omitted they grow up spindly, and lack that strength of constitution which is necessary to produce fine flowers. Bottom heat, we would remark, should be carefully avoided; we have always found this to mean no flowers and ruin to the bulbs. Nothing suits them better than a light position in an early vinery, out of which they might be moved to a dryer atmosphere as the first buds commence to open. It is quite surprising what power the flowers of these plants have in perfuming a room, and yet their fragrance, though strong, is not overpowering. From 55° to 65° is the best temperature for bringing them into flower early.—C. SMITH & SON, *Caledonian Nursery, Guernsey*.

— In reply to "B." (p. 95) allow us to state how we manage our early *Freesias*. Our first care is to select the largest bulbs in June and pot them at once in 6-inch or 8½-inch pots in a compost consisting of one-third well-decayed cow manure

and two-thirds of good fibry loam. We place them in a frame till September, and then remove them in a warm greenhouse close to the glass, so as to keep them as dwarf as possible. We apply water sparingly till they show bud; we then twice a week apply weak liquid manure, and remove them to a hothouse, where they flower most profusely from the middle of December onwards throughout the winter. We find *Freesias* most useful, coming, as they do, when all flowers, especially white, are very scarce, and they last for a considerable time in water. Our later batches we grow precisely in the same way, with the exception that they are potted successively and are not placed in heat. Last season we had *Freesias* in bloom from December to June.—HUBERT AND MAUGER, *Doyle Road Nursery, Guernsey.*

PLANTS IN FLOWER.

Primula Mrs. Walton.—A double white variety of the Chinese Primrose sent by Mr. Newsham's gardener at Higher Feniscowles, Blackburn, is very beautiful, the flowers being very double, spotless white, and the trusses large. It is said to be a strong grower and profuse flowerer, and invaluable for affording a good supply of cut blooms for bouquets.

Yellow winter Flax.—We have in the conservatory at the present time two groups of plants of *Linum trigynum* which were taken there when they first came into flower early last November, and they have continued to flower more or less ever since; they are, indeed, even better now than they have been at any time during the winter. The flowers, being a bright golden yellow, are very attractive. As a winter-flowering plant we have few of the same colour that can surpass this *F. ax.*—J. C. C.

Plants now in flower in open air, February 3:—

<i>Anemone blanda</i>	<i>Lithospermum</i>	<i>rosinaini-</i>
<i>coronaria</i>	<i>folium</i>	
<i>Galanthus Imperati</i>	<i>Vicia major</i>	
<i>Elwesi</i>	<i>Eranthis hyemalis</i>	
<i>Saxifraga Burseriana</i>	<i>Narcissus Taz-ta</i>	
<i>Elwesi</i>	<i>Hepaticas, various</i>	
<i>Iris stylosa</i>	<i>Primroses</i>	
<i>Ionocera fragrantissima</i>	<i>Bellebores</i>	
<i>Chimonanthus fr. gran.</i>	<i>nig r</i>	
<i>Cyclamen Coum</i>	<i>colchicus</i>	
<i>Atkinsi and others</i>	<i>orientalis</i>	
<i>Iberis gibraltarica (hybrid)</i>		

—G. J.

Helleborus niger ruber.—Mr. Ware sends us more blooms of this variety together with flowers of *altifolius* for comparison. The two are no doubt distinct both as regards tint and form, that of *ruber* being shallow or saucer-like, while that of *altifolius* is cupped. The colour of *ruber* is a delicate rose-pink rather deeper than that of *altifolius*. Associated with the white forms, this new variety is lovely, and must be welcomed as a valuable addition.

Early hardy flowers.—Already we are receiving from different parts of the country hardy spring flowers, the mild genial weather of the past fortnight being favourable for their development. Among a gathering sent to us by Mr. Ware is the lovely blue variety (*cerulea*) of *Iris reticulata*, some uncommonly fine blooms of *Galanthus Elwesi*, the sombre-flowered Snake Iris (*I. tuberosa*), while from frames come *Lachenalia quadricolor*, certainly one of the finest of the genus, and, together with *L. pendula* (coral-red) sent last week, indispensable for embellishing the winter greenhouse.

Chinese Primulas.—A large and fine series of varieties of *Primula sinensis* has been sent to us by Mr. W. Bull, all beautiful, but some more delicate in tone and more pleasing than others. Among the latter, the kinds named *flicifolia rosea*, bluish pink; *striatiflora*, large white, copiously freckled with carmine; and *rosea*, delicate pink, are particularly worthy of note, as are also four semi-double sorts, all of which are different from the ordinary run of Chinese Primulas. These are *kermesina plena*, rich carmine-pink; *rosea plena*, pale bluish; *alba plena*, white; and *rubra plena*, rich crimson-purple. The flowers of these semi-double varieties are not very large, but the little tufts of petals in the centre render them very pretty. The most striking of the other sorts in the collection are *punctata elegantissima*

rubra, very large, bright carmine-magenta; *violacea*, large, and of a kind of slaty tinge; *flicifolia rubra* and *kermesina splendens*, the latter remarkably rich and effective in colour. The new large-eyed sorts, such as those named *alba oculata lutea* and *lilacina alba oculata lutea*, we cannot regard as good additions to the race of Chinese Primulas, though, perhaps, some would think them handsome.

Double Violets.—The finest potfuls of double Violets that have ever been sent to us have reached us from Mr. Allan, Lord Suffield's gardener at Gunton Park, Norwich. They consist of three sorts, viz., the new double white *Comte Brazza's Neapolitan*, *Marie Louise*, and the old *Neapolitan*. The plants measure a foot across and are fairly smothered with bloom, which is prettily set off by the luxuriant foliage. Concerning these, Mr. Allan remarks that the *Neapolitan* is still one of the best of Violets for mid-winter, and that *Marie Louise* is unsurpassed for late summer and early autumn flowering. *Comte Brazza* comes into flower about a fortnight later than *Marie Louise*, say towards the end of August, and from that time flowers continuously throughout the winter with the greatest profusion. It is also more robust and vigorous than the two above varieties, and is sure to become a general favourite where Violets are grown. Czar I have used for frames, but always make it a practice to divide it and make a fresh bed of it annually. Treated thus it gives an enormous supply of flowers, especially in spring. The single Russian still deserves a corner in the garden, as it is very sweet and nearly always in flower. We intend to give a coloured plate of these double Violets.

Lachenalia pendula.—This is the largest and certainly one of the handsomest of the *Lachenalias*. It is still rare in gardens, although the name occurs frequently enough, almost always, however, attached to one of the forms of *L. tricolor*. There is a plant of the true *L. pendula* in flower in the Cape house at Kew, and the wide difference between it and *L. tricolor* is easily seen. The former has an indefinite number of leaves, which are fleshy, 2 inches broad, and nearly a foot long; a flower-spike 18 inches high, stout and erect, the upper 6 inches being clothed with flowers, which are 1½ inches long, in shape like the ordinary type of *Lachenalia*, and in colour a mixture of red and yellow, the tips of the segments being green and purplish. A comparison of the flowers with those of *L. tricolor* shows the former to have the two whorls of flower divisions almost equal in length, whilst in the latter the outer whorl is only half as long as the inner one. This is a good botanical distinction, whilst for garden purposes the size and colour of the flowers of *L. pendula* may be pointed to. The Kew plant has twenty-four flowers on the spike. It seems to be a general characteristic amongst the *Lachenalias* to become much brighter coloured after the flowers have been expanded a little while. *Lachenalia* growers should now place a few of their plants in a little extra warmth, so as to have them in flower early and in successional batches.

Rhododendron Nobleanum.—What a glorious early-flowering hardy shrub this is! I say hardy because it is seldom the wood is injured, although the buds and open flowers sometimes suffer from severe frost after a prolonged mild temperature. The present season seems to suit it exactly. It opened its first blooms here a fortnight after Christmas, and notwithstanding the check it received with the recent cold, it is now a blaze of dazzling scarlet—a contrast truly to the gloomy colourless surroundings. It is also well suited for conservatory decoration, requiring not a tithe of the care of hosts of less attractive plants. By a liberal use of liquid manure I have doubled the size of the blooms under glass compared with what they are in the open. Few would be without this plant, I think, if they were aware of its welcome colour at this time of the year. In exposed and cold situations it should be indulged with the most sheltered nook at command, or through its extreme rathness it would be pretty certain to sustain injury.—J. M., *Charmouth, Dorset.*

Winter flowers.—The bridge that has connected the flower death of the old year with the flower birth of the new has now been crossed by the happy possessors of little gardens. With me the latest choice flowers that gladdened my eyes as autumn clasped the hand of winter were *Sterbergia angustifolia*, *Stobæa purpurea*, *Crocus speciosus*, *Tritomas*, *Senecio pulcher* and *speciosus*, and a lovely salmon-coloured Poppy, *Papaver lateritum*. I think Pansies, Primroses, and Wall-flowers, with plenty of the sweet *Petasites fragrans*, have cheered us up all through the winter, and we have never been without a hardy border Carnation in bloom up to this present writing. A few very useful annuals bloomed till quite late in the year, *Alonsoa Warscewiczii* being one, and another *Amaryllis Philipsi*. This latter is a wonderfully free bloomer, even when not cut, and the rich handsome blue of its showy blooms makes it a very desirable plant. The following early spring beauties are all out now: *Crocus Imperati*, forming a lovely clump; *Iris Histrio*, *Muscari linguatum*, and *Iris reticulata cyanea*. It is remarkable that the latter is blooming now, while *Iris reticulata*, treated in every way the same exactly, is not nearly as yet so forward. I do not know anything more lovely than the sky-blue *Iris reticulata cyanea* mixed with the pure massive blooms of "St. Brigid's" *Hellebore*.—H. STUART WORTLEY (Colonel).

Perle des Jardins.—Although a very beautiful Rose, *Maréchal Niel* is no longer the yellow Rose of commerce. In looking through several large commercial Rose-growing establishments last summer I was surprised to find this once universal favourite but sparingly cultivated, and the few specimens with which I did meet were retained, I think, more for propagating purposes than for blooms. The late Mr. Ellwanger, in his book of Roses, says: "the inexperienced would do better not to attempt its culture. The continued demand for plants of *Maréchal Niel* is largely due to the fact that buds of the *Perle des Jardins* are supplied to customers for *Maréchal Niel* by most of the city florists. For three monthly Roses no one could select better than *C. Mermet*, *Niphetos*, and *Perle des Jardins*. By all means, plant in the natural border, if possible, in preference to pot culture. If quick as well as satisfactory results are desired, a good plan would be to plant three plants of *Solfaterre*, a vigorous growing *Noisette*, and bud with the varieties mentioned. Flowers from the budded plants will be larger and finer than those from plants on their own roots."—LEVANT COLE, in *Vick's Magazine*.

Rare species of Dianthus.—On looking over some old notebooks the other day, I came across the following jottings relating to a few Pinks, that, though extremely pretty, are not in general cultivation, viz.: *D. pubescens*, a kind with a fine dwarf branched habit, hairy leaves, and large deep scarlet flowers profusely dotted with brown at the base of the petals; *D. Balbisii*, closely related to the above, leaves destitute of hairs, slightly glaucous, petals without dots, a beautiful species for rockwork; *D. ferrugineus*, pale in colour, but good and compact in habit; *D. atrorubens*, taller than *D. cruentus*, and a really good border plant; *D. arboreus*, a fine shrubby kind, peculiar for a Pink, and very distinct; *D. Bisignani*, habit a little like the last, but having much larger and deeper serrated petals and a large protruding style; *D. tataricus*, a dwarf and very handsome species with deep pink flowers; *D. caucasicus*, sometimes called *montanus*, a kind with pretty serrated leaves and large pink flowers, with dark blotches at the base of the petals, one of the prettiest; *D. asper*, distinct, flowers pale; *D. bicolor*, a pretty species with large, handsome flowers, but straggling in habit, good for rockery culture; *D. orientalis*, a handsome shrubby species with rosy frimbriated flowers; *D. discolor*, a kind with large handsome flowers with pinkish serrated petals and white and brown spotted throat; *D. arbuscula*, a species with large, bright crimson, very pretty, double flowers; and *D. corymbosus*, flowers pink with bluish protruding anthers.—K.

INDOOR GARDEN.

THE LAPAGERIAS.

THE Lapagerias, both red and white, may be grown with equal success in pots or planted out in borders; the main point is constantly to bear in mind that perfect drainage is indispensable, for, although natives of swampy parts of Chili, where they grow to almost any length supported by branches of trees, under cultivation they positively refuse to thrive where there are any signs of stagnant water. As to soil, some are in favour of all peat; others deprecate its use and prefer a compost consisting of a more or less loamy character.

With me they do equally well in either peat and sand, or in a mixture of these materials with an equal quantity of loam. I am acquainted with a *L. rosea* that does well planted in a wooden box in a small conservatory in London; it is essentially a town plant, being accommodating in the extreme. This box, the surface of which was planted with hardy greenhouse Ferns, was filled with loam only, with the exception of about 6 inches on the top, which consisted of mixed soil, to suit the requirements of the Ferns. The Lapageria was originally planted in pure, very fibrous loam, and for six years it grew at an extraordinary pace, covering the entire roof, and when, some three years ago, through the owner leaving the premises, the plant had to be taken out of its box, the roots in the loam were found to be far more numerous and of greater substance than might have been reasonably expected. The young growths, too, that started up all around the crown were not unlike in appearance those of Giant Asparagus, a fact which goes a long way to prove that, where perfectly drained, fibrous loam free of iron suits all the requirements of Lapagerias. They also succeed in peat alone, provided it is of a fibrous and sandy character; but if of a comparatively close nature, such as that in which Grass has been known to grow freely or that extracted from boggy places, the chances are that not only will the Lapagerias not make luxuriant growth, but that they will not grow at all. Here is a case in point. Our Lapagerias, which form an avenue in a perfectly cool house, in which no artificial heat is allowed as long as the temperature does not fall below 35°, have their stems or matured growths trained up on either side of a walk, but their young shoots and branches cover a roof overhead, as do those in the annexed illustration, and are allowed, when the flowering season begins, to hang loose in all directions. These were planted red and white alternately in a border expressly prepared for them, and which to all appearances, and judging by the quality of the materials used, should have given satisfaction. The peat was put in a rough state; it seemed rich in humus, and the coarseness of the silver sand copiously added to it ought to have ensured porosity. Such, however, was not the case, and within six months after planting, which was done in October, the plants, instead of making a wholesome start, as was expected, fell into ill health; their shining leaves gradually lost their bright appearance and became flabby, and the ends of the shoots showed a particularly disagreeable tendency to wither away. At first bad treatment was suggested—too much heat, too great an abundance of water, too little of both, droughts, &c. Still,

none of these suggestions seemed satisfactory, as there had previously been some Lapagerias which for many years, and under the same kind of treatment, had been in a most flourishing condition. It was decided to look at the roots, when the real cause of the disaster was only too apparent. The peat used for the border although rich in nutritious properties, had not been sufficiently seasoned before being used, and the natural consequence was that as the young rootlets, and even the larger roots, came in contact with it they one and all lost their healthy colour and rotted off. There was no mistaking the pernicious effects of the closeness of the peat, for now and then we came across roots which had found their way into

compost just named was substituted and the beneficial effects of the change were soon manifest. Within a few weeks the leaves had regained their former brilliancy and stiffness, and quantities of young growths soon shot up through the new soil. These growths, however, were not of such good substance as they would have been had they been produced three months earlier by plants in good health; but, taking all things into consideration, they were really very satisfactory. After being trained in an upright manner during the ensuing season and provided with soft string on which to climb, and which they prefer to wires, they were allowed to bear a small quantity of flowers, which, as most people know, are produced in succession

from August to January; during the following January more soil was removed from the bed all round the plants, starting from where the mixture was previously used. Being applied in this way, the new soil does not become sour before the roots derive nourishment from it. There being on each side of the walk and about 12 feet from the plants a back wall, which was to be also covered with Lapagerias, it occurred to us that, instead of making use for that purpose of plants already established, it would be much more economical to use layers from the original plants, which was done; two of the thinnest of the long shoots among those of last season's growth were selected and layered, the majority of the shoots barely reaching the wall. These two were firmly pegged down all the way along on a bed made of the same mixture as that placed around the plants, but rendered more permeable by the addition of a little silver sand. Into this the shoots were buried about 1½ inches deep, special care being taken to save the leaves and keep at least the upper half of each of them above the surface of the ground, the part of the border in which they were thus layered being kept moist all through the season. In the following summer the plants made large as well as numerous growths and flowered profusely, as many as eighteen flowers being found on 6 inches of flowering wood, and wreaths consisting of forty-five and forty-eight flowers each of *L. rosea* were particularly conspicuous intermingled with the white blossoms of *L. alba*. The layers also gained in strength and began to make a slight show on the walls, producing a small quantity of flowers. Moreover, when the last prepared soil was, as on previous occasions, added to the border down to the drainage, it was discovered that not only were strong shoots fully the size of one's thumb present in dozens on one single plant,



A houseful of the white Lapageria in the Chad Valley Nursery, Birmingham.

a handful of sand, and these were perfectly healthy. It was, therefore, at once decided to remove the offensive material and substitute something more suitable. Loam of a thoroughly fibrous character not being obtainable and peat fibrous and sandy rather the exception than the rule, attention was naturally directed towards the formation of a compost which would in all probability produce the most satisfactory results. In this case preference was given to a mixture of two parts fibrous peat, one part fibrous loam, and one of coarse sand, with the addition of charcoal and old mortar or rubble from old buildings; the latter, though not nutritious in themselves, have the power of keeping the whole mass of soil in an open and sweet condition. After removing as much of the original soil from the balls of the plants as we thought advisable and right down to the drainage, the

but in many places the layers too had produced shoots of the same size and substance—that is to say, six or eight times stronger than the wood which had produced them. In most cases there were two, and sometimes three starting from the same point where the layer had rooted. The additional strength thus accidentally produced, as it were, is of the utmost importance to all concerned in the culture of this lovely plant.

I may add that these Lapagerias are not planted in a border devoted exclusively to them, as on it are placed plants requiring cool temperature all the year round, the majority of them being Palms, chiefly *Chamærops*, *Corypha*, and *Phoenix*, and *Dracænas* of the lineata and indivisa types, all of which during summer receive a great amount of water both at the roots and overhead. In the ordinary course of things these would weigh heavy

on the roots of the climbers and seriously interfere with their growth; in order to obviate this an iron grating is set on brickwork in such a way as to leave an open space of about 8 inches between it and the border. The water from the plants thus arranged supplies the climbers, and the surface of the border never becomes dry or caked. Although not strictly necessary, provided in the first instance the border is properly made, yet the practice of giving the plants fresh soil in the way above related is productive of excellent results, as it enables them to lay hold of the good material before the nutritive properties are washed out of it. It has also shown us that *Lapageria* growths in a young state must not be interfered with. Some of these have been forced into an upright position, or prematurely brought above ground, so as to enable us to have a more complete control over the ravages of slugs, which are exceedingly fond of them, but always with disastrous results. Frequent and copious syringings during the summer months keep the foliage in good order. In hot weather, if well syringed overhead two or three times a day, seldom will any insects attack them. Green fly is about the only pest that affects the young growths, and it is easily disposed of by slight fumigations. It is only, I believe, in cases in which they are subjected to too much heat that *Lapagerias* are infested with either scale, thrips, or mealy bug, and when in that state nothing has a more wretched or repulsive appearance than they have; while if kept cool and moist, flowers are produced in abundance, even in smoky places, although in such positions it would be unreasonable to expect the brightness to be found in blooms produced in a clearer and purer atmosphere. If, however, leaf insects can be ward off by means of cool and moist treatment, the same unfortunately cannot be said in reference to slugs and woodlice, both of which are extremely fond of the young shoots; indeed, they often eat them while still underground. The best preventive is a zinc collar or a zinc tube from 4 inches to 6 inches long put over each shoot as it makes its appearance through the ground; zinc is a metal to which snails and slugs have the greatest possible aversion; hence its value for this purpose. The most effectual way of trapping both slugs and woodlice is placing here and there a pinch of new bran, in which most of them can be caught and destroyed at night. With the exception of full south, all aspects suit *Lapagerias*, provided they are sufficiently shaded during the summer months and the atmosphere at all times kept moist, but preference must be given to a house with a north or north-eastern aspect. Thus situated, they require no shading whatever, and their flowering season is extended some weeks longer than it otherwise would be.

PRUNING is to a certain extent beneficial to *Lapagerias*, so far as the old flowering wood or superfluous growths are concerned, but great care must be taken in using the knife to do so with discretion, and not be tempted into a free use of it about the lower part of the plant; indeed, it is nothing uncommon to find shoots, which at their base are thin and wiry, with a sort of worn-out appearance, develop when a few feet higher into branching stems of good substance. These it would be unwise to cut off, as so doing would seriously damage the future crop of flowers. In one instance in particular do these plants derive real benefit from pruning, viz., when strong shoots, still soft in texture, but having already some perfectly developed leaves, have their extremities cut off. This should not, however, be done later than the middle of June, after which time it is best to leave them alone. Several here were treated in that manner by way of experiment, and in all cases the practice proved satisfactory. These pruned shoots produced each from three to eleven laterals of a size equal to their own, and which had ample time to develop and ripen sufficiently to withstand the following winter.

PROPAGATION.—*Lapagerias*, especially *L. rosea*, may easily be propagated from seeds, but there is no dependence whatever in the forms obtained by such means, as the variations in size as well as in shape and colour are very great. They are also sometimes increased by cuttings made of pieces

of wood furnished with from six to ten leaves, but increasing them in this way is a very slow process; in the case of varieties it may be found profitable to have them layered, thus securing young plants possessing exactly the same characters as those of their parents. This last mode of propagation is the one generally adopted in the case of *L. alba*, the seedlings of which very seldom if ever reproduce the pure white flowers of the seed-bearing plants, even when no red form whatever is allowed to grow in proximity to it. Than the *Lapageria*, few plants have been subjected to cultivation so long without producing some really striking variations at the hands of the hybridiser. True, we have the Nash Court variety with flowers finer both in colour and size than those of any other known form; also the Fisher-Holmes variety with large, well shaped, and richly coloured flowers, but these are merely accidental seedlings. Now and then we also hear of double forms cropping up, though they all seem to lack constancy. Such variations are, however, well worth noticing and watching closely. They are "straws which, though in themselves not very valuable, show which way the wind blows." S. G.

CYCLAMENS AND CHINESE PRIMULAS.

OF these there is now a magnificent display in Messrs. Sutton's houses at Reading. Of *Cyclamens*, not only is the variety great and the flowers the same, but the plants are models of good cultivation; there are plants here in 6-inch pots with fifty leaves and 200 flowers, and that, too, from bulbs raised from seeds that were not sown till November, 1883. The leaves of the giganteum section range from 3 inches to 5 inches across, and are stout in proportion and most beautifully marbled or variegated; the petals of several flowers which I measured exceeded 2 inches in length and half an inch in width. A variety named White Butterfly, standing out conspicuously amongst the others, had the broadest petals. It is of the purest white, good in form and substance, sweet scented, compact in habit, and handsomely marbled in the foliage. This and the kind called Reading Gem—which may be said to be the counterpart of the former in every particular, except that the base of the flower is rosy purple—are to my mind the two best varieties yet in commerce. Other extra good varieties noted were persicum roseum album, p. purpureum, p. rubrum, and p. Phoenix, the last named being a brilliant self-coloured crimson, an excellent companion to the pure white kind of the same section. The best kinds in the giganteum section are roseum superbum and roseum album. The houseful of what are termed mixed hybrids, that is, sorts of which no pedigree has been kept as to crosses with other varieties, is as grand a sight as are the groups of named kinds; there is not an inferior flower amongst them, and why should there be? Surely amongst such a wealth of perfection the throwing away of a few scores of inferior kinds must be a small matter, and each year in which such weeding occurs must reduce the percentage that needs to be thrown away as worthless.

PRIMULAS are cultivated with the same skill as *Cyclamens*, and they attain an equal degree of perfection. Amongst them, the most striking novelty is a semi-double variety, the colour of which is a rich rosy crimson; in habit the plant is compact and the flowers are thrown well up above the deeply serrated foliage. The best of the single varieties are the following, viz.: Gipsy Queen, with deep brown foliage and white flowers suffused with light red dots, a most unique variety. Pearl, pure white, with flowers of great size; habit of growth sturdy and spikes of flower long—standing up, indeed, quite clear of the foliage, a desirable quality in *Primulas*. Reading Blue is another very fine kind, but, like other so-called blue varieties, scarcely true to its designation; I should describe it as deep lavender, but for all that it is the nearest approach to blue that I have yet seen. The flowers are very large (2 inches across), and the habit of growth all that can be desired. Reading Scarlet possesses the same excellencies,

but the flowers are more crimson than scarlet. Reading Pink, Ruby King, Rosy Queen, and Snowdrift are all true to their designations and about of equal merit in every other respect. Many other kinds, too, are equally worthy of mention.

BEGONIAS, Calceolarias, and Cinerarias are grown here in numbers as large and to the same degree of perfection as are the *Primulas* and *Cyclamens*. Cinerarias are just beginning to make a show, and the Cabbage-like foliage of the Calceolarias, which at present fill several pits, bespeak the treat there is in store for lovers of this flower a couple of months hence. H. W.

PROPAGATING ALTERNANTHERAS.

THESE plants are required in such large numbers where carpet bedding is extensively carried out, that they take up considerable time and space in the spring to get them large enough to be serviceable. I have learned, however, from experience that there is not any great gain by beginning to propagate too early; where there is a sufficient number of stock plants, the middle of March is soon enough to begin that part of the work. Through want of sufficient time and suitable space most of us have to resort to the use of hotbeds and frames in which to raise our stock of plants, and as regards the labour and size of the plants obtained by this system, it is undoubtedly the best that could be devised. One has only to make up a hotbed and dibble in the cuttings and most of the labour is done. I am, however, satisfied that plants raised in this way are not the best; in fact, in point of colour they are vastly inferior to those raised in a house. If I could devote time and space I would raise all my plants in a propagating pit heated by hot water, and each plant should be potted singly in 2½-inch pots, and grown in a close warm house until the end of the third week in May, when I would harden them off in cold frames. By that course of culture I should obtain short-jointed, sturdy plants with sufficient colour in the leaves to make a strong contrast at once; moreover, the plants would turn out of the pots without experiencing any serious check and would at once take kindly to the soil; whereas plants lifted from a bed of soil require more careful planting and more attention to get them established, and they are fully a month longer in acquiring their proper colour. I am aware of the fact that plants raised on hotbeds are larger than such as are raised otherwise and cover more space when planted out, a consideration, I acknowledge, of some moment; but if we want to obtain the earliest results, no one of experience can say that pot-grown plants are not the best. As, however, but few can spare the time and space to grow plants in pots, I would advise all who may be obliged to adopt the planting-out system not to be in too great a hurry to get their plants rooted. If the bed is made, as I have said, about the third week in March and the soil put in a week later after the heat has risen in it, the cuttings will be in good time if dibbled in in the first week in April. In raising a stock of this plant plenty of heat and atmospheric moisture are needed. *Alternantheras* revel in a temperature of from 85° to 95° if there is a corresponding amount of humidity surrounding them. J. C. C.

FREESIAS AT BLACKHEATH, CLONTARF.

THE perfect culture of these charming plants is an object of such interest, and, I may add, of such difficulty of attainment in many cases, that I may be pardoned for saying a few words in addition to Mr. Poë's remarks (p. 38) on the remarkable spike submitted by him to THE GARDEN from Blackheath, Clontarf, near Dublin, the residence of Mr. Gibson Black. Mr. Poë told how the plants were potted early, started in the brisk bottom heat of a propagating house, and removed into a light and airy house kept at an intermediate temperature. When first I saw them there they had very strong foliage, and I told my sister (Mrs. Gibson Black) that she would have nothing but leaves, as such warm treatment was condemned

by the authorities. However, she was agreeably disappointed by their throwing up such noble spikes of bloom as Mr. Poë describes. But what I wish especially to mention now are two details of culture which, I fancy, had a good deal to do with the success. First, they were well supplied with liquid manure last year as well as this; and second, only six roots were placed in a 6-inch pot. Let growers, then, note that spikes of *Freesia refracta alba* 2 feet in height and laden with dozens of perfect blooms were produced by warm treatment, manure water, and pot room.

FREDERICK TYMONS.

HOYA CUMINGIANA.

THIS is somewhat distinct in habit from the majority of cultivated Hoyas, being stiff and erect rather than climbing, as most of the Hoyas are. It forms a bush—indeed something similar to what is seen in the allied *Cyrtoceras reflexum*. The flowers, too, are not unlike those of the *Cyrtoceras*, but the colours are different, as in the *Hoya* they are yellowish green, with a brown coronet. It is a native of the Philippines, and was introduced by Messrs. Veitch about thirty years ago. The annexed woodcut shows the flowers and leaves of this

and small hairy narrow leaves and pretty umbels of whitish flowers. All the Hoyas require a stove temperature, a well drained peaty soil, and plenty of water when growing, with a short period of rest in winter.

B.

FLOWERS FOR EASTER.

WHITE flowers being mostly required at Easter, it may be useful to name a few plants that are available at that season. *Deutzia gracilis* is one of the best. If plants of it are first raised from cuttings, it will take three or four years to get them large enough to be effective. The half-ripened shoots will strike freely in sandy soil, and root quickly with the aid of bottom-heat, but during summer they will form roots in about six weeks in a cold frame if carefully looked after. As soon as rooted let them be potted singly in 3-inch pots, in which they should remain with the protection of a cold pit or frame until the following spring. While resting in winter, a piece of ground on a warm sunny border should be prepared. There should be a depth of 12 inches of good soil, and below that it should be well broken up. About the middle of April the plants may be put out. Turn them out of their pots and shake off

sufficient to bring them forward for this purpose. The flowers of the lovely *Eucharis amazonica* are always valuable at Easter time, and, given plenty of room, a suitable temperature, and a sufficient number of plants, there is no more difficulty in getting them in flower at Easter than any other time. Beginners are recommended to start with plants that have flowered during August or September, as in that case there is time to grow them on briskly before dull days set in. Ten weeks in a temperature ranging from 70° at night to 85° during the day by fire-heat, and 10° higher by sun-heat from September 1 to nearly the end of November, will enable them to develop good flowering bulbs for the spring, when the temperature both at night and day should be reduced 15° in a gradual manner, and in that temperature they should be rested. The soil about the roots should be kept rather dry than wet for a period of six or eight weeks, according to the time at which they are wanted into flower. It is quite safe to reckon that they will require a month in a higher temperature to bring them into bloom, and if they should be a week too early it is easy to retard them by removing them to a cooler house. If repotted once in two years that is often enough, and the most suitable soil is three parts fibrous loam and one of peat. Always bear in mind that the more heat they are subjected to the more water they will need.

Where plants in pots are required, white-flowered Azaleas are indispensable; of these the semi-double forms are most valuable, especially such varieties as Borsig and narcissiflora; they bloom freely, and the flowers are of the purest white. Fielder's White and the old white (*indica alba*) are single-flowered varieties. Any of these grown in 6-inch pots are most useful, both for church decoration and for rooms. *Spiraea japonica* deserves prominent notice; it is easily grown, and very effective even in small pots. The best way in which to obtain plants suitable for 6-inch pots is to divide a few old stools early in spring. The pieces need not be large; if there are three or four crowns to each, they will be large enough. These pieces should be planted out in a rich piece of ground before they begin to grow, and in dry weather must have an abundance of root moisture, for all the herbaceous *Spiraeas* are moisture-loving subjects; indeed, without it, this one in particular would not make satisfactory growth. One summer's growth will be sufficient to produce plants suitable for 6-inch pots. They may be taken up at any time between the middle of November and the end of the year, and after they are potted, place them in a cold frame until wanted. A month or six weeks in a temperature of 60° will be required to bring them into flower, according to the date on which they are wanted. *Spiraea Thunbergi* is a hard-wooded species, which responds freely to artificial heat, and will be found valuable in a cut state. It produces numbers of umbels of white flowers on long arching branches, which may be effectively used for vases, in which, judiciously arranged, they look well. It is a plant of easy culture, but to grow it with as little trouble as possible two sets of plants are necessary, and then all the preparatory details may be carried on in the open ground, as one set of plants will be in a condition for forcing every other year. When Easter comes late, this *Spiraea* will come on in an ordinary greenhouse; at other times a very little forcing will suffice to bring it into flower. The Guelder Rose (*Viburnum Opulus*) is an admirable subject for our purpose, as its large balls of white flowers are very striking mixed with other subjects. As in other cases, two sets of plants are necessary, and it is indispensable that they be well established in pots. Indeed, the best results are obtained when the plants are regularly cultivated in pots, as no reliance can be placed upon plants recently lifted from the open ground and potted to furnish a sufficient number of flowers to be of any value; besides, well-established plants produce much larger and better formed flowers than would otherwise be the case. This plant requires more heat and a longer time to bring it into flower than some others. It is quite safe to allow it seven or eight weeks in the forcing house; if



Hoya Cumingiana (natural size).

plant. Its distinctness in habit is perhaps the only recommendation it has when compared with other Hoyas, of which there are many beautifully flowered kinds, though from some cause or other they are not much cultivated. The best known are *H. carnosa*, which, despite its commonness, is still one of the finest stove climbers we possess. It grows in almost any position where warmth, moisture, and a little light are afforded it, clinging by means of its stem-roots to a damp wall as Ivy does, and never failing to produce compact, even-formed umbels of flesh-coloured, waxy, glistening flowers. *H. bella* is perhaps the next best kind, a really lovely little plant when seen in health and bearing in goodly numbers its drooping umbels of sweet-scented flowers almost pure white, with a deep purple corona, resembling, as has been somewhere stated, an amethyst set in frosted silver. It may be cultivated either in a basket, allowing its lax stems to hang over the sides, so that when in flower its beauty is seen to advantage, or in pots and trained on a trellis. Peat and sand seem to be the most suitable mixture for this little plant. *H. Paxtoni* only differs from *H. bella* in having pointed instead of blunt-tipped leaves. *H. imperialis* is a strong growing species with large oblong leathery leaves and umbels of large purplish sweet-scented flowers with a yellow eye. *H. stenophylla* is of recent introduction, and is characterised by having thin drooping stems

all the soil, so as to be able to disentangle the roots; then plant them out 15 inches apart each way. The first summer they may require water at the roots in dry weather to enable the latter to get a good hold of the soil, but after that they will, as regards moisture, take care of themselves. The only attention they will require after that is to cut the young shoots down every winter to within an inch of the last year's growth, and this operation must be repeated until the plants are thought to be large enough. There will be sure to be plenty of roots, but it is branches which are wanted. A well-furnished plant ought to consist of from sixteen to twenty-four young shoots of one year's growth, and there is no difficulty in obtaining them under the planting-out system. These should range from 9 inches to 15 inches high; then, when the plant is taken up and potted in a 6-inch pot, it will be capable of producing a fine show of flowers. A relay of plants will be necessary in order to work out this system, as the same plants will not bear forcing every year.

It will be understood that these directions are intended for plants in pots, suitable for church decoration and similar purposes. For furnishing cut flowers larger plants are desirable, but how much forcing they will want to bring them into flower will depend on whether Easter is early or late. At any rate, a temperature very little above that of an ordinary greenhouse will at all times be

there are signs of its being too early, it will keep fresh and bright for a fortnight in a cool house. While making growth keep it in a cool, airy house and supply it liberally with liquid manure, as the stronger the wood the larger and more numerous the flowers will be.

LILIES OF THE VALLEY, when required in large quantities, should have a brick pit devoted to them, in which convenience is afforded for giving them a little extra warmth if required. In this case the routine must be of a permanent character. A bed of soil should be placed in the pit and care taken that after it is put in it does not sink down too far from the glass, or the leaves and flower-stems will be drawn up weak. The surface of the bed ought not to be more than 10 inches or 12 inches from the glass. The soil should consist of good loam chiefly, with a little rotten manure to give the roots a little stimulus. Good strong pieces the size of a man's hand, with several crowns to each, are the right sort of plants to select. These should be planted some time in February and well attended to afterwards in the way of watering and air-giving; indeed, every effort should be made to get them established quickly. Early in June the lights may be taken off altogether until winter. They may be expected to furnish a fair supply of flowers the first year, but more the second and third. With rich surface dressings and frequent supplies of liquid manure during summer, a bed once well made will last for several years. Owing to the movable character of Easter, it is not possible to give precise instructions as to whether or not they will require any forcing to bring them into flower at a given date. When Easter is late and the season favourable they will come on without any forcing; the rest must be left to the judgment of the cultivator. *Magnolia conspicua* is perhaps the most useful of all hardy plants for this purpose, as when trained to a wall it invariably furnishes a supply of its bold and lovely white flowers at that time. Except in very early springs, bush trees of it do not open their flowers soon enough. The only drawback to its use is that its flowers expand before its leaves; but it is an easy matter to substitute other leaves for those that belong to it, and, if leaves cannot be obtained from the evergreen variety, those of the *Rhododendron* will answer the purpose very well. Where bold masses of flowers are wanted, some of the hardy *Rhododendrons* may be taken up and placed in pots. A very little forcing will be sufficient to bring them into flower, and it is not at all difficult to meet with medium-sized plants having a sufficient number of flower buds that only require a little artificial warmth to induce them to expand. The best white-flowered varieties are *Exquisite*, *Minnie*, *The Queen*, and *Nivaticum*. These with their ample foliage closely set under the flower truss do good service. Where large, bold flowers are required for vases, &c., *Arum Lilies* are indispensable. Two of the spathes and three or four medium-sized leaves inserted in pots of moist sand will be found to be useful where larger growing plants would be too large. The stem in this case and leaves may be from 9 inches to 12 inches above the pot, and if the sand is pretty moist they will keep fresh from twelve to twenty-four hours, unless exposed to very dry, heated air. These plants are best grown in trenches out of doors in summer, with some manure put in the bottom. A large plant or two divided into single pieces and planted in the trenches early in June and kept well watered will make fine plants by autumn, when they may be taken up and potted. In a general way these plants will come into flower early enough if grown in a cool greenhouse. Besides the above there are white *Hyacinths* and *Tulips* that may be freely used where plants in small pots are required.—*Field*.

New double Bouvardias.—Three new and apparently very bright and beautiful double-flowered hybrids of these most free-blooming easily-cultivated, and early-flowering greenhouse plants have been obtained by the well-known French florist, M. Victor Lemoine, of Nancy, by

crossing the single scarlet-flowered *Bouvardia leiantha* with the double white-flowered variety *Alfred Neuner*—the result of the cross having been (if one may form an opinion from a coloured lithograph of these novelties just received from Nancy) a trio of beautiful varieties with the fully double flowers of the last named parent considerably increased in size, and the fine colour of the other parent intensified in depth and brilliancy of hue. The three varieties are named *Triomphe de Nancy*, with apparently the largest flower bunches; *Sang Lorrain*, the deepest coloured; and *V. Lemoine*, the most double flowered. They will be distributed by the raiser to his customers in the course of next March.—W. E. G.

Eucharis grandiflora (amazonica).—Whatever may be the verdict of fungologists as to the nature of the *Eucharis* disease, there can be no question as to what its cause is. It is only in establishments in which a severe system of cultivation is adopted that this disease makes its appearance, the "severe" treatment consisting of excessive forcing and feeding with a view to better the crop of flowers. Where the plants are subjected to what may be termed ordinary treatment, *Eucharis* disease never or very rarely makes its appearance; moreover, so far as a comparison of results goes to prove anything, the ordinary regimen is quite as satisfactory as regards the yield of flowers as one more severe, and that, too, without the risk of disease. As an instance of this we might point to the management of the *Eucharis* at Kew. Here the plants are potted every two or three years, watered regularly all the year round, and never removed from a stove temperature. All of them flower twice or thrice a year, and flower well. A little liquid manure is given as soon as the flower-scapes appear. There is a plant of *E. grandiflora* in the T range which is now bearing eleven flower-scapes with from six to eight flowers on each, and about seventy healthy leaves, and all this from bulbs planted in a 10-inch pot. We believe this is the third time this specimen has flowered in thirteen months. Planted out in the beds in the Palm house and left pretty much to themselves, the bulbs of this *Eucharis* do not suffer either from shade or the often excessive waterings which are required by the Palms, under whose shade the *Eucharis* grows. We are told that the *Eucharis* disease has never been seen amongst the Kew plants, and it would appear from this that the cause of such disease is to be found in the "hard driving" practised by some growers. There can be no question that for some plants at least attempts to make them do more than Nature made them to do generally results in their injury.—B.

GARDEN TOPICS.

British Apples.—I see the quidnuncs are determined to evolve a controversy on "geology" out of Mr. Barron's book, which reveals, as far as it goes, how little the "formations" have got to do with Apple culture. For example, here are some observations and "exhibitors' remarks" tabulated by Mr. Barron: "Fruit of fair quality; some examples very fine; situation, a high level well exposed; soil good, clayey to a great depth."—"Fruit of fair size"; some examples "wonderfully fine, grown in sheltered orchards; soil, a sandy loam, on the upper greensand."—"Very large and beautifully coloured examples; situation exposed; soil partly loam, marl, and red pebbly pinnock."—"Samples "of fine handsome appearance; soil a brick loam; subsoil blue clay."—"Examples large, clean, and well grown; soil, loam on gravel."—"A remarkably fine collection; soil, light loam on sandy subsoil."—"Examples very well grown"; some sorts "specially fine"; soil "strong with a clay subsoil."—"A very instructive contribution, containing many fine old standard Apples of the country; soil, a clay, both soil and subsoil in all cases."—"An extremely interesting collection; soil, alluvium on blue lias marl beds"—and so on throughout the book, showing both good and bad examples from all sorts

of soils and from all "formations," whether "igneous" or "sedimentary," or, to be more specific and scientific, volcanic, trappean, granitic, aqueous, ærial, chemical, or organic. In short, British Apples have not left the geological fad-dists a leg to stand upon, but tell the Apple grower that if he will only insure good culture, geology is the very last subject he need trouble his head about. The idea of complaining of the report because it did not introduce such subjects as Miller's "*Pterichthys Milleri*," the Java earthquake, and other "pomological" topics of the same sort indicates critical acumen of an exalted order.

Cottage gardening in the north.—"J. G.," Gosport, says (p. 65) that "clergymen from northern and manufacturing districts who come to the Isle of Wight bewail the backward condition of floriculture among their parishioners as compared with what they find associated with the humblest cottage in the south." I daresay clergymen whose charges lie among the crowded streets and alleys of "manufacturing" towns will discern some difference in the floral treasures of the gardens of the two places; but how anyone could think of comparing the garden of the "humble cottage" in the Isle of Wight with gardens in the north under such circumstances, and to the disadvantage of their cultivators, beats one's comprehension. It is not true, however—far from it—that the southern cottager beats the labourer and artisan of the north. In and around every large town and village in the midlands and north of England—even in the most thickly populated colliery districts—the cottage gardening—floral, vegetable, or fruit—is of the highest order to be met with anywhere, and the fact has been testified to at shows and elsewhere a hundred times.

Double white Primulas.—It is a fact known to the growers of these pretty greenhouse plants that their propagation is the most ticklish part of their culture. No doubt there is a right and a wrong way of going to work, but under any circumstances great care is necessary. One gardener, in a "single-handed place," is the most expert hand at the task we know of. First, he does not permit the plants to exhaust themselves too much in flowering; next, he trims the bottom leaves off the shoots to be detached and allows the wounds to heal; then he takes off the cuttings and dries the wounds; and, lastly, pots them singly in small pots and plunges them in that dependable old ally of the thrifty gardener from time immemorial—a manure frame. He had the best stock lately of some of the most tender varieties, when the expert propagator at a large nursery had to lament the loss of nearly the whole of his "set" which he had from the raiser. Another propagator we know succeeds well also by trimming away the lower leaves and encouraging the offsets to root into Moss placed at their base, detaching them afterwards.

The Eucharis disease.—Is this a fiction? or is there really a disease of the destructive nature we have heard of lately? We have a houseful of fine plants that we have grown constantly in a warm stove for twenty years, and our predecessor grew the plants from which our stock is derived in the same manner before that time, and as yet the plants have escaped the disease, but several visitors have cautioned us to beware of it, and describe it as malignant in its effects. We have seen plenty of unhealthy plants in the past exhibiting symptoms such as we have read of lately, but the appearances were not new, and were attributable to bad culture. I fear "the disease" is not new. There is such a diversity of practice in the culture of the *Eucharis*, that we need not be surprised at hearing of disease. The worst specimens we have seen have been plants grown on the "cool" resting system. Plants grown in a moderate stove temperature in good loam, pots well drained, and not subjected to a higher bottom heat than the mean temperature of the air of the house, never fail to grow well and flower, as regularly as the *Daffodil*, in autumn—a few stray flowers continuing to appear here and there throughout the year. It is now about time to pot the bulbs, and the best

should be selected and potted together, according to the size of the specimen wanted; but annual potting is neither necessary nor desirable, as established bulbs always bloom best. Weak or diseased bulbs will not, however, quite recover in one season.

J. S. W.

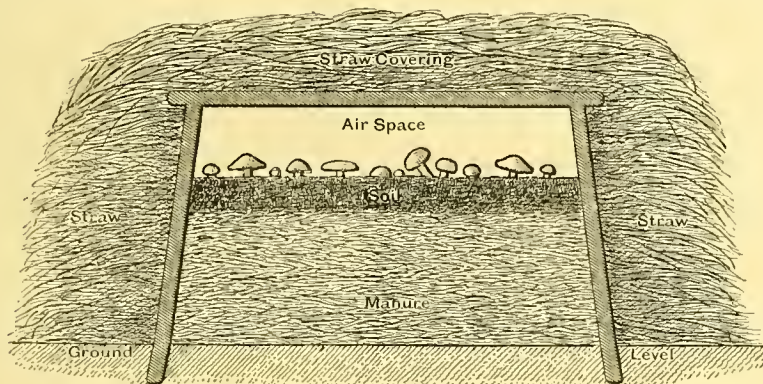
KITCHEN GARDEN.

MUSHROOM FAILURES.

MUSHROOM culture, though generally interesting and pleasurable, is not unfrequently a source of much anxiety to those engaged in it. Failures will occur, and that, too, at a time when perhaps Mushrooms are in great request; but why they should occur appears inexplicable, seeing that there has been no apparent deviation from the usual successful routine. The manure is sometimes considered at fault; in others the spawn is condemned; and doubtless rightly so at times in both cases. The quality of the manure obtained from stables where many Carrots are regularly given to the horses is generally admitted to be inferior or unsuited for making into Mushroom beds, neither do experienced growers care to use manure when the horses are in ill health. Personally, I have never had good cause to complain of ill effects

the walls and floors becoming too dry, or at the most twice a week is quite often enough to damp them. A high temperature with or without much moisture is most injurious, and should therefore be carefully guarded against. In order to further lessen the need of syringing so frequently, and also to better preserve the heat of the beds, it is a good plan to cover them closely with shutters, or directly after they are spawned and soiled with dry loose hay. The latter we use, and nothing could answer better. Cold draughts should also be carefully guarded against, this, in fact, being more necessary than the exclusion of light. When the beds are becoming rather dry we at once heavily syringe them with warm water sufficiently to moisten them again, the hay being carefully returned and always kept dry. One person only should have anything to do with the beds after they are once formed, and he should also gather the Mushrooms, as he best knows where to find them every day without upsetting all the litter.

OTHER CAUSES OF FAILURE I shall touch upon are, I believe, much less frequent, but are yet of sufficient importance to merit discussion. The old custom of spreading the droppings thinly in an open shed, in order to thoroughly dry them prior to the formation of the bed, is still persisted in by some, the droppings becoming so dry and hard



Section of open air Mushroom bed.

attending the latter occurrence, as it rarely happens that all the horses are under medical treatment, and I believe that when the manure is properly fermented and prepared, much or all that might provenoxious is evaporated. Where all or the majority of the horses are being fed on Carrots the droppings are not sufficiently cohesive and durable, and though this may be obviated somewhat by retaining a considerable quantity of short, strawy litter with the manure, a profitable crop of Mushrooms cannot reasonably be anticipated. There are, however, other causes of failure, and as I have been responsible for a few, my experience should prove instructive. According to my experience, more beds are spoiled from over-anxiety to succeed than from any other cause. Those in charge of the Mushroom house—this seldom being the head gardener, and who is unaware of all that is done—are frequently in the habit of doing too much, and especially with the syringe. One or more cans of water are daily distributed over the beds and about the house, and occasionally one of the beds that ought to be in full bearing gets an extra dose. When the manure retains its heat, little or no harm, perhaps, is done, but should it have become comparatively cold there is no evaporation going on, and the soil gradually becomes cold and much too moist, the result being the destruction of both the spawn and embryo Mushrooms. The latter may, perhaps, attain the size of a marble, then become soft and brown, to the no small consternation of those in charge. In the majority of cases I am confident there is no necessity for these daily syringings. A dry heat would certainly be injurious, but if the fire-heat is kept, as it ought to be after the first bed is in bearing, at about 55°, or even less, there is little danger of

as to remain intact even after the beds are broken up. Manure prepared in this manner contains sufficient moisture to generate heat, and it may be taken possession of by the spawn, but the crop of Mushrooms is certain to be poor, both as regards quantity and quality. The proper way to prepare the manure was recently well described in the pages of THE GARDEN, but will, I think, bear repetition. It should be collected daily or as frequently as possible, and not allowed to remain in the heap of litter, where it is liable to be much injured, or perhaps spoilt, in a very short time from over-heating. It should be stored rather thinly in an open shed, and when sufficient is collected to form a bed it should all be thrown into a heap. Directly it is found to be very hot, and before the centre has heated dry, the heap should be turned inside out. This should be repeated three or four times, and in this manner the whole will be sweetened and yet be fairly moist. Thus prepared, the beds when well rammed down need not be more than 9 inches deep in front and 12 inches at the back; but with inferior or dry and partially exhausted manure, which some growers have unavoidably to deal with, I would increase the depth of the beds by at least another 3 inches. The aim should be to secure a good, lasting, but not violent heat, and without which the crop will either be a failure or a very thin one. Where inferior or badly prepared materials are used the heat of the bed is apt to decline to below 60° before the mycelium has taken possession of the beds, and whenever this happens with us we form a hotbed where practicable, with rough stable manure directly under it, and this is renewed when necessary. We also adopt this plan when we are anxious to hasten a crop, and it

never fails, neither does it injure other beds in the same house. For the past month we have been gathering Mushrooms daily from a bed thus treated, and which without such attention would doubtless have been a failure. We spawn our beds directly the heat has declined to about 80° and usually mould over at once, this raising the heat considerably, though not to an injurious extent. The longer the beds retain their heat, provided they do not become dry, the better will be the crop and quality of the Mushrooms. When the beds are formed before the manure has been properly prepared, or when it is prepared in the open and unavoidably becomes wet and cold, there is sure to be much steam generated directly fermentation commences, and in this case unless great care is taken the spawn may easily be spoilt. In my time I have formed, according to orders, several beds with moist manure, and the spawning being also carried out at the stated time and in the usual manner, failures were the rule. Now, if I found much steam abounded, the manure would either be again formed into a heap till some of it had evaporated, or holes would be dibbled over the bed, and this would allow much of it to escape, spawning being deferred for about a week.

SPAWNING AND SOILING the beds are two details, the carrying out of which materially affects the value of the crops. Many still form the holes for the pieces of spawn with dibbles, or at any rate if they are not used, the change has been effected within the past six years. With tolerably dry manure no harm may accrue, but when much steam is given off these very holes, and which the spawn stops, but does not fill, are naturally outlets for the steam, this proving most destructive to the spawn. We find it the safest plan to make shallow holes either with the hands or with a trowel, and use lumps of spawn about 2 inches square, disposing them about 5 inches apart each way. From such pieces of spawn we obtain fine clusters of Mushrooms, frequently ranging from a dozen large ones to double that number of smaller ones. Larger pieces of spawn produce too many Mushrooms, one piece 4 inches square and put in by way of experiment having just resulted in the production of a cluster of fifty buttons. More also depends upon the nature of the soil used for surfacing the beds than many are aware of. At one time we were obliged to use poor clayey loam, but lately we have been fortunate in procuring much lighter and better soil, and we, in consequence, have been much more successful with our Mushrooms. What suits Cucumbers also suits Mushrooms, but good Melon soil is usually too poor and heavy. Where possible, it should be procured from high and naturally well-drained pasture land, and either taken from immediately below the thinly pared turf and used at once, or the turf itself be cut and stacked for several months in common with the potting soil. When used it should be broken up finely, be kept fairly dry, and placed in the Mushroom house if very cold in order to warm it somewhat. We prefer to use a good thickness of it, or not less than 2 inches when beaten down, and never water the surface, as it is beaten in order to make it run together, as I consider this practice both unnecessary and injurious. Neither do I approve of waiting a week or more after spawning before we soil the beds, but prefer to do it directly after spawning, and thus avoid any disturbance to the bed and the interruption of the spread of the spawn. It should be borne in mind that the spawn takes possession of the soil and a good thickness of it being less liable to become injuriously dry, also insures the production of larger Mushrooms.

W. I. M.

OUTDOOR MUSHROOM BEDS.

IN gardens where there is not the convenience of a Mushroom house it sometimes becomes necessary to obtain a supply of this favourite esculent from beds of manure in the open air. As usually constructed, these beds are ridge-shaped, and are covered with straw or loose litter, but our engraving shows a simple plan of making up Mushroom beds in the open air by the aid of old doors or

shutters. The sides and ends of the bed are boarded up as here shown, and after the spawn is introduced the top is closed in with shutters or boards, and the whole is covered up with straw in the usual way. The beds may of course be of any convenient size, and by removing the boards at the top the progress of the crop can be readily examined. Even an intelligent cottager might add to his income by growing Mushrooms in the way here indicated, and a plan so simple and economical might prove serviceable also in gardens of greater pretensions. F. W. B.

THE MOST PROFITABLE PEAS.

ALLOW us to put "W. I. M." right in one or two matters respecting our Peas. Is he aware of the height that such Peas as Prizetaker, Hundredfold, Dickson's Favourite, and half-a-dozen others which we could name attain, and yet are grown very largely by market gardeners for market? Does he know that the kinds just alluded to grow the same height and in some cases perhaps even higher than Telegraph and Telephone? Is he aware that the height of a Pea grown in a highly cultivated garden bears no comparison with that of the same Pea grown as an ordinary field crop? That is to say, Telegraph growing 4 feet or 5 feet high in a richly cultivated garden would in all probability not grow more than half that height as a field crop. If "W. I. M." will remind us during the coming summer we will take him down into Sussex, where he will see acres of Stratagem being grown for the Brighton market, and where people will not have any other variety if they can help it. We can also take him into Yorkshire, where he can see probably a hundred acres of Telegraph in one district. Facts such as these are of greater value than any amount of correspondence that can be brought into the columns of THE GARDEN. We are sorry if we have misinterpreted "W. I. M.'s" intention, but it certainly did appear to us that his remarks—at least their effect—were in the direction we have indicated. In our previous communication we suggested that "W. I. M." might have been unfortunate in the supplies which he had obtained of the Peas in question, and as he now says that any seedsman in the country may supply them, it is just possible that he may have been served with the wrong varieties. We cannot admit that the fact of "W. I. M." having grown our new Peas from the date of the introduction of Telegraph is any evidence that he is in a position to condemn them. At any rate he must have been very careless in his observations up to this date, or surely it could never have required him to have eight years' experience to arrive at the conclusion at which he has reached. If "W. I. M." will come to our trial grounds in the summer time, where one variety of Pea is treated equally with another, we shall be able to show him that our four new Peas can take care of themselves under ordinary cultivation and without the "extra trouble and trenching with turf and manure," or "preparing as for Celery," as he suggests, and we cannot help thinking that "W. I. M." is unfair in this portion of his remarks, because he has omitted to add that the extra cultivation such as he suggests is only resorted to by cultivators who want to produce extra fine specimens for purposes of exhibition, and that the same treatment is as necessary with any other variety of Pea that he has named as with ours. We have never intended it to be understood that we considered it necessary that all four varieties should be grown; on the contrary, when we are solicited for an opinion, we say, "Try the four, and make a selection of those which suit you best." "W. I. M." says "that at first Pride of the Market did very well, but afterwards came down to the level of the rest." We are curious to know in what year and at what period this downfall took place, because if we are right in our ideas, Pride of the Market is the very latest introduction we have made, and has not yet been produced in sufficient quantities to have had a fair trial in the hands of market growers generally. It is, however, each year making rapid headway, and until we see a communication from a responsible market salesman condemning this Pea, we shall

maintain the high opinion we have always had of it. We had hoped that some market growers would have given your readers the benefit of their experience. We feel sure that "W. I. M." will take our remarks in the spirit in which they are intended; we have the utmost confidence in his good faith, recognising that he will be as anxious as ourselves to be put right if he finds that he is wrong.—JAMES CARTER & Co.

"W. I. M." (p. 69) asks me to give him a clearer idea of the space my neighbour devoted to Peas and what he sold and the sum he cleared, but these questions I cannot answer, as no record was kept. Culverwell's large Peas, however, produced such heavy crops and the bid for them was so good, that he determined to make money of them in a green state. The Peas in question were all sold in pecks of 8 lbs. at 1s. 10d. per peck to sell again. Day's Sunrise and others named by your correspondent only brought 11d. per peck. "W. I. M." recommends Dr. McLean, Marvel, and Gladiator. I have grown them all once, and as they required sticks I shall grow them no more. Dr. McLean is a good cropper and no doubt good for market work, but to me it is a bad flavoured Pea. "W. I. M." asks if "A Pea Grower" seriously asserts that the big Peas can grow double the quantity produced by Champion of England and Huntingdonian. If I said quantity, I will now correct myself and say weight; either before shelling or after they are shelled, I have no hesitation in saying I can do so. I think "J. C. C." cannot be serious in his remarks (p. 69); if he is, I would advise him to go northward to see Peas grown to perfection. I cannot say that I ever saw Peas grown in his part of the country that pleased me, and they have been my study for years. Lord Bolton's gardener, Mr. Hall, is a reader of THE GARDEN and, I hear, a great grower of Culverwell's big Peas. I hope, therefore, that he will give us his experience in regard to them, and also how he grows them.—A PEA GROWER.

I cannot understand "J. C. C.'s" statement that Telephone and Stratagem are not sufficiently high in quality. If by quality he means flavour, I can assert that Stratagem is the sweetest flavoured Pea I ever tasted, and so says my employer. A neighbour of mine—a market grower—has given up growing Dr. McLean, Champion of England, and other varieties in favour of Telephone and Stratagem, and so convinced was my employer of the superiority of these two latter varieties, that he bought a supply of them for his own use, and ordered the other two to be used in the servants' hall. A neighbouring gardener grew Telephone last year for the first time, and his employer, who is a good judge of vegetables, says it is the best flavoured Pea he ever tasted, and he intends growing it largely this season in preference to such varieties as Veitch's Perfection, British Queen, and others. He grows Ne Plus Ultra for a late supply. I find that Telephone and Stratagem are juicy and sweet at an age when other reputed good Peas are quite uneatable.—D. D. T., Great Yarmouth.

NEW KINDS OF POTATOES.

IN reference to the remarks lately made in THE GARDEN anent new kinds of Potatoes, allow me to say that, knowing something of the work undertaken by the seedling committee of the International Potato Show, I can aver that not a kind passes muster, or obtains the highest number of marks, unless it be good at all points and is really a first-class variety. When from some sixty to eighty kinds, all in their raiser's estimation of high merit, after all perhaps not more than half a dozen are awarded certificates of merit, it must not be at all assumed that the few selected prove the mediocre character of the many. It rather shows that now we have a much higher standard of merit than we had a few years ago; indeed, many that received a lesser number of marks than the maximum are kinds that not so long since would have been regarded as first-rate. One of the most remarkable facts connected with new kinds of Potatoes is the comparative absence of Americans.

Surely if anything were needed to prove how much our home raisers have progressed, it is found in the undoubted fact that England now offers no profitable market for American Potatoes. Let us see what this Seedling Potato Committee does. It first directs that before any seedling kind can be entitled to receive a certificate of merit a certain number of tubers must be sent to the Royal Horticultural Gardens at Chiswick and there grown during the summer. Thus the committee at once secures a central place for trial. Potatoes have been grown in large quantities and in myriads of kinds at Chiswick for the past twelve years or longer, and there is hardly a kind in commerce that has not been through the Chiswick ordeal. Of course, it does not follow that kinds which have not there done well have been withheld from trade. That could not be helped, but at least it has been possible to give a sort of hall-mark to kinds that prove to be truly meritorious. In previous years the work of testing new kinds of Potatoes was performed at Chiswick by members of the trial committee only; but since the council has given permission to the International Potato show committee to grow their seedling kinds there, the supervision has taken a much more practical form, especially in relation to those seedlings which come under the notice of the latter committee. The earlier stages of the growth of the Potato enable experts to make comparisons as to habit and distinctness, or otherwise the lifting is done twice or thrice as necessity and the habit of the sort may require; but the marks are awarded, first, for crop as thrown out on to the ground; second, for average sample, inclusive of form and evenness; and thirdly, for tuber quality when cooked, such quality to include not only agreeable flavour, but also that dry mealy character without which no Potato can be popular. The Chiswick soil is not the best in the kingdom for the production of high table quality, and, therefore, when any kind cooked as soon as lifted, and often almost ere quite ripe, turns out really first-rate on the table, and has obtained the highest number of marks on the ground, it must be a first-class sort admittedly, let people say what they may. No other Potatoes, and, farther, no other vegetables, are passed through so trying an ordeal as seedling Potatoes are at Chiswick.

Those who have been privileged to share in the labours of testing admit that the work is exceedingly interesting; still farther, they will assert that only those who have had some such training are qualified to pass an authoritative opinion. The home grower or raiser doubtless thinks his productions the best. At Chiswick, perhaps, it is found they are a long way behindhand. White kinds now predominate largely over coloured ones, as these latter have but a limited sale, let their quality be ever so good. In these early cooking trials coloured kinds suffer somewhat because they are seldom ripe enough to have their skins fully removed, and some little discoloration follows; however, allowance must be made for that. That so many of the new kinds have white skins would seem to show that raisers are ambitious to introduce really popular market sorts. On the question of raising disease-resisting kinds it is not now worth while to enter, but it may be stated that no kind which exhibits disease is further tested. On the other hand, the past few years have been so favourable for Potatoes that disease has been rare, and no considerable opportunity has offered itself for observations on that head. Still, it is a matter of belief on the part of those who conduct these trials and adjudicate upon the merits of the seedlings that improved new kinds are now gradually wearing down that which was once thought to be a perpetual disease.—A. D.

I am far from wishing to check the onward movement in any branch of horticulture, and I am as ready as anyone to welcome any real improvement effected, especially in the vegetable line, but it does not follow that a few or many interested persons are to be allowed to dictate. Everything soon finds its level, and doubtless we may safely

leave the matter to the good judgment of practical cultivators to discard worthless novelties or doubtful improvements. I hold that more new varieties, or varieties with new names, are being added to the already much too long list of Potatoes than to any other sort of vegetable, and if we are to have about eight newly certificated sorts, besides many that do not secure these awards, annually added, the confusion will become worse confounded. Many of us might safely grow one-third of the catalogued varieties of various vegetables without much confusion or injury to the regular supply of good vegetables for the table, but what if we attempt to grow one-third of the sorts of Potatoes now to be found in the lists? "A. D." seems very positive that great strides have been made during the past few years in the improvement of Potatoes, but how is it we hear and read of really good cultivators who after having tried sixty or more varieties, including most of the leading novelties, reducing their lists of sorts worthy of culture to less than six? That does not say much for the improvement effected. Again, of what value are the certificates that are awarded to sorts tried for one year only? One season they may be all that is good—heavy cropping, disease-resisting, and good in quality—and yet during a less favourable season they may be found utterly wanting in at least the two most important essentials. It is here where the weakness of "A. D.'s" argument is most apparent, and he evidently feels that himself, or why does he add that "perhaps the committee are fortunate in having those to grow Potatoes," meaning the new sorts, "who can do so?" Apparently these so-called improvements require special culture to bring out the qualities for which they are to be prized, and that is the true reason why so many of us fail to appreciate them.—W. I. M.

FRUIT GARDEN.

CHERRIES.

IN Kent and the lower parts of Hertfordshire Cherries are largely grown as standards in orchards, but in gardens they are generally trained to walls, not so much, perhaps, for the sake of shelter as to have them in a position where the fruit can be protected from birds. My intention now, however, is to have something to say about varieties before the season for planting gets further advanced. Taking the earliest first, the one I would recommend is Governor Wood, which is a most prolific kind, and bears medium-sized fruit of a pale yellowish white, suffused with colour on the side next to the sun, the juice, of which this Cherry is full, being very sweet and delicious. The next to ripen after this is the Frogmore Bigarreau, which is a little larger and brighter than the foregoing, and, like the old Bigarreau, of exquisite flavour. Black Eagle and Knight's Early Black come in quickly after, the first named, being a small kind with very black shining fruit, that is sweet and agreeable, and Knight's is the same in colour, but much larger, and not equal in flavour, as it is more fleshy and less sweet in the juice. To come in after these none are equal to the Elton, which is the most showy and best of all Cherries, as the fruit is large and high coloured and very rich in the flesh. As a black companion to this, ripening at the same time, the Tartarian is the best, the fruit being large and conical and deep blue-black in colour. Although there are many others of the dessert kinds, those mentioned above are the most distinct and desirable, and for cooking, till the Morellos come in, none are equal to the May Duke, which is a prodigious bearer, and the fruit will hang a long time. The Morello is quite indispensable, and is the most serviceable of all Cherries, as it may be used in such a variety of ways, and its season is a prolonged one, as by keeping the trees dry the fruit will remain sound and good till very late in the autumn, and the longer, in reason, it remains, the better it is. To have it to the period referred to, it is necessary to train the trees to a wall or fence, that with a north, north-west, or north-east aspect

being the most suitable, and if the young shoots are allowed a little freedom to grow out as breast-wood, much time will be saved in tying them in, and they will bear heavily and keep cleaner and more free from insects through the washing they get. Morello Cherries also do remarkably well grown as dwarf standards or loose espaliers, with the main branches just held to strained wires, which is a good plan of growing them, as they may be protected easily when in flower or fruit—in the first case, by sticking a few evergreen branches along their sides, and in the latter by dropping nets over the tops. All Morello Cherries require in the way of pruning, when grown loosely, is just an annual thinning out to prevent them becoming too dense, as, unlike the dessert sorts, they must not be spurred, or have the shoots stopped, but left to grow full length.

The most favourable situation for the dessert sorts is south-east or south-west, but it is always advisable to have some in different aspects, as when frost comes with wind from one quarter and kills the blossom, it often escapes in the other, and not only that, but a longer succession of fruit is maintained. To keep the spurs close to the wall, which is the only way of taking full advantage of the shelter, the shoots the trees make during the summer should be pinched back about the middle of July, when they will form fruit buds at the base. Although Cherries do fairly well in almost any soil, that of a light sandy nature suits them best, and, therefore, in planting the young trees, they should be started by having a barrow-load or so of sharp turfy loam to each, in which they will root and soon make some fine shoots. These ought to be laid in full length, and not stopped, or shortened at any time till they have filled the allotted space and met the others trained at their sides. For destroying green or black fly on the trees, to which insects they are very subject when the shoots are young and tender, there is nothing so safe as tobacco-water, in which the points may be dipped. S. D.

JUDGING GRAPES.

"J. C. C." (p. 41) regrets the want of a code of rules furnished by some competent tribunal to guide or assist those who take in hand or who have thrust upon them the judging of Grapes. He also says that "it should always be recollected that Grapes are grown to be eaten, and not to be looked at." With the latter assertion I can hardly quite agree. I think, indeed, that it may not be too much to say that Grapes are generally grown to be looked at as well as to be eaten. A good deal depends upon the outward aspect of many things, and this holds good in the matter of Grapes. A handsome dish of Black Alicante or other showy variety of Grape may be highly appreciated upon the dinner or the exhibition table, although their quality or flavour may not be first-rate. As regards a code of rules by which to adjudicate, however desirable that may be in some respects, its application would, I fear, in many cases be found to be difficult, as the judging of the merits of horticultural productions, including Grapes, will most likely continue to be more or less a matter of taste or opinion. Where the merits of competing productions appear to approach equality, most censors have recourse to the application of what are known as "points," and if the result of this application shows something like equality, the productions are consequently bracketed, or made equal. The following may be regarded as points or properties in such matters: 1, flavour; 2, colour; 3, size of berry; 4, size or weight of bunch; and 5, form of bunch. Where competing productions are all of one sort there is generally less difficulty in coming to a correct or just decision than in cases in which the competing exhibits are of various kinds, such as in the case to which "J. C. C." alludes, where such varieties as Alicante, Mrs. Pince's Black Muscat, and Black Hamburgh are made to contend for supremacy; or in the case of white Grapes, where such varieties as Muscat of Alexandria and Buckland Sweetwater are pitted against each other. Let us take the case of the Black Alicante and Mrs. Pince's Black Muscat, and

say that each exhibit in accordance with its kind had deserved and obtained each of the five points enumerated, viz., flavour, colour, size of berry, size of bunch, and symmetry or form of bunch; such a case is not unlikely to occur, and when it does so, to which production ought the judges to award the prize? Placing the two productions upon their individual merits, irrespective of kinds, however well flavoured the Alicante might be, they would doubtless in this respect be surpassed by the Mrs. Pince variety; and with respect to colour, it is possible that they might be upon equality, and if so, it will be admitted that there is more credit due to the colouring of Mrs. Pince than to the colouring of the Alicante variety; while as regards the three remaining points, viz., size of berry, size of bunch, and the form or shape of bunch, it is not unlikely that the Alicante variety would have the advantage. With regard to white Grapes, it may certainly be said that, other things being equal, no white variety of Grape can successfully compete with the Muscat of Alexandria. So I think it would be very desirable if horticultural societies while framing their schedule of prizes could see their way to the introduction of additional classes as regards Grapes, so that Muscats might only compete with Muscats, Black Hamburgh with Black Hamburgh, &c.; while there could be little objection to such black varieties as the Alicante, Lady Downes, Gros Colman, &c., competing with each other; and possibly all white sorts, with the exception of Muscats, might do the same. P. G.

Bury St. Edmunds.

THE BEST APPLES.

TAKING the consensus of opinion throughout Great Britain, it would appear that King of the Pippins is the best dessert kind, but why it should have dethroned the Ribston I am at a loss to understand, as that has always been considered the standard of perfection, its only fault being that it is liable to spot in the skin and the tree to canker, although it does well and is quite free from those defects in some soils. In cases where the Ribston is found not to succeed, Cox's Orange should be tried, as this variety runs the other very close and is a remarkably free grower and bearer, making a quantity of young wood annually that becomes studded with buds. Another dessert Apple that stands high in popular favour is the Kerry Pippin, which is the very best in its season of ripening, and should always form one even of the most limited number. Blenheim Orange is good at all points, as the fruit is large, rich in colour, handsomely formed, and the tree grows vigorously, making a large spreading head, and when a little age is attained bears fine crops of fruit. If an earlier ripening Apple than Kerry Pippin is needed, which comes in during September, either Devonshire Quarrenden or Irish Peach should be chosen, as both are good, but not equal to the one mentioned above. Scarlet Nonpareil is a handsome, high-coloured, fine-flavoured fruit and the tree a good grower, and the same remarks apply to Court Pendu Plat, which invariably takes a place in all or most of the winning collections, and both have the merit of being very excellent keepers. For late work, to ripen after March, none are equal to the Sturmer Pippin, which, though not particularly showy, is of fair size and first-rate in flavour. Those enumerated will be found quite sufficient for even large places, as it is better to repeat them than to go in for numbers; but if more are desired, I should say take Claygate Pearmain, Fearn's Pippin, Herefordshire Pearmain, Worcester Pearmain, and Adam's Pearmain, which are all fine kinds and good.

KITCHEN SORTS.—The first fit for culinary use is Lord Suffield, which is of the Keswick type, but larger and better, as it is a splendid cooker and goes to pulp quickly. Following on the heels of this comes Warner's King, which is also a big weighty Apple, ovate in shape, and when ripe having a skin of a rich yellow colour. To succeed this none are equal to Blenheim Pippin, as, like the Ribston, not only is it first-class for dessert, but it is the best of the culinary kinds, and should

be largely planted, as, added to its many qualities, it is a capital keeper and improves by being laid up till the winter. Dumelow's Seedling or Wellington is an Apple in high favour for market purposes, but the acidity is a little too brisk for some, and yet for all that it is a very desirable variety and most prolific in habit, bearing large pale fruit, a little coloured next the sun, and very solid in texture, the season of ripening being from November to March. Mère de Ménage comes in about the same time, and is a remarkably handsome large sort, with red skin and darker streaks, the flesh being firm and briskly acid, but not so sharp as the one mentioned above. Alfriston is also a late keeper and a good bearer, the fruit being large and of a light orange shade, with flesh pleasantly mixed with sugar and acid. Beauty of Kent is also a very desirable kind, and so is Bedfordshire Foundling, both being large and first-rate in quality. If more than the above named are required, Cox's Pomona, Waltham Abbey Seedling, New Hawthornden, Golden Noble, and Tower of Glamis may be added, but, as remarked before, it is better to have more of one kind than to plant too many sorts, as they are only a trouble in storing.

For growing in exposed places there is nothing like low bushes, which are more out of the wind, and if planted moderately thick they help to shelter each other. In gardens of circumscribed space it is a good plan to grow the trees as espaliers or cordons trained to strained wires, as then, by having them at the backs of borders or near the margins of walks, they take up but little room and look very neat, besides which they are easy to manage, as they can be got at readily for the summer stopping of the shoots and the gathering of the fruit, which, from being so fully exposed, colours well and is of good flavour. For trees of the description referred to the Paradise stock is the best, as it has a dwarfing tendency, thus checking the growth and production of wood, which other stocks of a more free nature force. For orchards the Crab is generally preferred, and where the soil is at all stiff and suitable it answers better than seedling Apples, which vary considerably according to the fruit the pips are saved from, but in a general way they make excellent stocks. Bushes, like espaliers, require summer pinching or stopping, but all that is needed for standards is timely thinning of the branches by taking out all that cross each other, or crowd in such a manner as to make the top thick and shut out the sun.

What injures Apple trees more than anything else is the American blight, which is the most frequent, if not the entire, cause of canker, and should be eradicated at all costs, the easiest way of getting rid of it being to brush paraffin and water into the affected parts; the penetrating nature of this oil is so great, that it strikes right through the insects and seems to dissolve them. The next injurious parasite to the bug mentioned is Moss, which may be got rid of in a very easy way, as all that is necessary to kill it is to syringe the trees with hot limewash, which quickly destroys all life in the Moss, and after that is dead the two fall off the bark and leave it quite clean. The way to manage is to procure fresh lumps of lime and slake them in a large vessel, adding water sufficient to reduce it to the consistency of thin paint, when it should be strained through a fine sieve before using to take out the lumps. Trees of bad kinds or that do not suit the district, or are unsatisfactory, should be cut back and grafted with known good sorts, the proper time for doing which is in March, and the way to work them is to put the scion under the bark, after having made a slit and raised it from the wood by inserting a piece of smooth stick under it shaped like the graft, when this may be pushed into its place without any bruising. The next thing is to tie it securely by running a few strands of matting round, when the whole of the part should be covered with clay and cow manure mixed, and this ought to be bound over with Moss to keep it from cracking and letting air into the graft. With regard to planting, that is an opera-

tion that cannot well be carried out too early, and the sooner young trees are moved, after the fall of the leaf, the better it is for them, as when the ground is warm they make root at once and get nice hold before winter sets in. The proverb says "that anything that is worth doing at all is worth doing well," and this applies with strong force to the planting of all trees, as so much depends on the first start they get; that being so, the holes to receive them should be made large and deep and if possible new soil added, the best for the purpose being fresh maiden loam, a barrowload or so of which will do much for each plant. Many depend on manure, but unless the land is very poor it is not a wise plan to apply it, and it is far safer to use it on the top as a mulching, where it not only does good by enriching the earth below, but keeps out frost, and by husbanding warmth and moisture encourages root action. The practice of heading young trees back cannot be too strongly condemned, but though it has been written against time after time it still prevails; I have just seen a lot wretchedly mutilated and have been told of others treated the same. It is said to be done to make them break back, but everyone who has seen a tree ought to know that the buds do not require such persuasive force, as they start ready enough if the planting is right, and the more leaf and top they make the quicker they become established and bear fruit. S. D.

Noire de Montreuil Peach.—What "Byfleet" has written upon Peach culture at Montreuil is by no means the least interesting of a very valuable series of notes. I should like to ask him if Noire de Montreuil is really synonymous with the variety that is commonly grown for Bellegarde. The gardener at Meikleour, in Perthshire (Mr. Mathieson), has a large tree 39 feet broad under the former name. He states emphatically that its fruit can be distinguished at a glance from that of Bellegarde. The tree in question came direct from Montreuil. Mr. Rivers in his fruit list says that he has the true Bellegarde with an almost black cheek, otherwise Noire de Montreuil. In the list of Peaches grown at Montreuil "Byfleet" includes Blondeau. The others he mentions are familiar names. I should be glad if he would be kind enough to give some information about this variety, and also of Marquise de Brissac if it has come under his cognisance.—C. A. M. C.

Currants and Gooseberries.—How seldom do we find these grown on stems high enough to keep their fruit clean, and especially is this so with Gooseberries, which are naturally drooping. To prevent this the plants should be furnished with longer legs while young, i.e., when the cuttings are made. They should be as straight and long as possible, and if they cannot be got to the height required, the best shoot they make in the spring should be staked and led up straight till it has reached the desired length; it may then be stopped to cause it to branch out and form the head on which to bear the next season's fruit. The most suitable height for the plants to stand without support is about 2 feet, but even at that height they may require some assistance till the stems get strong, as while in leaf the wind has great power on bushes. A good plan of growing Gooseberries, in order to keep them well up from the ground, is to tie the branches to strained wires, and train them espalier fashion, a way in which the fruit is well exposed to the sun and very easy to pick, as it may be got at from both sides of the rows without having to thrust the hand among thick shoots full of sharp spines. Currants of the Red and White kinds are more amenable to standard training than Gooseberries. Nothing is, however, gained by having them too high, as they are then more difficult to protect, and they must have stakes to keep them erect. Many experience great difficulty, even during the winter, in keeping birds off the buds; sparrows often pick them out, and in that way do great damage. The way in which we protect ours is to syringe limewash over them. This not only preserves the buds from the attacks of feathered

depredators, but frees the bark of the bushes from all Moss, and makes them clean and healthy for the rest of the year.—S. D.

GARDEN FLORA.

PLATE 478.

HIBISCUS GRANDIFLORUS.*

OF the beauty of this species but little need be said, as it is well represented in the accompanying plate. It is a native of the saline marshes of Georgia and Florida, where its stems rise some 3 feet in height. The upper leaves, which are triangular or cordate, are three-lobed and soft and downy on both sides; the lower ones are broadly ovate and cordate. The pods are very hirsute, but the seeds are smooth. Mr. Stevens, with whom this plant flowered well last year, also cultivates a white variety of it. The other perennial species are as follow:—

H. MOSCHEUTOS.—This, like *H. grandiflorus*, is very ornamental, but though hardly rarely flowers without the aid of artificial heat. Its flowers, which are large, are white with a purple centre, or pale pinkish purple. The stigmas are large and globose. From *H. palustris* it is distinguished by having generally the pedicels united at the base with the petioles; indeed, the two kinds are sufficiently distinct for our purpose, though Prof. A. Gray has reduced them to one species. Mr. W. B. Hemsley follows this reduction in *THE GARDEN*, Vol. XVI., p. 486, but Mr. B. Daydon Jackson considers them botanically distinct. The leaves of this plant are decidedly lanceolate; the upper surface nearly glabrous, and the lower one covered with fine hairs. A pale purple form, figured as *H. palustris* in the *Botanical Magazine*, t. 882, has leaves described as oval acuminate. The capsule is glabrous. The specimen just alluded to appears to have flowered in the stove, as it is said Mr. Colville, with whom it flowered, informs us that, finding it did not thrive in the greenhouse, he put it in the stove. It grows from 3 feet to 5 feet high, and is a native of North America, from New York to Carolina, being found plentifully around the salt lake of Onondago.

H. PALUSTRIS.—This is similar to the last, but the flower-stalks are free from the petioles, and the leaves, which are more broadly ovate, have a rougher pubescence, and are more nearly the same on both surfaces. They incline to be three-lobed, but the lower leaves of both *H. moscheutos* and *H. roseus* have also the same tendency. The peduncles are articulated above the middle. The flowers, which are very showy, are described as rose-coloured, white, and yellowish. Its native habitat ranges from Canada to Carolina.

H. ROSEUS.—This appears to be quite distinct from the two preceding kinds, but of the two it comes nearest to *H. palustris*, of which it may be regarded as a variety. The leaves are like those of *H. palustris*, but rather more cordate, and, as in that kind, the peduncles are free from the petioles and articulated above the middle. As figured in the *Botanist*, the flowers are of a beautiful pale rose colour. It is a native of Gascony, and grows on the banks of the river Adour, but it is possibly an early introduction from North America, as Prof. Gray believes it to be. It is found also in Tuscany, and its having become established in Europe, whether introduced or not, is interesting.

H. INCANUS.—This has been introduced, but I have no note of any figure of it, and I have not seen the plant. The leaves, which are ovate, acuminate, and serrated, are covered with grey short hairs. The flowers are large and yellow in colour, and supported on stalks articulated about the middle. It is a native of Carolina.

H. MILITARIS.—An ornamental species with white or flesh-coloured flowers 4 inches or 5 inches in diameter, having a red centre. The

* Drawn in Mr. Joseph Stevens' garden, at Byfleet, Surrey, in September.



HIBISCUS GRANDIFLORUS

lower leaves are three-lobed, ovate, heart-shaped and toothed, the upper ones halberd-shaped with short lateral lobes, the middle lobe prolonged and taper-pointed and much the largest. The seeds are hairy, but otherwise the plant is smooth throughout. It is tolerably hardy, but the flowers do not come to perfection without artificial heat. A figure of it is given in the *Botanical Magazine*, t. 2385, where it is said that it should be kept in a pot in the greenhouse during winter and re-

The species of *Hibiscus* just named belong to the section *Abelmoschus*, and include all the perennial kinds described in De Candolle's "*Prodromus*," with the exception of one which he calls *H. aquaticus*, which is probably not distinct; indeed, I have little doubt that it is *H. roseus*, though in the description it is not said to have cordate leaves; the pedicels are articulated near the base instead of above the middle and the flowers are white, but De Candolle does not say that *H.*

militaris appear in each case to have been drawn from specimens grown in heat. As ordinary border plants they appear to be of no use whatever, but as they are so fine and showy, expedients are worth resorting to for flowering them. Moisture must be ensured, and probably, unless grown in pots in the greenhouse or stove, as was done by the older cultivators, the best position is in the open ground against a south wall, where lights can be set up to forward their growth and protect them from cold and rainy nights. Those having a good border in a light greenhouse or conservatory should not fail to plant out every kind obtainable. They would most likely flower when established.
R. IRWIN LYNCH.

NOTES.

Flowers of winter.—We can never hope to rival the sunny south of Europe, and yet there are but few days in the year after all on which one may not pick a few flowers and green leaves for indoor ornament from our northern gardens. We may not have Tea Roses, Heliotrope, Anemones, sulphur-coloured and white Marguerites, Narcissus, and the other sweet or lovely flowers which come from Nice or Cannes, but we may have pure white Christmas Roses and Violets, and during fine open weather in mild districts even Anemones will bloom. Japan Allspice is tolerably certain, and near the sea Veronicas go on blooming long after the *Chrysanthemum* has paid its golden dues right nobly. There is scarcely a fairer flower on earth in its way than the Algerian *Iris stylosa* when plucked in the bud stage and allowed to open indoors, and after all there is a charm about outdoor blossoms which forced exotics do not possess.

Christmas Roses.—Of all outdoor flowers these are now the fairest, and, being well established, yield plenty of flowers and buds for indoor use. *Helleborus altifolius* is getting over, but *H. niger angustifolius* is at its best; so also is *H. niger scoticus*, which in some ways is intermediate between the two last named. Arranged in big bowls along with leaves of the Portugal Laurel these flowers are very effective, and although I cannot lay my hands on any evidence in books of their being sweet as well as fair, yet they exhale a delicate odour when brought into a warm room. Their fragrance is by no means pronounced, but it is fresh and not unlike that of Cherry blossoms.

Vinca acutiloba.—Just before Christmas I saw a plant of this flowering most beautifully in a moist position in the open air. The flowers are as large—larger, perhaps, than a shilling and freely produced in the axils of erect, leafy stems 1 foot to 2 feet in length. In colour they are white, or white with a delicate lilac suffusion, quite different from those of any other *Vinca* I know. I never saw or heard of this plant before. What is its history? All I can vouch for is that the plant I saw under the above name is very floriferous and beautiful, and as a winter-blooming plant it certainly deserves attention.

Winter-flowering shrubs.—Two of the best and sweetest of all the shrubs now in bloom are *Lonicera fragrantissima*, from China, and *Chimonanthus fragrans*, from Japan. Both are deliciously fragrant, and are all the more welcome because they brave the wintry climate, and blossom at a time when outdoor flowers are few and far between. For want of a better name we call the first the Winter Honeysuckle, and the *Chimonanthus* has long been known as the Japan Allspice. Veronicas of the Andersoni section are flowering freely, and there are a few coral buds on *Cydonia japonica*; the Rush-like shoots of the winter Jasmine are yet aglow with golden buds and flowers, and the promise of rosy Almond blossom is richer than ever.

Hothouse walls are never so attractive as when clothed with beautiful vegetation, and one of the best of all plants in its way for this purpose is *Pothos celatocaulis*. It is a singular-looking member of the Aroid family, which was introduced from North-east Borneo by Mr. Bur-



Hibiscus speciosus (reduced).

moved to the stove in spring. It is a native of river banks from Pennsylvania to Illinois, and flowers in August and September.

H. SPECIOSUS.—This very handsome deep crimson-flowered species grows many feet in height and bears flowers 4 inches or 5 inches in diameter. Its leaves, which are glabrous and palmately divided, have lanceolate serrated lobes. It is said to flower best in the stove—usually in August. It is one of the finest of the herbaceous species and hardy enough to withstand our winters. There is a figure of it in the *Botanical Magazine*, t. 360. It is a native of the South-eastern States of North America. Syn., *H. coccineus*.

roseus is found in Italy, as is the case, and he gives Tuscany as the habitat for this. Savi, in his "*Botanicon Etruscum*," makes *H. aquaticus* a synonym of *H. palustris*.

CULTURE.—All the above have been cultivated at one time or other, but only two species could perhaps now be found in gardens. Two kinds used to be grown at Kew, where they formed strong clumps, but never flowered. With scarcely an exception, they are hardy in the open ground; *H. grandiflorus* is described as half-hardy, and three or four are perfectly so. Their flowering out-of-doors, however, seems scarcely known, and the figures of *H. moscheutos*, *H. speciosus*, and *H.*

ledge, and has been provisionally given the name now appended to it by Mr. N. E. Brown, from the curious manner in which each leaf overlaps and conceals the stem of the next above it, as it climbs up a board or the wall of a stove like a large-leaved and very close-growing Ivy. It cannot be finally named till it blooms, which it has not yet done in Europe. At the end of one of the houses devoted to Nepenthes in the Chelsea Nursery this plant has been for some time in perfection, and is generally admired. The large velvety green leaves are pressed close to the masonry, and remind one of those of some *Marcgraavias*. It is of rapid growth, and succeeds well if grown on bare walls along with the creeping Fig, *Ficus repens*, or more correctly *F. stipulata*.

Cherry Pie is an unsentimental name for the *Heliotrope*, which singularly enough is just now one of the most fashionable of flowers. But then it has always been a favourite for the sake of its bewitching fragrance, which is deliciously piquant, and unlike aught but its own sweet self in the whole world of perfumes. Some of the modern varieties, both purple and white, are very lovely, and a great improvement on the pale old type as figured in Curtis's *Botanical Magazine*, t. 141, nearly a century ago. Peruvian Turnsole is the old English name for the plant which old Miller, of Chelsea, grew and flowered from seeds sent to him, as he himself tells us "from the curious garden of the Duke d'Ayen at St. Germain's." The younger Jossien sent the seeds from Peru to the Royal Garden at Paris, where it first flowered.

Orchids in flower.—Among other *Cypripediums* now in bloom *C. purpuratum* is, to my mind, one of the most attractive, the contrast between the wine-coloured petals and white upper sepal (with few stripes) being so well marked and distinct. It has foliage like that of some varieties of *C. barbatum*, and is a native of Hong Kong. *C. Dominicanum* is nearly always in flower, as also is *C. Sedeni*. *Cœlogyne cristata* is lovely snowy white in colour, with a lemon-yellow crest; and the rosy *Calanthes* and *Lælia* skippers are also in flower, along with *Lycaste Skinneri*. *Zygopetalum intermedium* is blooming fairly well, and although not so large and showy, nor so fragrant as is *Z. Mackayi*, it is nevertheless well worth growing.

The best Pea.—I suppose it is rank heresy to say it, but the old *Ne Plus Ultra* is yet to my mind the best of all Peas from the dining-table point of view. Veitch's *Perfection* is nearly perfect, but to my mind in delicate succulence *Ne Plus Ultra* is, as its name implies, unsurpassable. Of course, I know it is a tall grower, 10 feet high or so on good soil, but then there is plenty of room upwards, and all the enviable graces cannot well be combined in any one individual variety. Who raised *Ne Plus Ultra*? When was it first sent out? I suppose it never had a first-class certificate awarded to it, although hundreds, if not thousands, of people have inwardly and, perhaps, half unconsciously blessed the man who left such a noble heritage to our kitchen gardens. Amongst a hundred new sorts it lifts its head to-day like a king as the best of all Peas on the dining table.

Spring flowers.—Elwes' *Snowdrop* has been in bloom a week or more, and with it a dwarf purple *Crocus* having fiery stigmas, and to-day the gold buds of *Eranthis* have freed themselves from the earth, and gleam unsullied in the mild sunshine of our January days. It may interest some to know what Sala thinks of spring blossoms. "The love of flowers seems a naturally implanted passion, without any alloy or debasing object in its motive; we cherish them in youth, we admire them in declining years; but perhaps it is the early flowers of spring that always bring with them the greatest degree of pleasure, and our affections seem to expand at the sight of the first blossom under the sunny wall or sheltered bank, however humble its race may be. With summer flowers we seem to live, as with our neighbours, in harmony and good order; but spring flowers are cherished as private friendships."

Early Daffodils.—A few weeks ago we heard of the blooming for the first time in England of

two of M. Damman's new Italian Daffodils, viz., *Regina Margarita* and *Umberto I.* Now from the sunny Isle of Wight comes the news (see p. 43), "some of the new Italian *Narcissi* are in full bloom now and have turned winter into spring." It is very pleasant to think of Daffodils flowering thus early, and it may occur to some of our friends in the bulb trade that Italy would be a better climate for the growth of early-flowering bulbs than Holland. Even the common kinds of Daffodils would flower earlier if grown in Italy; at any rate, the experiment is well worth a trial. Italy years ago sent us *Tuberosa* and *Paper-white Narcissus* roots, and there seems no good reason why her fine early climate should not be utilised for the growth of other early-flowering bulbs.

Daffodils in bloom.—Since the above note was written I have received from a friend forced flowers of *Narcissus P.N. præcox*, and, what is even more remarkable, a well developed Rose-like flower of the double *N. grandiplenus*. These, I am told, are from bulbs collected wild in Italy, but I am doubtful as to whether the latter variety is really wild there. Be this as it may, Daffodils in January are very welcome, and these flowers seem to prove that by having our Daffodil bulbs grown in different climates their season of blooming might be considerably hastened on the one hand, and if needs be retarded on the other. Even our British climate would afford facilities in this direction, since in Cornwall and Scilly Daffodils naturally bloom in February, which in Northern England are not in flower until April or even May. The influence of climate affords room for experiment, and no doubt will meet with the attention which it really deserves.

In Holland, as also in the Scilly Islands and in other places where a speciality is made of *Narcissi*, two things are especially provided, viz., good drainage and good shelter from the wind. Even in Holland, where the soil is light and sandy, raised beds are the rule for all bulbs, and if this is necessary in a good climate and on light and warm soils, how much more must it be so on wet, stiff clays or in cold northern localities? I am especially doubtful of the efficacy of drying off or ripening the bulbs above ground. My own opinion is in favour of made-up or raised beds and shelter. Sand or very sandy soils almost invariably suit bulbous plants of all kinds, and in Holland these are enriched with cow manure and in Scilly with sea-wrack. Of course some of the common yellow Daffodils will grow in any soil, but the white kinds and some of the new *Narcissi* will not do so.

VERONICA.

LATE CHRYSANTHEMUMS.

MR. W. CULLINGFORD has "hit the right nail on the head" with regard to these by offering £10 in prizes for January blooming kinds, or, as we suppose, for the best groups or collection of flowers to be shown in bloom in January next (1886). This offer will be one way of bringing late varieties to the front, or it may act in two ways, viz., by encouraging the raising of really late blooming kinds, while on the other hand growers of existing varieties may be stimulated to devise some system of culture conducive to late blossoming. In either or in both cases the results cannot fail to be beneficial. These prizes are to be awarded by the National Chrysanthemum Society, and we are glad to see the same body are next season (1885) to offer prizes for English-raised seedlings, and also for single-flowering or Daisy Chrysanthemums. There are some other agreeable signs of energy and vigour about the National Chrysanthemum Society, but is the Royal Aquarium the best of places in which to en throne the winter queen? Could not some arrangement be made with the Royal Horticultural Society so that the exhibitions might be held at South Kensington? Again, could not the National Chrysanthemum Society induce some at least of the petty societies near London to give up their far too numerous little exhibitions and contribute to its own shows and meetings instead? During the past year two very notable exhibitions

were held at South Kensington, viz., the Apple Congress and the *Narcissus* or Daffodil Conference, exhibitions in themselves interesting and productive of lasting good in other ways by diffusing information as to nomenclature and culture. Popular as the *Chrysanthemum* now is, there are a good many difficulties in the path of those who are only commencing its culture. The nomenclature and synonymy is confusing, and there are many interesting points in its culture that require clearing up; in a word, under good management, a grand exhibition of plants and cut flowers next November and a conference of *Chrysanthemum* growers, both French and English, might be made one of the successes of the horticultural year.

BRUISE DU MATIN.

FLOWER GARDEN.

DAFFODILS IN IRELAND.

So little has been said about Daffodils in Ireland, particularly the southern portion of it, that I venture to furnish some small details as to the adaptability of our climate for their growth. All the early plantings are now well above ground. The first to show bloom is the Italian pseudo-*Narcissus* fl-pl. the golden buds of each bulb appearing in triplets from the soil simultaneously with leaf formation. I have 3000 of it just at present almost fit to cut in the first week of February. They will be beautiful. It will turn out, I suspect, a dwarf form not unlike *grandiplenus*, or it may be the double form of our Tenby Daffodil; the bulbs were not unlike it; the flower-head being so short and thick and its earliness make me associate them. I know the Tenby has been introduced to Wales from Southern Europe, Spain, and Italy. The next to show for bloom is *odoratus interjectus*—Italian bulbs. The foliage of this variety is now 12 inches long, and the blooms fully shot through, ready for bursting. The next earliest is a variety of *nanus*—I believe confined to Ireland. The bud and leaf spring from the ground together, as is the case with *minimus*. The next is a variety which I call *Rip Van Winkle*. This is in full bloom under glass (100 bulbs in one box). This variety, I am persuaded, is confined to Ireland, and I hope to trace its single form this season. It is of true *nanus* type. For description I would refer your readers to Mr. Barr's new work on Daffodils. *Pallidus præcox bicolor* and *pallidus præcox* are also well forward for bloom. The bulbs are Italian grown; they come mixed. The Tenby Daffodil is well above ground, but there is no sign of bud; also *poeticus angustifolius*, Irish bulbs, taken from a field where it has been growing wild for years. A dwarf form of *cernuus*, 500 bulbs of which were planted after a long journey, all shot out rootlets in September, and are now 6 inches high and some blooms are appearing. The Dutch *nanus* and *minor*, also English *nanus*, planted at the same time as the Irish form, are not above ground yet. Six forms of the incomparabilis class from Italy will also occupy a prominent place.

Three large beds of *eystettensis* (*capax*) are well above ground. I have given them a good dressing of Clay's Fertiliser, and expect a fine display of this very rare Daffodil. It is now bursting for bloom in the open. All the rest of my bulbs are well through the earth. I dread frosts and hard weather, particularly in the case of Italian ripened bulbs that are so forward, a circumstance no doubt attributable to the Italian cloudless sky. I often wish that such fine kinds as *Horsefieldi* and *Empress grandis*, &c., could be procured at a lesser rate, in order that we might offer them in quantity to the Italians, that folk in England, more particularly in London, could have such fine flowers on their tables at Christmas from forced Italian ripened bulbs. The most we can now do with *bicolors* is to get them the first week in March or end of February; however, as it is, I would strongly advise market growers about large towns to look up Italian wild Daffodils for forcing purposes; no doubt they will come, needing to be "rogued." Such men as Mr. Walker,

of Whitton, could export from, I am told, a very large collection. We now get Roman Hyacinths, Alliums, Roman Narcissi, Paper-white, &c., and why not bulbs with heads of gold? If such men as Mr. Barr and Mr. Ware with their vast channels of supply were to get people to start grounds in the south of France for the early maturation of Narcissus, in particular the Leedsi sorts, Sir Watkin, Barri, and others, some progress might be made. A long price is paid for a Eucharis bloom, and what can surpass in their way a couple of blooms of Narcissus bicolor Horsefieldi pulled through a spray of farleyense Fern? Such is quite possible at Christmas from bulbs imported from under a cloudless sky. I am somewhat enthusiastic relative to the exportation of our choicer sorts. The Italians are very careless at present in the matter of keeping stocks pure. There were some varieties offered from Italy this year that were said to throw Emperor and Empress into the shade. I wish they had done so, but the Irish form of princeps is vastly superior to what I saw as King Humbert of Italy. Your readers may say Holland could grow Daffodils in quantity, but the south of England and, better, the south of Ireland can grow Daffodils better than Holland. They get some sort of red rust on the bulbs in Holland from which we in Ireland are perfectly free. I expect to have the "Big Welshman" full measure and overflowing in size.

Cork.

W. B. H.

NEW FRENCH CHRYSANTHEMUMS.

"THE cry is, still they come," and although a matter of wonder even to those who know best, yet it is a fact that new colours and additional variety of form succeed each other every season. So prolific, indeed, are the Japanese Chrysanthemums in variety, that one may wonder the less at their having increased in popularity year after year, until it now seems likely that they will oust the stiff and formal incurved and pompon varieties from the field, so far at least as decorative purposes are concerned. Whence come, then, these novel and beautiful varieties? Let us be frank, and say at once from France! M. Délaux et fils, of St. Martin du Touch, près Toulouse, have for years been raising new kinds of Chrysanthemum, and at the present, without a doubt, they are far ahead of other originators, so far as the weird Japanese varieties are concerned. It must not be supposed that raising new Chrysanthemums is by any means a novel industry at Toulouse, for as long ago as 1826 we learn from the *Revue de l'Horticulture Belge* that Captain Bernet, an amateur of that place, was very successful in originating new spots by intergrafting the then known varieties into each other. As long ago as 1830 the late Donald Beaton recommended intergrafting as a means of inducing "sports," and it is not impossible that some whisper of Captain Bernet's experiments had reached his ears. Be that as it may, many amateurs and florists have continued the work which Captain Bernet began, and foremost among these are M. Délaux et fils, who send out from thirty to forty new varieties every year. All lovers of the Chrysanthemum would learn a good deal by a perusal of the annual lists issued by this firm, especially their general catalogue of Chrysanthemums, published in 1882, in which, as a rule, the raisers' names are correctly given. Just at the present moment we have three great centres, in each of which the raising of new seedling Chrysanthemums is carried on. The credit of first place must be given to France and the Channel Islands, the second to England, and the third to America. Dr. Walcot and Mr. John Thorpe seem to have originated the raising of American seedlings, some of which appear in English catalogues this season for the first time. As a set-off against our American cousins, however, we must point out that Mr. Teesdale, of Chichester, was, I believe, the originator of the new single-flowered race. One result of this extended modern activity in the rearing of seedlings is showing itself in the blending together of old races or distinct sections, such as Chinese, Japanese, and pompones, and the repe-

tition or clashing of names is also apparent more and more every day. For example, we have now two or three distinct varieties named Ceres, at least two Duchess of Albany, two Arlequins, two Apollos, two Aurora Boreales, and one might go on quoting cases similar *ad infinitum*. If we add this clashing of names to the synonym difficulty, matters are rendered still worse, and it is in difficulties of this kind that the addition of *bona fide* raisers' names are serviceable, and this is the main reason why they should always be used, as indeed is now the rule when Auriculas or Carnations are exhibited.

A friend who has seen most of the new French seedlings kindly sends me the following account of them, which may be interesting to other amateurs, as it has been to myself. "In my opinion the varieties of Chrysanthemum sent out during these last two years show a marked improvement on the varieties of the preceding years, and seem to give us ground for hope that Chrysanthemums have still a bright future before them. In France pompones are being abandoned by degrees, and perhaps also large-flowered old kinds, while everyone prizes the newer and more singular forms of the Japanese flowers; wherefore the number of these last-named varieties is always increasing and taking the room of the others."

VARIETIES OF 1883 AND 1884.

The best pompon flowered kinds are in order of decreasing merit: Anaïs Délaux, fringed, rosy lilac and white, with golden tips; Laciniatum superbum (Délaux), fringed and lacinate, delicate violaceous rosy hue, with golden tips; Mademoiselle Darnaud (Délaux), purple rosy, golden tipped; M. Luguet (Délaux), early, small purple-violet-coloured flower; Elegant (Délaux), copper-red; Perfection (Délaux), brownish red, yellow tipped; Mademoiselle Mathilde Raynaud (Délaux), rosy carmine, with silvery tips, yellow centre.

Large flowered: Freycinet (De Reydellet), tubulated florets of a fine rosy white hue, with yellow shades; Pietro Diaz (Lacroix), velvety brown, with golden reflexes; V. Lemoine (De Reydellet), late flowering amaranth - coloured kind; Président Lavallée (Pertuzès), intricate purplish red; Cimbale d'Argent (Pertuzès), white tinted with pale yellow; Val d'Andorre (Pertuzès), orange-red; Gaillardia (De Reydellet), late, incurved, deep maroon, golden tipped; Belle Valentine (De Reydellet), anemone-flowered, canary-yellow. Early Japanese: Ernette (Délaux), rust-red yellow-tipped; Madame Deville (Délaux), white with a creamy shade in the centre, and pink stripes; Mastic (Délaux), large ochre-yellow flowers; Boule d'Argent (Délaux), purplish amaranth, with a silvery ball in the middle; M. Deville (Délaux), blacky brown with golden centre; M. Henry-Jacotot (Délaux), velvety crimson with yellow tips; L'Or du Rhin (Délaux), spiral florets, bright golden yellow with brown shades; Isidore Féral (Délaux), pink, golden centre; M. Pynaert Van Geert (Délaux), brown, yellow-tipped. Japanese: Madame Bouchardet (De Reydellet), globular flowers, yellow and mahogany; Flamme de Pouch (Délaux), brown, with golden shade and golden stripes; Margot (Délaux), pink, buff centre; M. Astorg (Délaux), beautiful white, with pink shade; Bois Rosé (Lacroix), large white flower with pink shade; M. Moussillac (Délaux), large flower, deep crimson; Helvétie (Délaux), amaranth with a silvery centre; M. Carin (Délaux), violaceous rosy.

VARIETIES OF 1884 AND 1885.

Pompones: Bouquet Fleuri (Bouchardet), small, globular, poppy-coloured flowers; La Désirée (Délaux), early, imbricate, white shaded with pink; Rubra perfecta (Bouchardet), crimson-purple, late flowering kind. Large-flowered: M. Roux (Bouchardet), buff-yellow; Madame Féral (Délaux), imbricate, silvery pink; Carmen (Délaux), dark red, yellow centre and lips; Incarnata (De Reydellet), bluish and white. Japanese: M. John Laing (Délaux), contorted, crimson, grained with yellow; Brise du Matin (Délaux), rosy, white centre with buff shades; Aurora Boreale (Délaux), spiral florets, orange-salmon, golden ball in the centre; M. Comte (Délaux), amaranth and viola-

ceous red; Colibre (Délaux), dark crimson, golden centre; Fleur des Bois (Délaux), blood-red, golden centre; Emblème (Délaux), contorted, dark crimson, yellow tipped; Beauté des Jardins (Délaux), contorted amaranth with silvery reflexes; Souvenir du Caire (Délaux), spiral florets, amaranth, rosy white centre; L'Alsace (De Reydellet), deep violet, silvery tipped. Early Japanese: Galathée (De Reydellet) irregular, rosy white; Frizon (Délaux), yellow, irregular, and curled florets; Souvenir du Japon (Délaux), pink shaded buff; Fernand Féral (Délaux), spiral florets, pink, shaded buff. Late-flowering Japanese: Belle Alliance (Délaux), brick coloured, golden centre; L'Or de France (Délaux), contorted, yellow with brown flames; Mlle. Antoinette Brunel (Délaux), tubular, carmine-tipped white florets; La Géante de Valence (De Reydellet), tubular florets, pink and lilac. The following varieties may be considered as late-flowering ones, for they did not bloom this year in my nursery: M. Léon Brunel (Délaux), Blanche Neige (Délaux), Hébé (De Reydellet), Diane (De Reydellet). All the varieties named above are peculiarly fine and superior to others sent out at the same time. The late-flowering kinds are not esteemed by French raisers, who grow their plants out-of-doors and shelter them in cold greenhouses only when frost is likely to prove injurious to the flowers. Perhaps many growers (De Reydellet among them) who reside in the southern departments of France send out every year some late-flowering plants without remarking it, for under their fair climate they are all early and very fine.

The following new Japanese Chrysanthemums were raised by Délaux et fils, St. Martin du Touch, near Toulouse, and are not as yet distributed: L'Incrovable, fiery cerise, with a gold centre, outer florets quilled, those in the centre spoon-shaped; Le Surprenant, crimson or velvety brown, centre yellow, a very distinct variety with wavy actinoid florets; M. Ivoy, creamy white, with a rosy centre; M. Margottin, reddish crimson, changing to rosy orange, each floret bordered with crimson; M. Dixon, clear rosy violet and white; Mlle. Lairg, fiery rose, the florets tipped with silvery white, and flamed and bordered with rose-violet, centre golden; La France, carmine, changing to crimson, centre silvery white; L'Introuvable, amaranth-purple of velvety texture, centre white; Mlle. Cannell, silvery white, speckled and flamed with rose; Ne Plus Ultra, soft rose, florets shaded with gold and white at the base; M. Davis, blood crimson, with gold-pointed florets; M. Harmony Payne, large crimson, flower shaded. The first two varieties in this list are very remarkable in form and colour; indeed, it is not too much to say that they will create quite a sensation when they become well known and are distributed. Among other well-known French raisers of Chrysanthemums may be named M. Lacroix, of Toulouse, M. V. Lemoine, of Nancy, MM. Beroard and Marrouh, of the same place, M. Bouchardet aîné, of Lyons, M. Schwartz, of the latter place, and M. de Reydellet, of Valence. It is very pleasant to see that Messrs. Bull, Barr, and other London seedsmen are now offering seeds of Japanese and other Chrysanthemums. It is also offered by MM. Benary et Cie, of Erfurt, so that there is no reason why seedlings should not be raised in England as well as on the Continent. Now is the time to sow in gentle heat for flowering next November.

BRISE DU MATIN.

Daffodil notes.—The first Daffodil to flower here this year was the Italian pseudo-Narcissus fl.-pl., which bloomed January 28 in The Dell. Oddly enough, it came single, just like our English Lent Lily. It is one of a score, all of which are in bud, and some appear likely to be single and some double, so that we are watching their blooming with no little interest, as it may help to throw light on the double Daffodil question. Can this be an example of a double becoming single from changes of condition less favourable? We intend carefully to mark the individuals of this group to see if any of these singles will come double again after generous treatment in their new home. Evidently the bulbs are replete with

vigour, as they are the first to bloom, and they may have expended some of this extra force in early blooming, and thus reverted to singles. Two days later the Italian *N. præcox* bloomed, and at the same time *N. pallidus præcox*, whilst in a few days we shall have a tall growing *Tazetta* in flower—*N. italicus præcox*. The English bulbs of *N. pallidus præcox* are quite out of the contest, and it will be weeks ere they are in bloom. Is it not probable that the Italian bulbs flower earlier because they are better ripened, and that this constitutes the reason for their earliness? In all probability these earliest varieties of 1885 will be as late as the rest next year.—WM. BROCKBANK, *Brockhurst, Didsbury*.

GENTIANAS.

That was an interesting and useful article on the Gentian in last week's GARDEN, and throws light on points that are none the worse for elucidation, *inter alia* on a plant which I received as *G. affinis*, and which I have since grown with satisfaction to myself as *G. macrophylla*, but which, it seems, is *G. tibetica* (*thibetica*?) after all. This plant, as I believe I have said before, is quite worth growing for its beautiful foliage, irrespective of the flowers, which, indeed, are as good as the other white summer-flowering Gentians with which I am acquainted, although this, perhaps, is not saying much.

"D. K." having explained one difficulty, has, however, to my mind at least, created another. He states (p. 88) that a variety of *G. Saponaria*, named *linearis*, is in cultivation "under the name of *Fœrlechi*, and differs but little from the type." Now, *G. Saponaria* is a North American species, and is, I believe, much like *G. Andrewsii*, of which a figure is given, but the *G. Fœrlechi* with which I am acquainted, and which, by the way, I have two or three times attempted to grow with complete want of success, is a rare European Gentian from the Eastern Alps, in the way of *G. acaulis*, though smaller in all its parts and of a lighter blue. (It is figured by Seboth and Bennett's "Alpine Plants," vol. iii., plate 89.) What are we to think about this?

It may be as well to emphasise, for the benefit of the unwary amateur, that though "D. K." on Gentians may be as easy reading as Mr. Wolley Dod on *Helianthus*, yet that, practically, the cultivation of the majority of the species of the former is about the most difficult of all problems in hardy flower gardening. All, no doubt, of the species named by "D. K." are or have been grown in some few—some very few—gardens in the United Kingdom; but I should be inclined to doubt, in the case of some of those mentioned, whether they can even yet be pronounced to be "at home." Peat and (in the south of England at any rate) a certain amount of shade are, for many of the species, *sine quibus non*, but given these two desiderata, it by no means follows that you have surmounted the preliminary difficulty of getting the plant established. August (if wet) appears to be the best time to make the attempt, but anyhow the percentage of failures and disappointments is pretty certain to be large. I have never seen *G. Saponaria* offered by any nurseryman. Can any of your readers tell me where it can be procured?

J. C. L.

HELLEBORUS NIGER.

VARIETIES OR HYBRIDS.—On this question I do not take upon myself to say that your correspondents are wrong who contend that the niger section is restricted to one species with many varieties, but no hybrid. I think, however, that they entirely fail to prove their contention. As to the many varieties, we do not differ. I believe that niger typical has produced niger minor, niger major, niger angustifolius, and endless intermediate forms, varying with sepals pure white, pink shaded and green shaded, with leaves broad and narrow, with leaf segments plain and notched, and with stalks blotched and green. I believe this, because I have observed all these deviations in seedlings which I raised from typical niger

without cross-fertilisation; but in habit and character *H. niger maximus* stands quite apart; and I have never seen nor heard of any seedling known to be raised from self-fertilised typical niger which has shown the slightest tendency to approach the *maximus* habit, nor to present the pink-tipped pistil which characterises it. No one now doubts about *maximus* being a truly wild plant. Unless, then, it can be proved that a like form can be raised from seed of a self-fertilised typical niger, there appears to be a strong presumption in favour of its claim to be a species quite as distinct from niger (type) as *orientalis* from *olympicus*, or *cupreus* from *purpurascens*. The difference between a hybrid and a variety I take to be this: that a variety is an uncrossed deviation from its type; a hybrid is the result of foreign pollen, and from the description of Mr. Poë's plant with its pink-tipped pistil and green stalks I should call it a hybrid.

Others have, I believe, obtained seed from *H. maximus*. I have failed to do so myself, but the organs are perfect and the pollen is there; consequently, by applying the pollen of *maximus* to the pistil of *angustifolius* I should expect to obtain exactly such a plant as Mr. Poë's appears to be; and for this reason, that, according to my experience, it is always the pollen of the male plant which determines the special characteristics of the hybrid. The pollen of a white flower upon a green-flowered plant produces a white flower, or rather I should say the white predominates; the pollen of a persistent-leaved plant upon a non-persistent has with me produced a persistent-leaved hybrid; and so in Mr. Poë's plant I suppose *maximus* pollen may have been the cause of the pink pistil, and in the absence of any evidence to the contrary I should call this a hybrid, or if a variety, not a variety of niger typical, but of *maximus*. If I understand rightly, all that is known of Mr. Poë's plant is that it came from Ireland about 25 years ago. Another apparently similar plant has been noticed in THE GARDEN as being in Ireland, and in that case also, in absence of its history, I expressed my belief that it was a hybrid with *maximus* for one parent.

Apart from this question, I would repeat a query of Mr. Tymons'. Has anyone ever succeeded in obtaining, or tried to obtain, a hybrid between niger and any other form of *Helleborus*? I have never seen such, but I am just now cross-fertilising *N. maximus* with a large hybrid 4 inches across with the deep purple colour, but not the form of *colchicus*, with what result or whether with any time will show.

T. H. ARCHER-HIND.

South Devon.

Jaborosa integrifolia.—This, although one of our most attractive late summer and autumn-flowering perennials, has been for some time almost lost sight of in gardens. It is very impatient of shade or over-moist places, and this may in part account for its apparent scarcity. On dry sunny borders it may be kept in good condition for an indefinite time. It grows about a foot high, its oval, blunt-pointed leaves rising from the crown, and little shorter than its long waxy white, tubular, fragrant flowers, resembling the Tobacco plant, to which it is closely related. They are produced from early in July until September, the individual flowers lasting in good condition for a considerable time. It may be readily increased by division of the roots.—K.

Phlox subulata.—The awl-leaved *Phlox* and its many brilliant varieties, although by no means uncommon in gardens, are not so generally used as edging plants as they should be. In tolerably warm and dry places on level borders they exhibit a display of beauty hardly surpassed by any other plant of equally humble habit; the contrast between the exquisitely coloured flowers and the spine-like leaves is really striking. On rockwork it is quite at home, and it seems to do equally well in shade or sunshine, soon covering the stones, especially if of a soft, porous character, and easily penetrated by the roots. It has a trailing or creeping habit. It seldom grows more than 2

inches or 3 inches high; the flowers, which are usually purplish in colour with an intense dark eye, vary to white, rose, &c., in some varieties. It is easily increased by means of cuttings, which readily strike root when made of the growing points and placed in a cold frame, or by division, which it stands well when done early in spring.—Q.

Fruiting Duckweed (*Nertera depressa*).—Although generally grown in greenhouses and frames, this is perfectly hardy when placed in a suitable position; in pots one is not always sure that its fruits will set, but outside they never fail to do so in profusion; they are small, round, and about the size of a Pea, orange-red in colour, but attaining a deep shining red when nearing maturity. They are produced on short stalks and can just be seen above the light green oval-shaped foliage, which is not more than an inch high. Perpetual shade, or only a little of the morning sun, with plenty of water, are its principal requirements. It seems to do best in peat to which has been added a little loam. It creeps along the ground at a good pace, and may be easily increased by nipping off the points, which will be found to be rooted at every joint. In spring, when in flower, it should receive copious waterings, which should be continued until after the fruit has set. It is a native of New Zealand.—K.

Double yellow Wallflowers.—One seldom meets now-a-days with the fine old double Wallflower that used to be so well grown in old times in cottage gardens; in fact, in many parts of the kingdom it has disappeared altogether, and we now find the single and semi-double German Wallflower filling its place. On the south coast, however, I frequently come across some grand old specimens of the true golden yellow Wallflower with blossoms as double as those of an Oleander, and a fine show they make in snug little seaside gardens, the thick hedges of which are proof against the ruthless gales with which they are assailed. The soil here is light and stony, so that growth is not very luxuriant, but the wood gets hard and well matured, and the frosts of winter, being modified by the sea breeze, plants of this Wallflower keep vigorous for years. I would by no means, however, recommend retaining such very old plants, except as curiosities, for young ones are altogether better. The little side shoots of this Wallflower, dibbled into sandy soil with a hand-glass placed over them, strike readily, and as soon as rooted plenty of air may be admitted. They are best kept under the friendly shelter of glass until all danger from sharp frost is over; then they may be planted out in beds a foot apart, where they will soon form nice bushes, and must then be carefully transplanted where they are to remain; for, although they move well enough in a young state, they are by no means good subjects to disturb when old.—J. G., *Hants*.

Myosotis disitiflora alba.—This is an invaluable plant for supplying cut flowers early in the season. It blooms naturally very early, but is liable to suffer if fully exposed to the full force of the cutting winds that prevail in spring. If, however, it is afforded the slightest protection by means of temporary covering, its lovely blooms of the purest white prove excellent for mixing with blooms of a more massive character in decorations of all kinds, notably in wreaths and crosses, for which white flowers are in constant request. I find that this *Myosotis*, like the blue-flowered form, makes a capital pot plant; anyone, therefore, having a good stock of it will find that by lifting good sized clumps and placing them in 5-inch or 6-inch pots, and setting them in a cool vinery or glass-house of any kind, that they will quickly develop quite a cloud of blossoms. The plan which we adopt in getting up a stock of this plant is division of the roots after the plants have done flowering; every piece if dibbled into a shaded border will make a good plant. Seedlings also make excellent plants for potting, but, like the older blue variety, it is difficult to collect any quantity of seed. Birds are so fond of it, that unless carefully netted over they make a clean sweep of it as fast as it ripens. If the seed is only required for home

use, the best plan is to cover the plants with fish nets and allow the seeds to shed on the soil; by keeping the latter moist by means of frequent waterings, a colony of young plants will spring up around the parent, and as soon as large enough to handle they may be pricked off into beds. The old clumps may be pulled to pieces and replanted.—J. GROOM, *Gosport*.

MOSSY LAWNS.

THERE have been several replies to this query (5304), but I do not think that any of them has quite hit the mark. Poverty of soil may have something to do with the production of Moss, but it can scarcely be the sole cause of its appearance, or how is it that the finest turf we can get comes from high-lying commons, where the soil is too poor to grow anything but Grass, Bracken, and Heather? I have had some experience in the laying down and management of lawns, and my opinion is that texture of the soil, situation, or both combined, are the true causes of mossy lawns. A very fine sandy loam that goes "pasty" when wet (and this tendency is often greatly assisted by the use of the mowing machine and roller), if imperfectly drained or not at all, and in a more or less shaded position, is almost certain to become mossy sooner or later. The worst instance that ever came under my notice was a large lawn, on just such a soil as that which I have mentioned, in a low situation only a few feet above and very near a large river on the north side of a very large house, and thickly surrounded by large trees. No treatment of the surface had any appreciable effect on this lawn. At last the whole was carefully pared off, well dug over and levelled, and then about 2 inches or 3 inches of ashes were spread evenly over it, also a sprinkling of fresh soil, and the original turf was relaid. The Moss very shortly disappeared, and afterwards gave no trouble. I have since done the same thing, or nearly so, in many cases of mossy and "pasty" lawns where the Grass would not grow strongly, and invariably with success. I feel certain that an open, porous, or granular texture of mould beneath the turf, through which superfluous moisture readily percolates, is one of the great points in producing a clean, strong turf, and anything that has been burnt has always this character, and in addition a sweetening influence. Fresh house ashes, with any foreign matter carefully sifted out, is undoubtedly the best material to apply, but, failing this, factory or furnace ashes may be used with good results. In an open situation, where the sun acts freely upon the surface, the texture is not of so much consequence, as the evaporation caused by its rays dries and sweetens the soil and renders it much more open and favourable to the Grass. One of the best bits of turf with which I have ever had to deal, at least in a town garden (for of course Grass, like everything else, grows best in country air and does not require so much looking after), was produced from seed sown on a piece of ground where a fire had taken place, and which when levelled and dug over contained a large proportion of particles of burnt material of various kinds. Naturally, the ground was as poor, sour, and worthless as anyone could desire, but it produced a really fine bit of turf without a weed or particle of Moss throughout, though it was situated almost in the heart of London and surrounded

on three sides by high buildings. Water would run through it anywhere as fast as one could pour it on. This went far to prove that my views respecting lawn making were correct, and I have ever since acted upon them with success.

B. C. R.

SALVIA CANDELABRUM.

OUR gardens are now rich in Salvias both in number of kinds and variety of forms and colours. Many of the most beautiful kinds are of garden origin, having been obtained either by selection or by crossing one species with another. Some of the Salvias seem to lend themselves to crossing



Salvia Candelabrum.

much more freely than others, whilst many of them vary much under cultivation when raised from seeds. In *S. Candelabrum* we have one of the handsomest and most distinct of introduced species, which, when grown into a large bushy specimen either in a pot or planted out during summer, produces on the ends of the strongest branches erect panicles of white and purple flowers. The stems of this plant are square and hoary, as are also the Sage-like leaves; the panicle is much stouter and more numerous flowered than is shown in the accompanying woodcut. Its regular branching form suggested the specific name. The leaves have a powerful aromatic odour, as have likewise most of the Salvias. It was introduced by Mr. Thompson, of Ipswich, nearly

thirty years ago, and is a native of the south of Spain. In this country it is hardy enough to bear an ordinary winter, but owing to the fugacious character of the flowers it presents an unsatisfactory appearance if exposed to wind or rain. By growing it in pots out of doors during summer and preventing it from flowering by pinching out the flower-buds as they appear it may be employed for autumn and winter decoration indoors, as is now usually practised with the majority of the Salvias. In Spain the weather is much more favourable for this plant than with us, warmth and moisture prevailing during the early part of the year, succeeded by hot, dry weather. It is, therefore, enabled to make sturdy growth and to produce an abundance of flowers for a lengthened period, conditions which we should try to imitate in this country.

E.

SPIRÆA ARUNCUS.

THIS *Spiræa* is not so frequently met with in private gardens as its extreme beauty entitles it to be. It should, however, be grown wherever room can be found for it. As a back row plant in a herbaceous border during the latter part of May and all through June it is strikingly effective; it throws up its massive plume-like spikes of creamy-white bloom well above its finely lacinated foliage very often to the height of 5 feet or 6 feet. It is also an excellent plant for open spaces in shrubby borders, the background of green showing off the flowers to great advantage. If grown in company with some of the scarlet-flowered *Rhododendrons* that bloom at the same time, the effect is excellent. It may also be isolated on lawns or planted in the rock garden. When not in flower its foliage is quite as ornamental as that of the majority of shrubs, and when in flower it is not surpassed in intrinsic beauty by any plant with which I am acquainted. The effect of a large plant of it carrying from 30 to 40 fine spikes of bloom when viewed in the distance can be better imagined than described. The cultivation of this *Spiræa* is of the easiest possible description. It will grow in almost any sort of soil, but it attains the greatest perfection on good strong ground with a clayey subsoil. Before the roots are planted the ground should be well prepared for them. It should be thoroughly trenched 2 feet deep and enriched with good rotten manure. It should be dug over two or three times after the manure is put on, so as to mix it well with the soil. I dislike the practice of placing manure in layers, as is often done; when so applied, it has a tendency to cause the plants to grow rank and long-jointed. The best time to plant is in November, for then the plants have shed their foliage and have also formed their crowns for the following year's flowering. They may, however, be planted at any time during winter or early in spring, provided the ground is in good order to receive them. Once planted, they will require but little attention beyond cutting away the old flower-stalks and giving them a mulching of rotten manure once a year for four or five years. At the end of that time they should be taken up and divided and replanted, as just recommended.

H. PARKER.

Comte Brazza's white Violet.—I have lately had an opportunity of seeing this lovely Violet in excellent condition—certainly by far the finest I have ever seen, the blossoms being

exceptionally large and white as snow, and borne on very long, stout footstalks, denoting a sturdy habit. I have no doubt that when better known this Violet will be a great favourite with bouquetists, its large size and powerful fragrance rendering it exceedingly well suited for the purpose. I have seen many Violets that were termed white, but none so white as this one. As regards freedom of blooming, Mr. Allan, of Gunton Park, who has been deservedly awarded a first-class certificate for this sterling acquisition, informs me that usually it commences to flower in August and keeps right on through the winter up to the time for dividing the plants in the spring. Therefore anyone who can grow the old Neapolitan or Marie Louise will have no difficulty with this, the latest and most exquisite of the whole race of Violets.—JAMES GROOM, *Gosport*.

WORK DONE IN WEEK ENDING FEB. 3, 1885.

JANUARY 28.

The change to showery weather is most acceptable, for the soil a few inches from the surface is still as dry as it usually is at the end of summer. Fruit trees and shrubs that were lately transplanted were all given a good covering of litter as mulching to protect the roots from frost, and it will be equally profitable as a protection from drought, and, provided there are not heavy rains shortly, other litter will be added with this intent. Planting Horseradish; prepared ground for planting out early Cauliflowers. We plant in deep drills and 2 feet from plant to plant. The drills partially protect the plants from wind, and another advantage is that no earthing up is required, but simply the filling in of the drills as soon as the plants need additional soil to keep them upright. Planted Lettuces on a south border, and made a sowing on ditto. Earthed up Peas, and sprinkled soot and lime over the rows to make them unpalatable to sparrows. Renewed the bed in fruiting Pine pit, leaves principally, a small proportion of litter being added to ensure the more speedy heating. All fruiters and those just showing for fruit have been half plunged in the bed, the entire burying of the pots being deferred till it is seen what temperature the bed registers, 85° being our maximum for fruiters; above this, injury is done to the roots, particularly if they are—as they should be at this stage—clustering round the sides of the pots. The plants have been top-dressed with a little fresh loam and bone-dust, and will now be kept constantly moistened through with water of the same temperature as the bed; the top-heat will now range between 65° and 75°, according to the state of the weather. A couple of hours' sunshine to-day caused us to rejoice, as it just appeared in the nick of time to benefit the early Peaches, which are in full flower; a slight jar of the trellis caused the pollen to disperse like so much dust, and it is no exaggeration to say that this short time of sunshine to fruit trees at this stage of growth did more good than a whole week of artificial firing. Thinned the blossoms of Strawberries, and touched over those remaining with a camel's-hair pencil. I do not think that this procedure is really necessary, but somehow one feels that they would like to be on the safe side—hence it is difficult to give up the practice.

JANUARY 29.

More rain, though not sufficient to stop outside work, which has been much the same as yesterday as regards kitchen garden doings. Rolled up turf from the base of young Conifers that are to be top-dressed with fresh soil, but which for the present will remain in this state for the soil to get well soaked through. Chusan Palms (*Chamerops Fortunei*) have also had the turf rolled away from their base and the soil lightly forked over to let in the rain, after which they will be given a rich top-dressing of loam and cow manure, which mixture they fully appreciate. Potted off autumn-struck Carnations, and which for the present will be kept in a cold pit and be planted out in April; also potted sundry kinds of bedding Pelargoniums and put in cuttings of sorts that are scarce. Cleaned

out third compartment in Melon house, washed lights outside and in, and made up bed for Melons, and also bed for propagating purposes. Put in forcing pit pots of Lily of Valley, Hyacinths, Narcissi, and Roses. Watered Camellia border, and also well washed the plants over-head by syringing with garden hose. The best flowers were cut previously, the bulk are just unfolding; hence the washing before they get into full bloom.

JANUARY 30.

Rain falling nearly all day, there has been little outside work accomplished. Pointing Pea sticks, washing pots, cleaning out sheds, making and writing labels, sorting out seed Potatoes and rubbing off surplus sprouts of early kinds, and watering inside Vine borders of late houses with rain water from the tanks in the houses are a few of the principal jobs that have occupied outside hands. Rearranged plant stove; Poinsettias, winter-flowering Begonias, and Calanthes being nearly over, they have been shifted into a warm pit, the appearance of which is but of secondary consideration, and it will be just as well for the plants till they have quite done flowering and have to be cut down or rested, as the case may be. Palms, Dracenas, and Ferns are now our best foliage plants, and the flowering plants with which they are intermixed consist of Begonia manicata, Thysacanthus rutilans, Cologlyne cristata, Eucharis amazonica, and Euphorbia jacquiniæflora. Potted a few Ferns and Crotons.

JANUARY 31.

Still it rains; there has been 1½ inches since the 27th ult., and as we are still some 7 inches short of the average on the twelve months and the springs are very low, we can but hope for a continuance, for inconvenient and hindering as it is, the benefit received will far exceed all this. Our work has been of the same description as yesterday. The houses have all had a thorough clean out, and the rain-water tanks in late vineries have again been emptied out to the borders. Put in cuttings of *Colens Verschaffelti* and of *Iresine Lindenii* and *acuminata*. Planted the smaller Dahlia roots in propagating bed for the production of cuttings. The largest roots have been potted and placed in heat with the same intent. Tied up and disbudded early Vines. Our rule of disbudding does not differ from that which is generally practised, viz., to take off the worst placed and the weakest shoots; perhaps we take off more shoots—that is, have them farther apart—than do most people, as we dislike to see the foliage crowded.

FEBRUARY 2.

Fine the greater part of the day. Nailing Peach trees and Morello Cherries. Laying Box edgings and trenching ground for forming clumps of Portugal Laurels and Yews. The soil being poor and light, abundance of good manure is being added to it. Began to shift first succession Pines into fruiting pots, and top-dressed those already in fruiting pots (10-inch size) with fresh turfy loam and bone dust. The pit is being prepared for replunging by adding about half new material—Oak leaves and a small proportion of stable litter—to the old bed. If all new were used, there would be the risk of injury through excessive bottom-heat, 90° being the extreme height to be safe. Watered second Peach house (inside border) with water at a temperature of 70°. The trees are now regularly syringed at 9 a.m. and 2 p.m., and the day temperature ranges from 55° to 65°, according to the state of the weather; the night temperature varies from 6° to 8° lower.

FEBRUARY 3.

Slight showers, very mild; nailing Peaches and Cherries, laying Box edgings, returning bare spots under shade of trees, and trenching for planting Portugal Laurels and other evergreen shrubs. Put in other batches of cuttings of bedding plants, cleared out all Pelargoniums, &c., from Strawberry house, and filled it entirely with Strawberry plants. Repotting Pines; the old balls are well moistened through before they are taken out of the old pots, and the roots loosened a little from the sides of the balls by the use of a pointed stick.

Planted out Melons in one division, and in another division sowed the seeds directly on the bed, a couple of seeds in each station, which is hollowed out so that the seedlings may be earthed up as high as the seed leaf. Bell-glasses are placed over the seeds till the plants are in rough leaf.

HANTS.

HARDY FRUITS.

THE PEACH.—Notwithstanding the fact that we have had an unusually fine autumn and mild winter, it is probably owing to the extreme dryness of the ground, notably the subsoil, that the buds of all kinds of fruit trees are more backward than they have been for some years. This condition, so far favourable to fruit prospects, must not, however, be allowed to influence the performance of the most trifling details, which make up an important whole in the successful management of this delicious fruit. Therefore, if not already done, let every tree be carefully nipped or unnailed; burn the nails and cast them into linseed oil while hot; carefully wash the trees with soap and water, and tie the shoots together in small bundles to prevent injury from wind, and secure them to stakes a few inches from the walls. As all good Peach growers now cut out the past-bearing and superfluous shoots as soon as the fruit is gathered, the few final cuts and shortening of gross shoots to maintain the proper balance of the trees may be deferred until the time arrives for nailing in the spring. Meantime, take advantage of unfavourable days for getting shed, nails, and protecting material ready for use at the shortest notice when the proper time arrives. If the walls are old and full of nail holes, a wash of some kind should be applied to destroy the larva of insects, or to seal it up before the buds begin to swell, when the use of strong insecticides, even on walls, is attended with danger. In old gardens, or wherever utility takes precedence of appearance, the best wash that can be used is composed of quicklime, sulphur, and soapsuds, toned down with soot or vege-tarian red; but where the colouring of good brick walls is objectionable, soapsuds and sulphur will answer the purpose for which a winter wash is here recommended.

PLUMS, PEARS, AND CHERRIES.—If the pruning and nailing of these is still in arrear, no time must be lost in bringing the work to a close, as many pressing matters will soon require attention. Plums and Pears that were carefully pinched in July should be cut back to two eyes where they have not formed spurs near home, and foreright spurs on old trees should be thinned and shortened to give light and strength to others which are better placed close to the wall. In favourable seasons like the past many kinds of Pears, notably those worked on Quince stocks, make a growth of 4 inches or more in length and set a flower-bud at the point. These, where practicable, should be tied in to the main branches to give the blossoms a chance of setting, as they invariably swell off fine fruit. Should they fail, they can be shortened at the first summer dressing. Formerly it was the practice to spur back all the wood growths on the main shoots of sweet or dessert Cherries, but many of the strong-growing kinds, including Governor Wood and some of the Bigarreus, when planted in cold, damp situations unfavourable to the complete maturation of the growths, resent this treatment and very often lose their best spurs altogether or commence gumming, which is equally unfortunate. On warm, friable soils this dying back is unknown, but where it is a matter of touch and go all the main shoots should be trained at wide intervals to admit of laying in at full length as many of the young growths as can be so treated without producing a crowded mass of foliage in the summer. All the Dukes bear spur-ring, but these even grow and produce heavier crops of fruit when sparingly pruned and abundant space is allowed for extension.

BUSH FRUITS.—The pruning of these in many gardens is left till the last. It may be that some look upon Gooseberries and Currants as of secondary importance, while others defer thinning out Gooseberries on account of the depredations of birds, but

the light gained by throwing this or any other kind of work into arrear hardly pays for the candle; therefore, bearing in mind that no crop would be more severely missed than that obtained from our humble bush trees, I would suggest pruning without delay. Birds, now very numerous, are extremely fastidious. In some mild, unlikely seasons they are troublesome, while in others they do not seem to discover that Gooseberry buds exist; but to put an end to all doubt and danger, an occasional application of dry soot and quicklime when the newly-pruned trees are damp will make the buds distasteful, while the manurial properties of these deterrents will benefit the roots of the trees and most likely do good service in destroying the larvæ of enemies which may be lurking beneath the surface of the soil. If the planting of bush trees is still in arrear, no time should be lost in getting it finished, and something here again may be said for and against our feathered friends. In many places from time immemorial it has been the custom to plant lines of bush trees along the margins of walks for the avowed purpose of economising space and facilitating gathering. The first idea is a mistake; the second is unnecessary, as facilities are sometimes too numerous. In small gardens a marginal row of trees is all very well, but in large places, where the demand is heavy, there is nothing like planting a well-prepared quarter, if possible, in a high and dry part of the garden safe from spring frosts and favourable for netting either early in the spring or when the fruit is ripe. The square meshed netting is a boon to the fruit grower, as he can tell exactly what a yard of this kind will cover, but the cheapest and best protector for large squares of Gooseberries or Raspberries is galvanised wire netting, so fixed that a portion of it can be removed after the crop is gathered to allow our feathered friends to enter and pay for what they have taken by waging war against our insect enemies. I say this advisedly, as I once saw a very large north border permanently enclosed by a great fruit grower who had reckoned without his host, as the caterpillars had destroyed every leaf, and the birds could not get in to feed when there was no fruit for them to eat. Cuttings of approved kinds may still be put in with a fair prospect of success, but they are better put in in the autumn, as they do not bleed after the removal of the buds, and autumn cuttings always make the best trees.

RASPBERRIES.—Where the old fruit-bearing canes are cut out annually as soon as the fruit is gathered and the young rods are well secured to the stakes or wires, it is well to defer all further thinning out or shortening back until later on, otherwise the Raspberry, being soft and pithy, may suffer from exposure to rain or severe frosts. The rods may, however, be selected and tied in, but not cut back until the buds begin to push in the spring. The Raspberry delights in light, rich food, and plenty of it, in the form of a mulch of good rotten manure, but, like the Strawberry, it resents all disturbance of its surface roots, and on this account the ground should never be touched with the fork or spade.

THE APRICOT.—Although the Apricot is an early-flowering tree, it does not follow that it is the first to claim the pruner's attention; neither is it desirable that it should be pruned until after the turn of the year; but when February comes round, danger of protracted frost has, as a rule, gone by, the buds begin to swell, and the best time to prune has arrived. Like all Eastern trees, it is easily excited into early growth, and on this account it is almost invariably planted against the best south wall in the warmest part of the fruit garden. This may be right in the coldest parts of the kingdom, but south of the midlands, a good crop of fruit being the primary object, it is questionable if walls facing the west would not better answer the purpose. In a well-managed, but badly situated, garden in this county the trees are planted against a west wall, and I have frequently seen them carrying good crops of fruit in seasons when trees on south walls in better situations were a failure. The cause is not bound up in mystery, as it is well

known that a burst of bright sunshine on south walls puts the finishing touch on thousands of frosted flowers, which, though equally hard hit, would escape under the morning shade of walls facing the west.

The pruning of Apricots is a very simple operation, particularly when summer picking is properly carried out, as all that then remains to be done in February is the shortening back of foreright growths to two or three eyes. In course of time the spurs get wide of the wall, and a few of these should be cut back annually to induce the formation of new buds close at home, and to strengthen weaker spurs lying near the wall. Old walls, often badly infested with grub, should be well cleansed every winter. A wash similar to that recommended for Peach walls will answer the purpose, and save a great deal of time in hand-picking in the summer.

Eastnor Castle, Ledbury. W. COLEMAN.

TREES AND SHRUBS.

THE MURTHLY CONIFERS.

MURTHLY Station on the Highland line immediately precedes Dunkeld, and thus it is but a short distance below the redoubtable woods of Duke John of Athole. But although the Murthly woods can fairly be compared, by reason of a similar environment, with those at Dunkeld, the climatic regulations and position of Blair are considerably changed by being 20 miles nearer the heart of the Grampians. The whole district from Murthly to Blair is very rich in attractions to tree lovers; indeed, in this respect it is second to none in Perthshire, and therefore, perhaps, Great Britain. Murthly belongs to Sir Douglas Stewart, the lineal representative of the Stewarts of Granatully, which latter property has been in the hands of the family over 450 years. The planting of the newer kinds of Conifers was commenced by the present laird's brother, Sir William Stewart, a great part of whose early life had been spent in the wildest regions of the United States. On his return to Scotland he brought with him a large quantity of Douglas Fir cones and plants. His predecessor had been engaged in the building of a new castle, of which he only lived to see the outside portion completed. But Sir William, who had stood alone on the peaks of the Rocky Mountains, was content with the old house, and devoted his time and money to the formation and planting of his pleasure grounds and estate. The same work was eagerly taken up by Sir Douglas when he succeeded to the property, and to this day the new castle remains very much as it was left—an empty framework. However, the magnificent triple avenue planted as an approach to it has matured into imposing treehood.

The question of a substitute for the Larch has been more or less ventilated for these last two decades. The Perthshire arborists have come nearest solving the problem by the thriving plantations on a large scale of *Abies Douglasi* and *Menziesi*. In no place in the kingdom, perhaps, can Douglas Firs be met with in such quantity as at Murthly, and, putting aside the giant at Dropmore, finer specimens do not exist anywhere from Penzance to Wick. A great part of the planting is on ground that slopes gradually down to the Tay. In the neighbourhood of the castle the ground is suited for terrace formation. Accordingly, a series of terraces has been formed near the house, and green drives have been carried on the same system nearly parallel to each other for some distance into the woods. The planting all over the estate has been extensive. Immediately on emerging from the station a perfectly straight road is cut westward across the Muir of Thorn, through a thriving and recently formed wood of Conifers, including many Douglas Firs and Pines. This road goes on for 4 miles with dense wood on both sides. On the other side of the estate the planting has been equally extensive, so that there are now over 4000 acres covered by forest growth. The most interesting piece of planting is the re-forming of Great Birnam Wood, which until lately

has never recovered from its march to High Dunsinane Hill.

The geological formation on which the trees are growing is either the old red sandstone or the lower Silurian. For the most part the soil is a sandy loam, but in many instances marshy and peaty. Numerous rills trickle down the slopes, and the soil is annually enriched by the fall of the leaves from the deciduous trees, any number of which may be found here. The range of altitude above the sea varies from about 160 feet to 1000 feet. On the whole, the position of the plantations round the house and stretching alongside of the Tay is very sheltered. The bulk of the ornamental planting was done about 1845. The Lime avenue leading to the old castle was planted in 1711.

The Conifers, with which many will be most interested, are upon the slope that leads down to the Tay. Terrace walks, in the form of mossy green drives, are cut, as aforesaid, parallel with the river. Taking the topmost of these, and starting from the kitchen garden, which is at one end, we enter a Douglas Fir avenue of over half a mile in length. The trees are taller on one side than on the other; on the left hand they average 40 feet. Behind the Douglas Firs is a wood, and between them, also under the trees in the rear, Rhododendrons are growing. The differences observable amongst specimens of this famous Fir are very great, there being no fewer than four distinct types, leaving out of consideration minor divergencies. This is most marked in a part of the avenue where the trees on one side are close upon 60 feet high. Curiously enough, two types appear on one tree; the foliage for about two-thirds of its height is totally different from that at the top, which is conspicuously smaller. Short breaks and hollows occur ever and anon; in these other trees are planted. A Wellingtonia 60 feet high has a goodly bole, but the branches are far apart, which gives it a sparse and unhappy appearance. Close adjoining are some good *Picea nobilis* without a trace of any glaucous coloring. About a dozen *Picea Nordmanniana* take the place of the Douglas Firs on the lower side of the avenue. Here, again, it was possible to notice two types, differing not so much in colour as in the length and projection of the needles. The prettiest part of this walk is where a series of three ponds lie beneath one's feet in a verdurous hollow. They are called American, from the fact that Rhododendrons, Azaleas, Laburnums, and Kalmias cluster thickly around them and up the slope. The Birches, prettiest of all trees in winter, are likewise mirrored in the pellucid water. A very pendulous *Sequoia sempervirens*, most probably from growing in the shade, greatly enhances the effect, as do also some very thick and quite glaucous Douglas Firs. The most noticeable trees further on are two good examples of *Picea lasiocarpa*, each 35 feet in height, and a *Sequoia sempervirens* which has lost its leader, and consequently spread out like a park Oak.

Descending through the wood to the next green drive, and walking back again towards the castle, one comes to a part of the estate notable for magnificent trees of *Abies Menziesi*. A line of very tall ones, averaging fully 70 feet by accurate measurement, is especially noteworthy, and as the height of this tree very rarely exceeds 100 feet, no better proof of its utility for extensive planting could be desired. Those, too, who have every right to speak positively vouch for the good quality and endurance of its timber. The great charm it affords as an ornamental tree is well known. The reverse of the foliage is a slaty blue. As the branches grow from the stem at an angle of 45°, this beautiful colour is always visible, and in a tall tree can be seen from a considerable distance off. Opposite these fine specimens is a larger pond. This, when I saw it in January, was like a fairy scene in a Christmas pantomime by reason of the icicles clinging to the rocky margin, which, being always moist in the winter time, was frozen and shone like glass. A little further on a stream of water pours down some steps into a stone basin. Round the basin is a semicircle of

Cupressus Lawsoniana, with a *nutkaensis* in the centre. Every spray of the latter looked like a Fern frond, and was different from the other both in colour and fall of the branches. On the same side higher up are two remarkably fine specimens of *Nordmanniana* and *Picea amabilis*. After these is a line of tall *P. nobilis*, nearly all non-glaucous, and quite put into insignificance by the magnificent colouring of the *Menziesi*. I am unable to assign a reason why *nobilis* here is so different in hue from others elsewhere. Opposite these, somewhat retired from the drive, is a tall Douglas Fir lying full length on the ground from the effect of a severe gale. Part of the roots still remain in the earth. This has given such strength to the trunk, that four of the branches are growing up from it like separately planted trees. The one nearest the roots is 23 feet high. We are now at the foot of a slight undulation where the path makes a gentle curve. At the bend, planted so as to contrast with the Conifers, is a short avenue of purple Beeches. At the top is a stretch of park land crossed by the approach to the castle from the eastward. It is an avenue of *Pinus Cembra* and *Wellingtonia* alternately with Oaks in the background. This road joins the grand avenue, and the walk which we have been following does the same, but a little before doing so passes under a clump of *Pinus monticola*, three of which are between 60 ft. and 70 ft. high. This Pine does extremely well at Murthly. It takes up little space, as the spread of the branches is slight. Opposite is a thick covert of *Menziesi*.

The chief avenue consists of Limes with Yews underneath them and between the road and the trees are broad Grass lawns. This avenue contains four lines of trees, thus forming three avenues—a wide one in the middle and a smaller one on each side. The blending of the foliage of the Yew and Lime is very striking, and in autumn and spring well worth going a considerable distance to see. At the end, facing the new castle, is a high precipitous rock of red sandstone, surmounted by a triumphal arch. The planting round the house is very tasteful, trees of the same kind being grouped together. To the right of the entrance is a triangular piece of ground planted with thriving *Araucarias* and *Juniperus recurva*. Lower down is a fine group of Deodars and Pines—the Deodars the healthier of the two. A broad walk goes from here to the river. By its side is a fine *Albertiana* 50 feet high, and a tall Douglas Fir with an 8-foot bole at a height of 3 feet. These two trees are only part of a great number, for the planting here, as elsewhere, has been done by a lavish hand. A large Silver Fir stands forth as the champion of the old-time trees, and bravely too. *Abies grandis* is very healthy, and is represented by two specimens, the annual growth of which has been very great. Before reaching the river we pass through an avenue of *Araucarias* and a grove of *Cupressus Lawsoniana*. Along the river bank, both towards Dunkeld and Perth, is a broad green drive, by the side of which Birches and various trees have been planted. On the opposite side of the Tay are high wooded hills.

The home pleasure grounds lie between the house and the Tay, and contain unquestionably the finest Douglas Fir avenue in England or Scot-

land. The height of the trees averages 70 feet, and every specimen is apparently in good health. A very prominent one belongs to the variety called *taxifolia*. Beyond this avenue, on the side remote from the house, is a fine Deodar 55 feet high with a still taller *Pinus monticola* beside it. At this part I found that it took sixty-four paces to walk round one of the Douglas Firs, and one branch at the bottom was as much as 11 yards from the trunk. On the other side is a row consisting of five thriving trees of *Abies Hookeriana* about 20 feet high. This is one of the most beautifully coloured trees known. It is much more glaucous than *Pattoniana*. At Murthly it is a quick grower, and the branches cluster thickly round the stem. Popular favour has not been bestowed upon this tree; why, it would be hard to say, for nothing in the same genus is prettier. Nearer the house is a very tall tree of *Chamaecyparis* and two or three good examples of *Picea magnifica*. Alongside of the latter are growing some *P. nobilis*; a good opportunity is thus given of comparing the two; although of the same type, the habit of growth is manifestly different. Avenues are constantly recurring, and in every instance the trees are growing pro-

Arancaria-famed places, and the growth formed has been thoroughly matured. By the side of the chapel are two grand old Silver Firs. 3 is an avenue of Yews over 300 years old. It leads down to a small mortuary chapel. The trees are planted so close together, and the foliage is so dense at the top, that this avenue looks as gloomy as an aisle in a dimly lighted crypt. There are other fine Yews round the house, the circumference of the branches of one being 225 feet. Trees like this, when seen in conjunction with new kinds, take away the sense of primness, one of the chief defects of foreign trees; besides, an air of antiquity is always desirable about the grounds of a mansion. The average height of this avenue at the tallest part is 40 feet. 4. Leading upwards from a flight of stone steps is a line of tall *Cupressus Lawsoniana* averaging 35 feet or more. This leads up to another Deodar avenue, planted in the same way as the first; but between the vases are stakes, upon which various kinds of Clematises are trained. Besides these avenues, the grounds have many other features of interest, such as hedges, which are remarkable, as are also the flower and Rose gardens, which are hedged in

from the view of the house; but as the primary object of this paper is an account of the Conifers, I must pass these over.

Not only in the parts to which I have alluded, but all over the estate the planting is equally interesting, and all the more recent introductions in the way of trees have been tried. Others besides those mentioned are thriving, but a conspicuous failure is *Pinus ponderosa*. Below the gardener's house, in a glen formed by a small burn, are several fine trees. A pendulous variety of Douglas Fir, 35 feet high, is remarkable for the small spread of the branches laterally. Looking at the tree from a distance, it appears as if a hoop could be dropped over it from top to bottom. Either the shade of the wood has caused this, or it is the natural habit, since there is abundance of



Holly leaved Cherry (*Cerasus ilicifolia*).

sparsely. Four merit a detailed description, which for sake of conciseness I will number. 1. consists of wide-spreading Deodars about 35 feet high. At their base is a fringe of *Rhododendrons*, and at regular intervals apart occur vases for flowering plants. At the foot is the river, the further shore of which is in the form of a forest-clad hillside. When *Rhododendrons* are in flower and the Deodars bright with fresh foliage, and when the wood beyond the river has assumed its greenery, the wealth of colour here poured out by beneficent Nature is beautiful beyond compare. 2. Between the chapel and the old castle is an avenue of *Araucarias*. There are longer avenues of the same tree, and others in which the average height is taller, but there are none in which the trees are in more perfect health. The severe gales and winters experienced here seem to have left it untouched, and scarcely a branch is removed from year's end to year's end. The perfect health of the trees can no doubt be accounted for from the fact of the ground having been levelled for terrace formation. This has caused the removal thither of large quantities of soil in which the trees were planted; the latter again being in a higher latitude than Castle Kennedy or Elvaston, where Conifers have suffered much, have not grown so fast as in these

room for the spread of the branches. Growing with their roots in the water are three fine examples of *Sequoia sempervirens*, each over 60 feet; from this instance of its success, it might be tried with considerable advantage in sheltered glens further north. *Picea nobilis* has already proved of great value in such positions, but not so close to the water. The Himalayan Spruce seems healthy enough, but none are sufficiently tall really to judge of its merits, as they are all in sheltered positions. In this glen there is likewise a vigorous *Fitzroya patagonica*. *Cedrus atlantica* will doubtless prove to be one of the best of Conifers, and a very promising avenue of it has been formed at Murthly. The Weymouth Pines, as elsewhere in Scotland, are many of them large, massive trees.

The effect of a Douglas Fir plantation on the landscape is very marked, the dark green of the foliage and the tapering leaders having a very bold appearance. In situations sheltered by the hills from wind this Fir will form a very valuable tree, and so, perhaps, will *Menziesi*, from its sturdier growth in more exposed districts. If Murthly still continues to escape with impunity from the severe gales and winters, it will soon be without many rivals as a home for coniferous trees. As it

is, owing to the enormous numbers that have been planted, few places are more interesting or instructive. M. C.

THE HOLLY-LEAVED CHERRY.

(*CERASUS ILCIFOLIA*.)

THE accompanying illustration represents a flowering spray of this very distinct and desirable evergreen shrub. It appears to be a comparatively recent introduction to British gardens, as London makes no mention of it either in his "Arboretum" or the abbreviated edition of that work, viz., "Encyclopædia of Trees and Shrubs." The thick, rigid, dark green, glossy foliage bears a considerable resemblance to that of the Holly, hence the specific name. The small white flowers are borne in erect racemes sometimes a couple of inches in length. So far as my knowledge extends, no fruit has as yet been produced by it in this country; in the "Botany of California" cited below it is described as large (half an inch thick or more), somewhat obcompressed, apiculate, usually red, sometimes dark purple or black, with a thin pulp which is acid and astringent, but of pleasant flavour. *C. ilicifolia* is a native of the dry hills of the coast ranges from San Francisco to San Diego and of Western Arizona. It flowers from March to May and matures its fruit in November and December. In all probability it is only in the south and south-western parts of Britain that this highly ornamental shrub will succeed. A few years ago I saw a bush of it flowering freely in the garden of the late Mr. G. C. Joad, at Wimbledon, and it has also flowered at Kew, where it thrives thoroughly well in the temperate house, and also against a wall in the open air. Neither the bush in Mr. Joad's garden nor the one which bloomed in the open at Kew had, however, stood the test of a severe winter. In a wild state it forms a compact shrub 8 feet or 12 feet in height.

GEORGE NICHOLSON.

Royal Gardens, Kew.

NURSERYMEN'S PRICES.

"J. S. W.'s" note on the disparity of the prices of nursery produce requires some explanation, as I think it can be shown to be more apparent than real. No one who has any practical knowledge of trees would judge of their value by a mere comparison of heights, than which nothing could be more misleading. If inches meant shillings, then the nurseryman's cue would be to plant his seedlings very thickly and give them a double dose of manure, treatment by which he would produce as many inches in two years as he ought to do in three. Whether the plants would succeed equally well when removed to the bleak mountain side is another matter. With regard to the Austrian Pine, I am selling four-year-old plants, *i.e.*, two years seedling and two years transplanted, and from 9 inches to 12 inches high, at 25s. per 1000, a price at which they pay well enough if one could only sell plenty of them; but having an order lately for a hundred about 2½ feet, of which size I was sold out, I had to purchase them from a neighbour who charged me 30s. for the hundred. This I considered a moderate price, as they had had plenty of room, had been three times transplanted and had abundance of fibrous roots. I could have purchased plants of the same height for 20s. per 1000, but these were standing in the original nursery lines and would only be purchased by those who look in catalogues to see where they can get the greatest number of inches for the smallest number of shillings.

The Corsican Pine is one of the most troublesome of all to transplant successfully. I know where I could at present buy 50,000 2½ feet high at almost any price I liked to offer; the grower would certainly be highly pleased to dispose of them at 20s. per 1000, but any forester who knew his business would prefer to pay 70s. per 1000 for even a smaller size that had been two or three

times transplanted, although his employer would very likely be told, by the recognised cheap plant hunter who is to be found in every neighbourhood, that it was a gross imposition. I believe that the uppermost thought in nurserymen's minds at present is not how much they can make out of their customers, but how cheaply they can offer their plants, in order to tempt impecunious proprietors to become purchasers. As an example of the great variation in the price of forest trees, and which might be multiplied *ad infinitum*, I remember fully twenty years ago having to burn over 100,000 fine from 3 feet to 4 feet Larch, while a neighbour was advertising the same size at 5s. per 1000; the following season similar plants were selling freely at 35s. per 1000. In further illustration of the delusiveness of mere height as a criterion of value, I know where from 3 feet to 4 feet Scotch Firs could be bought at 10s. per 1000—probably 7s. 6s. would not be refused; whereas if these were two years younger and 2 feet shorter, they would easily bring a guinea a thousand.

The principle of paramount importance to be kept in view by planters is to see the plants, but more especially the roots, before purchasing. I believe as a rule the disparity in the prices of seeds is also more apparent than real, and that any honest seedsman will only charge a fair profit on the purchase price. If "J. S. W." happens to be acquainted with any seed-saving gardeners, he will know that seedsman have generally to pay fancy prices for their produce—*e.g.* I have known 20s. per ounce paid for *Lobelia speciosa* when it could be got from the London trade for 5s. I have no doubt these prices fairly represented their respective values, but it would be absurd to expect the retailer to sell them at the same price. It would appear anomalous to the uninitiated were they told that a grower of Turnip seed will not grudge to give 50s. or 60s. for a bushel of seed the produce of which he has contracted to sell at 18s. per bushel, but the grower knows what he is about.

NURSERYMAN.

Ornamental Brambles.—*Rubus chamaemorus* and *R. arcticus* are both well known as flowering plants, and desirable for rockwork. *R. saxatilis*, though not claiming a place as a flowering plant, deserves one as a fine-foliaged trailer. All through the dull season its leaves, which are deep red, are extremely ornamental, and for draping old roots surpass even the Virginian Creeper, if not in intensity of colouring, at least in duration. In dull shady places, in which this plant is generally seen, it rarely develops its bright colours, which only reach their best when fully exposed to the sun and kept well supplied with water during hot summers. It revels in a peaty soil, and although useful for draping rooteries or large boulders, it is most at home where it can find soil for the roots emitted at every joint to strike into. Its stems are small and wiry, and covered with close-set short prickles. Cuttings of it taken off in spring are easily struck under hand-lights, or they may be taken off in autumn and struck in the open ground.—K.

SHORT NOTES.—TREES AND SHRUBS.

Taxodium shenense—I know of no Conifer with brighter foliage than this. For sheltered gardens by the south coast or in warm Devonshire coombes it would be peculiarly effective. The foliage for a great part of the year bears the same bright green as young Larch shoots do in early spring.—C. A.

Chimonanthus fruticosa—I have seen a few seed pods once upon a plant of this which we have here on a wall facing the east, but I believe it very rarely produces seed. Not quite so rare, perhaps, but more interesting on account of their peculiar shape, are the seeds of *Magnolia coarctata*, which are not ripe for six months after the flowers have faded.—J. C. C.

5313.—Pruning Hawthorne—As the roots of the tree about which enquiry has been made have been well manured, nothing more can be done for them. I should recommend that the branches be shortened back 3 feet or 4 feet according to their length, but it is not advisable to cut back to very old or hard wood, as if they broke into growth again at all it would be weak.—J. C. C.

SHRUB PLANTING UNDER TREES.

It is often difficult to know what to plant that will flourish under the branches of overhanging trees. The first thing before planting should be to cut off as many branches as possible not to make the trees unsightly; many are afraid to cut trees much, but in nine cases out of ten they are improved by being judiciously pruned. Common Laurel is the best of all shrubs to plant among large forest trees of any kind, and when the Laurels are annually pruned to about 2 feet or 3 feet high they soon form a dense mass of greenery. English Yews likewise grow well under trees where they can have a little more head room than the Laurels, and they do not bear quite such close pruning in this position, but where plants 10 feet and 12 feet high are required they are among the most useful to plant. Portugal Laurels grow well in such positions if allowed freedom, and it is surprising how deep green they get when so grown in some soils; of chalk they are very fond. Where sloping banks are formed under overhanging boughs of large deciduous trees the following plants do well and are very effective when planted in masses—viz., *Berberis Aquifolium* planted thickly and associated with two or three golden or silver Hollies. In autumn and winter the *Berberis* assumes a bronzy hue which contrasts well with the silver or golden Hollies. This *Berberis* will bear annual close pruning, and grows luxuriantly in such positions. Next to the *Berberis* and Hollies may be placed a patch of common Dogwood, which grows well under trees, and its red stems in winter show themselves off to advantage. Another plantation may consist of common Savin, medium-sized plants of which are very effective, and contrast well with the Dogwood. It grows close and requires little trouble to keep it in good condition. *Aucuba japonica* in a mass intermixed with a few plants of *Berberis Aquifolium* makes another charming combination. The *Aucuba* grow well in such positions, and are not over particular as to soil; if strong, so much the better; clay with some manure added to it is what they revel in. *Lycasteria formosa* in a mass grows amazingly fast under trees, and when in bloom its long, drooping catkins are very effective. *Hypericum patulum* is a dwarfier growing plant, and where not too much under overhanging branches it grows and blooms freely. Where variety in the way of blooming plants is desired the flowering Currant (*Ribes sanguineum*) can be employed with advantage; owing to its blooming before the trees overhead get into leaf, it is not much interfered with. *Forsythia viridissima*, too, grows and blooms freely under trees, its yellow flowers being produced in quantity in early spring; it is amenable to pruning. *Berberis Darwini* makes a compact-growing bush, and when in bloom its bright orange-coloured flowers, set off to advantage by its dark green leaves, are very effective.

E. MOLYNEUX.

Old-fashioned trees.—In the grounds at Meikleour, within sight of the windows, stand two fine Scotch and Silver Firs. The first is of very peculiar growth. Within 6 feet of the base are some twenty strong laterals making upward. Thus the form is wide-spreading and bushy in character. The Silver Fir is a giant over 100 feet high, with the branches rising regularly tier upon tier from base to summit. At 4 feet up it girths 13 feet 6 inches, and it takes sixty-six good paces to walk round the spread of the branches. Besides these two magnificent trees there are numerous tall Spruces about the grounds, which it must be confessed lose little by the absence of Wellingtonias and other trees, which, as Mr. Baines truly remarks, are often planted on the chance of their succeeding, when harder trees would do just as well. Sir William Stirling Maxwell, at Keir, when any of his Deodars fell out of the ranks, used to replace them with Scotch Firs. He had learned something by experience; "twere well that others would."—M. C.

The old Poison Vine (*Periploca græca*), though long an inmate of our gardens and pretty

* *Cerasus ilicifolia*, Nuttall, "Sylva," II., t. 47. *Prunus ilicifolia*, Walpers; Watson, Gray, and Brewer, "Botany of California," i., 168.

extensively used as a conservatory climber, we rarely meet with in the open air, though it appears to be hardy enough to stand our severest winters unscathed. It is deciduous, however, and when used for trellis work, for which it is well suited, it should always be associated with a not over-robust evergreen. Its flowers, though not attractive, are unique in appearance, the petals being a dark, dingy purple with green tips, and produced plentifully in June and July. Their construction is singular; long incurved appendages in the shape of a crown seem to be placed as sentinels to protect the style and anthers from unwelcome visitors. A good rich, well-drained soil suits it best. It may be increased by cuttings put in in spring.—K.

LAYING TURF.

WHERE new turf has to be laid there is no time of the year so good for doing it as the autumn. The extra rush of growth which the various Grasses make when the soil and air are moistened by the rains that generally fall at that season is such as to admit of the roots making good the loss which they have suffered in removal and getting well hold of the soil before winter sets in. When such work has to be done late in winter the drying March winds make gaping joints, despite a free use of the beater, necessitating the trouble of watering, which in dry springs, where much work of this kind has to be carried out late, causes a good deal of labour, with an unsatisfactory state of the turf through the ensuing summer. Cutting and laying turf are usually looked upon as such simple operations, that any labourer can do them, but the condition in which this kind of work when completed may often be seen proves the contrary. In the neighbourhood of towns, where the material has often to be bought, turfing is usually the most unsatisfactory work connected with making new places or alterations in old ones. Much of the turf procurable is so foul with weeds and full of coarse Grasses, as to require an unlimited amount of weeding before it can be brought even into fair condition. To admit of turf being laid well and quickly, more care is needed in cutting the turves than is often bestowed upon that operation. Where an ordinary line is used, without constant watchfulness it gets pressed by the iron out of the straight line, causing the turves to be so much narrower or wider than they should be, and the result is that when they come to be laid there is no end of filling in with bits required. If, instead of the line, a long, straight-edged board were used, the turves could be cut exactly equal in width and in half the time compared with where a garden line is employed, and, as will be easily understood, the longer the board the quicker the work may be got on with. The board used should have a hole an inch or two from each end that will admit of an iron pin being put through it, such as that used for a garden line. These pins thrust into the ground keep the board in its place. Under such conditions, a handy man with a sharp revolving cutter running against the edge of the board on which his feet are placed will cut the turves as straight as an arrow, and twice as fast as when the ordinary garden line is used. I need scarcely add that turves should not be rolled up for any length of time, as the Grass gets blanched and the roots dried up, nor need I allude to the necessity for having the ground to be laid not only quite free from inequalities of surface, except such as are intentional, but also the material with which hollows are filled up made solid enough to prevent its settling into holes afterwards. Half an inch of fine soil spread on the top of newly-laid turf is a great assistance to it, especially if laid at a time when dry weather may be soon afterwards looked for. Where work of this kind has yet to be done, the sooner it is completed the better, for reasons already stated.

T. B.

Mummy Peas.—The note respecting mummy Peas from Viscountess Chetwynd is of a nature to stagger those sceptics who have found it

very difficult indeed to admit the possibility of Peas growing after an existence of 2000 years. Assuming that such is a fact, it is evident that the preservation of the vitality of the seed must be due to some elements in the preserving process to which the mummy wrappings were subjected. But it would be interesting to learn why Peas should so often be found—or said to be found—in mummies. Were Peas held to be sacred plants by the ancient Egyptians? It is odd, too, that all previous mummy Peas should have been found identical with the old branched Pea.—A. D.

GARDENERS' BENEVOLENT INSTITUTION.

"J. S. W." is probably, like myself, a non-subscriber to the funds of this charity, and therefore both his and my criticisms upon the enormous sum charged for management may be deemed out of place. Still, the matter is one which concerns all gardeners, because the institution claims to be a representative one. I may mention that I am a member of a society based absolutely on the principle of mutual help. It has an income of more than £24,000 yearly and has hundreds of members, and the amount of work involved is great, and yet the entire cost of management annually does not reach £90. As the real good done by the benevolent institution is supposed to be found in the pensions granted to aged or infirm persons, I find that the amount so paid last year was £1372, and the cost of disbursing that amount was in round figures £500, or just about one-third of the amount granted in pensions. Practically, at £20 per annum pensions, the management expenses of the ordinary fund alone consumes the income of 25 pensioners.—A. D.

—"J. S. W." complains of the item for travelling expenses, and a curious commentary on this has just been afforded. Mr. Cutler went down to the Preston show of the Royal Horticultural Society, and there interested a Mr. Dodson, of Blackburn, who then became an annual subscriber, and, on the death of his widow, a legacy of £500, less duty, came to the society, which was paid into the institution last week. How many more cases of the same kind there may be one knows not, but this alone is sufficient to justify the steps taken. "J. S. W." writes as if asking for money was a pleasant occupation; if he would perhaps try it for a little while, and see what he could add to the institution amongst his neighbours, he would perhaps alter his opinion, and be less ungenerous to those who undertake it.—DELTA.

—As a subscriber to this institution, and one who has also taken somewhat of a working interest in it for the last few years, allow me to make a few remarks on what "J. S. W." says in THE GARDEN last week (p. 77). In doing so I would first of all say that I am as alive as any man can be to the necessity of thorough enquiry into the question of expenditure *versus* receipts in any institution that appeals to the public for support. What I mainly take exception to in "J. S. W." remarks is, first, he would lead his readers to believe that what he credits the secretary with receiving during the past year is annually received by him. Now, this is not so. The donor, for instance, of £88 odd mentioned by "J. S. W." was specially granted for the secretary's well-directed efforts in securing the magnificent sum of £1762 for the Augmentation Fund. It is 5 per cent. on the amount gained, which most of your readers will agree with me in saying is far from an extravagant allowance. Then, again, as to the expenses of the annual dinner, £74 odd, would it not have been but fair for "J. S. W." to have put opposite that the amount collected at that dinner—viz., over £1000? I for one think it would. As to the secretary's travelling expenses, I believe it is generally allowed that the results gained, as to annual subscribers and life members, by his personally canvassing the gardening community at the large shows throughout the country are such, as your editorial remarks infer, as to fully justify them. However, I am free to admit that there may be room for differences of opinion on this subject. "J. S. W." will, I think, be one of the first to allow

that there is such an individuality in some men for certain positions, that it is difficult to put a money value on them. In my opinion, Mr. Cutler is one of those men, and that the gardening community as a body will never be able to repay him for what he has done for them. For now over forty years he has been using his persuasive powers to induce those who "have" to give to those who "have not," and has laid by the good nest-egg of £20,000 to give solidity to the society. Thrifty habits are undoubtedly a desideratum in all classes. Meanwhile there are lots of unfortunates in the gardening community who cannot well avoid their misfortunes and who want help. The Gardeners' Royal Benevolent Institution is doing what it can to help them, and if "J. S. W." does not see fit to give it his support, why surely he should leave it alone. I may add that I know Mr. Cutler personally but slightly, and that I do not know any other official connected with the charity.—H. J. CLAYTON, *Grimston Park, Tadcaster.*

ORCHIDS.

RARE ORCHIDS.

IN reply to "M. P. F.'s" query (p. 58) allow me to say that I can find no record of *Vanilla Walkeri* in the books now at my disposal. Lindley describes twelve species of *Vanilla*, but this one does not appear to be amongst them.

VANDA SPATHULATA is a species found wild as an epiphyte in Mysore and Malabar. It is a plant bearing long corymbose racemes or panicles of golden yellow flowers, standing up high above the short distichous leaves, both leaves and flower-stalks being marked with red or crimson spots.

VANDA PARVIFLORA of Lindley, in the *Botanical Register*, vol. xxx. (1844), misc. 57, is now better known under the name of *Aerides testaceum* or *A. Wightianum*. It is found wild in India and Ceylon. It resembles *Vanda lamellata* in habit, but the flowers are small, of a pale ochre colour, and the lip is dotted with purple.

CYMBIDIUM BICOLOR is an old Lindleyan species (*Bot. Reg.* (1839), vol. xxv., misc. 69). It was imported from Ceylon by Messrs. Loddiges, then of the Hackney Nurseries. The flowers are similar to those of *C. alofolium*, but are more richly marked with deep red or crimson, and is readily distinguished by having a sac at the base of the lip. It has also been called *C. pubescens* and is not unlike *C. Finlaysonianum*. Lindley was of opinion that the shorter spike and the hairy lip ought to distinguish this last plant from *C. bicolor*, but it is questionable whether it is more than a geographical form of that species. It was imported by Mr. Cuming from Singapore for Messrs. Loddiges about 1837.

LIPARIS LONGIPES.—This is an Orchid that has long been grown in collections. It is now throwing up its flowers with us. It is curious, inasmuch as one of the two or three leaves is folded around the flower-spike, and so acts as a flower-sheath in its younger stages. It was found both by Seemann and Champion growing in clefts of moist rocks in Hong Kong, but is tolerably common elsewhere in the Eastern Tropics. The flowers are very small, of an apple-green colour, and remind one of those of the *Dendrochilums*, being borne on gracefully arched spikes. Its odour, however, is very disagreeable, somewhat resembling that of the male inflorescence of the Spanish Chestnut, or of that of the *Ailantus*.

LUISIA ZEYLANICA.—This, according to Reichenbach, used to be known in English gardens under the name of *Cymbidium triste*, a name which does not suggest its possessing any great beauty. It is wild in Ceylon, where Macrae seems to have first found it, and has sombre green flowers with a dull purple lip.

OBERONIA LONGIBRACTEATA.—A curious little plant, also discovered in Ceylon by Macrae, something like *O. iridifolia* in habit, but with more fleshy leaves. Flowers minute, in rat-tail spikes; not at all a showy Orchid, although botanically very interesting.

JOSEPHA LANCEOLATA.—I could not find the generic name of this Orchid until I referred to vol. iii. of the "Genera Plantarum," where I find that Josepha (not Josephia, as on p. 58) is one of Wight's genera of orchidaceous plants, of which two species only are known. They come from Ceylon and India. The species lack beauty, bearing small greenish flowers on slender branched spikes. It may be as well to note that the generic name Josepha has also been applied to the well-known genus Bougainvillea, and that Josephia is, or rather was, Salisbury's name for the genus now known as Dryandra. It is very pleasant to hear from "M. P. F." that he has the curious Cingalese *Cottonia peduncularis* in cultivation, and I trust that he will be so good as to notify its flowering in THE GARDEN whenever it happens. No doubt there are hundreds of rare Orchids now in cultivation in this country, seeing that of late years so many facilities have arisen favourable to their introduction, and it would be very interesting if other amateurs would follow the example of your correspondent, and record their names in THE GARDEN whenever they have reason to suppose them rarities and have failed to find their names in popular books, trade lists, or catalogues.

F. W. BURBRIDGE.

Trinity College Botanic Gardens, Dublin.

Lælia anceps Sanderiana.—Of this new Orchid, which is said to be as lovely as Dawson's variety, large quantities of imported plants were sold last Tuesday at Protheroe and Morris's sale rooms, Cheapside. Some 160 lots were sold, and these included some huge masses, which fetched from 46, 42, 38, 36 guineas down to 10 guineas.

Dendrobium nobile Wallichii.—Wallich's variety of this well-known Dendrobe is not only quite distinct from the original, but superior in point of colour, the flowers being larger and darker. The growth, too, is stouter and of a paler green. Dr. Soper has fine plants of both flowering side by side in one of his houses in the Clapham Road. Both are fairly smothered with bloom, and, as may be imagined, have a charming appearance. They have been subjected to treatment, the object of which was to thoroughly ripen the bulbs during late summer and autumn.

Calanthes at Powderham Castle.—Mr. McCrowe (p. 24) asks for the names of Calanthes which were subjected to cool treatment here while resting. Mr. Powell has kindly furnished me with them. They are as follows: *C. Veitchii*, *vestita luteo-oculata*, *nivalis*, and *Turneri*. I do not think that cool treatment could have been the cause of Mr. McCrowe's failure, as no plants could possibly look better than those at Powderham. As to their standing in a conservatory when in flower, that is another matter. I never remember seeing them remain in good condition when in flower in a temperature much below 60°.

—J. C. C.

Odontoglossum Rossi majus.—Of this charming Orchid we have received flowers from various correspondents during the past week. Mr. Horsman sends from his nursery at Mark's Tey a beautiful gathering of several varieties, differing chiefly in the depth of tint, some being very dark and others very pale. The variety *rubescens* is the deepest of all and very lovely, the whole flower being flushed with a purplish rose tint. Judging by the fine spikes sent, Mr. Horsman grows this Orchid to perfection. Another gathering comes from Mr. Sanderson, Talbot House, Edinburgh, whose specimens are also extremely pretty, one form being almost white and another unusually dark.

Vanda peduncularis.—I am glad that "F. W. B." has directed attention (p. 51) to this interesting Orchid. The illustration is a faithful representation of the plant in question. I know it well, having flowered it several times. We have two plants of it growing in teak baskets suspended from the roof in the Cattleya house, on which there are at present four flower-spikes—two 18 inches long and two smaller. It is very free-flowering, and will remain in flower three months. It grows freely, and requires no particular care as to management. Our two plants, together with a

number of other Orchids, were sent from Dharwar, Bombay, seven years ago. No one whom we knew could tell us the name of this Vanda-like Orchid, but three years ago we sent flowers and leaves of it to Prof. Reichenbach, who named it *Cottonia peduncularis*.—JAMES ROUTLEDGE, *Freelands, Perth.*

Phalænopsis leucorrhoda.—This, in my opinion, is one of the most beautiful of all the Phalænopsids, whether species or hybrids. It possesses the handsome foliage of *P. Schilleriana* while the flowers most resemble those of *P. amabilis* in form, particularly as regards the hair-like cirrhi on the lip. The type *P. leucorrhoda* possesses a lovely delicate pink colour, but now there is a white form of it which, I think, is not so pleasing, inasmuch as it too closely resembles the commoner *P. amabilis*. A fine form of the typical *leucorrhoda* has just flowered in Mr. Bonny's nursery, Downs Park Road, Hackney, where it, as well as all the other Phalænopsids, are most successfully grown. It is gratifying to see such healthy and vigorous plants without even a trace of spot on the leaves, which is so commonly seen on Phalænopsids. The collection, moreover, is particularly rich in varieties, all being especial favourites with Mr. Bonny, who pays close attention to their requirements.—V.

Phalænopsids at Clapton.—Lovers of Orchids who would like to see a matchless display of the various kinds of Phalænopsis should visit the Clapton Nurseries during the next week. They will see there thousands of plants in one house, all either in full bloom or bursting their buds; in fact, there is quite a thicket of spikes rising on a groundwork of most exquisitely marbled foliage of such species as *P. Schilleriana*, which is grown and imported the most numerously. This species alone affords a great diversity in the tint of the flowers, and these, intermingled with the white *P. amabilis*, produce a charming effect. *P. grandiflora* is another species imported largely, and of the lovely new *P. Sanderiana* Messrs. Low have just flowered one of the finest forms that has been seen, the flowers being large, finely shaped, and of a deep rose-pink, but of quite a different shade of colour from that of *P. Schilleriana*. A superb *P. leucorrhoda elegans* has also just flowered. These exceptional varieties do not long remain at Clapton; they are eagerly bought by connoisseurs, so that unless one is fortunate to visit the nursery just at the time they begin to expand their flowers, they do not have the opportunity of seeing them.

Dendrobium Waltoni.—This Dendrobe is now one of the most beautiful, and at the same time one of the most interesting, Orchids in flower in the vast collections in Messrs. Low's nursery at Clapton. It is reputedly a natural hybrid between *D. Wardianum* and *D. crassinode*; it possesses characters exactly intermediate between these two species, both as regards flowers and growth. The latter is long, as in *Wardianum*, but the bulbs have swollen nodes, though not so marked as in *crassinode*. They are midway between the parents in size, but most resemble those of *crassinode* in colour. The lip, however, bears two conspicuous black or almost black blotches, which are not seen in *crassinode*. It is a most floriferous plant, the bulbs, which are from 2 feet to 3 feet high, being thickly wreathed with flowers. It is, of course, rare, and probably always will be, as it is quite a chance if ever it is imported again. Among other Dendrobes which may be seen in flower at this nursery are *D. heterocarpum*, which quite scents the house with its delightful perfume, *D. Ainsworthii*, *D. Wardianum* by the thousand, *D. formosum giganteum*, *D. philippinense*, a variety of *D. heterocarpum*. Later on the housefuls of Dendrobes will afford a grand display, including such rarities as *D. Brymerianum*, of which there are large quantities; *D. Falconeri*, grown admirably in small pans; and *D. Jamesianum* and *infundibulum*. Of the two last named species there is the healthiest stock that one could possibly see, which, having regard to the fact that they are not the easiest to manage, is the more remarkable. The plants are grown in suspended pans close

under the roof, where they get plenty of light, and almost constant currents of air are passing above them. The stout and vigorous growths which the plants have made since they were imported clearly show that they are under the proper treatment.

PARKS & PUBLIC GARDENS.

BOTANICAL GARDENS, MANCHESTER.

The following is written with the intention of letting the public know something of our present requirements and recent proceedings. About four years ago we found that the old range of glass-houses which had been standing for fifty years was worn out, and its removal became imperative; consequently it was taken down and a new range was built, not so imposing as the old one, but far better adapted for cultural purposes. Two years later it was found that the exhibition house was not safe; this also had to be demolished, and the present fine house was built. These improvements have been effected at a cost of £6000. This amount has been raised partly by the creation of life members, partly by the successful Whitsuntide exhibitions, and partly by donations from friends of the society. When the present magnificent exhibition house was finished many gentlemen who had plants which had grown too large for their houses, and who had also a desire to embellish the building, presented some fine specimens of various kinds. These, with some of the old plants saved from the old houses in the garden, numbering together 200 fine plants, are at the present time in the exhibition house, and form a magnificent spectacle. Now, inasmuch as the whole of these plants will have to be removed to make room for the great annual display at Whitsuntide, and inasmuch as we have no house to protect them, are they to perish? This must be the case to a certain extent unless a suitable home be provided. Our only sources of income are derived from annual subscriptions, life membership, and receipts from exhibitions. I mention this because the other day when asking a gentleman for support he asked me, "What amount do you receive from Government?" It is an unfortunate circumstance that the need for these extraordinary items of expenditure should have come upon us all at once, but it is, of course, a circumstance over which no one has had any control. The exhibitions of horticultural produce, which for so many years have taken place here, have been among the most attractive events in Lancashire; liberal rewards have produced keen competition, and gardeners know that to be the gainer of a prize at Manchester is to stand at the head of their class. Knowledge has been sought for, and improved methods of cultivation have been gradually discovered. Horticulture is the parent of agriculture. It determines on a small scale the value of the principles on which an extended cultivation of the soil depends. It is also associated with our food, our wealth and many of our social enjoyments. It is very gratifying to read in the public prints of large sums being given from time to time for purposes of art study and the preservation of art treasures. Surely it is of equal importance that a suitable home be provided for Nature's treasures. In the best periods of art the science and art of gardening was united to the sister arts of architecture, sculpture, and painting. Then the same feeling pervaded and the same principles regulated them all, and if the misuse and misapplication of these principles in later times have forced again upon us the simple study and imitation of Nature, individual arts have suffered by their disjunction, and it is satisfactory to know that they are now more combined. It is very generally admitted that the Manchester Botanical Society has been for many years doing important public work. At the annual meeting of the society two years ago the president of the institution said: "In merely a utilitarian and material point of view he had no doubt it had a great deal more than repaid any expenditure which it had caused, but far above and beyond that he was quite certain that in a place like Manchester and

a county such as Lancashire, it furnished a civilising and humanising agency with which they could not afford to dispense." I may state that the sum required is £2000, and it is earnestly hoped that this sum will be raised by an extension of membership and donations from ladies and gentlemen who have the means to assist so worthy an object.

Old Trafford.

BRUCE FINDLAY.

SOCIETY OF AMERICAN FLORISTS.

OUR American friends are great at societies, at fêtes, orations, and so on. They have lately started a florists' society, to which we wish all success. If it be managed as well as the American Pomological Society, all who work for it will have reason to be proud. Mr. Thorpe, the president, sends us some particulars, which we herewith give. The first meeting will be held at Cincinnati next August, and the plan of inaugurating it with a large exhibition is a good one. We trust that the society will put its energies to better use than that to which some of the societies in the old country have done, the outline of a penny-piece being here held to be the best possible one for all flowers called florists' flowers. We are sure, however, our American friends, with their new artistic aspirations, their splendid flora, and their excellent journals, will not be tied by such a narrow limitation. "The aim of the society is to lift up and carry forward all that tends to advance the growth of flowers, to collect and diffuse from the best sources information that shall be beneficial to all its members, to care for and instruct all in the best modes of carrying on a successful business, to help those overtaken by misfortune, and form a brotherhood worthy of the goddess Flora. The plan of action is to have a yearly meeting at one of the larger cities; in connection with these there will be an exhibition. At such meetings the business of the society will be conducted, the transactions of the year previous will be presented, and the programme for the ensuing year laid down. The exhibitions will be entirely novel, and of such interest as will be worthy of the Society of American Florists. The desirability of forming either a hail fund or a hail insurance company is generally conceded, and it will receive careful thought and prompt action on the part of the society at its first annual meeting in Cincinnati. Practical papers, short, concise, and full of instruction, will be read at the meetings and printed with the reports each year. No new plant or flower, no device or invention of merit will go unrewarded. Medals and certificates will be given for deserving exhibits. The society will take especial care to have everything reported in the best manner."

QUESTIONS.

5314.—**Blue glass.**—I shall be glad if any of your readers can give me any information as to the use of blue glass in vinerias.—AMATEUR.

5315.—**Rhododendron campylocarpum.**—Can anyone tell me where I can procure a plant of this Himalayan Rhododendron?—CONSTANT READER.

5316.—**Gladioli.**—Can any of your readers give me any information about Gladioli angustifolius and G. alatus? Can I obtain bulbs of them anywhere?—B.

5317.—**Cape Heath.**—Would some successful grower of both summer and winter-flowering greenhouse Heaths kindly tell me the proper mode of cultivation—whether they require pruning back (if so, how far? and when is the proper time to do it?), also the proper time for repotting?—J. W.

5318.—**Tacsonia and mealy bug.**—I had a very fine Tacsonia in my conservatory, but was obliged, owing to its being infested with mealy bug, to cut it down, especially as the insect had spread over all the other plants. Can any of your readers inform me whether the Tacsonia is always attacked by this disagreeable insect? and if so, how it can be kept under?—G. C.

5319.—**Lily of the Valley.**—Can any of your correspondents give me any information about failure of the Lily of the Valley? It has quite refused to start into growth with me. I got a few imported clumps, also imported crowns, in November. I had them carefully potted about the first week in December. I placed six pots of them in a pit filled with leaves, in which the heat was 65°. There they remained for three weeks, when I removed them to the forcing pit, which was filled with

leaves and stable manure, producing a bottom-heat of 85°. They have been there for four weeks, and as yet exhibit no signs of growth. What can be the matter with them?—D. T.

ARRANGING HERBACEOUS BORDERS.

WILL any of the readers of THE GARDEN kindly help me as regards the following? My borders are very thickly planted with all kinds of spring and other bulbs, besides a large collection of herbaceous plants that flower at all seasons. I find that there is a great inconvenience in this system; though the bulbs look lovely and come up perfectly through the plants, yet the impossibility of shifting the position of the herbaceous plants or making any rearrangement, and the difficulty of finding a suitable spot very often for a new treasure is great, owing to the risk of disturbing the large mass of bulbs which cover the ground; consequently the border is rapidly getting into a regular muddle—the herbaceous plants grow so fast and get far beyond the space originally allotted to them. I am therefore thinking of devoting one border entirely to my bulbs, including all spring ones—Lilies, Hyacinthus candicans, Tigridias, and Cape bulbs. I should like to carpet the entire border with one of the Sedums, cutting out spaces to be filled with choice carpet plants, whose flowering seasons should be during the summer and autumn, when the spring bulbs are over. The bulbs would be planted through these various carpets, according to their suitability in colour, growth, &c. I should also propose to have in the border choice small evergreen shrubs, Ericas and such things as Yuccas and small standard Myrtles, round and under which the bulbs could be grouped. I am anxious to know if this plan would be successful and what may be its disadvantages. I thought of introducing annuals, such as Sunflowers, Stocks, Asters, &c., and perhaps a few bedding plants in groups for the autumn. Any help in this matter from those who possess practical knowledge will be gratefully received. Would anyone kindly give me the names of choice carpet plants which, while serving as a carpet for bulbs, would flower at a different time, and thus prevent the border from looking hopelessly uninteresting when the bulbs should be past?

O. A.

ASPHALTE WALKS.

SHEFFIELD may be said to be the home of asphalt garden walks, as in that neighbourhood they were much used before they were adopted to any extent worth naming elsewhere. It is therefore quite possible that "S. W." may have become so accustomed to the sight of them, that he fails to see their defects. The latter, however, so far outweigh any good there is in them, that it is surprising to find any gardener advocating their use, which, however, "S. W." only does in a qualified way, as he owns they are not fit for flower gardens or pleasure grounds—an admission which most people will look upon as a sufficient reason for their exclusion from kitchen gardens, which at the present day those who have an eye for anything beyond the use of the crops grown in them are trying to make fairly cheerful and inviting in appearance, a condition not possible where this material is used, unless those who frequent them are colour-blind.

Those who, notwithstanding the objections attached to asphalt walks, and still disposed to have them, would do well to avoid following "S. W.'s" advice in their construction. The cinders which he recommends, though much used when asphalt was first adopted, is the worst material that can be employed, as is well known by anyone who has had an opportunity of comparing walks made with them with others where good clean gravel or small broken limestone formed the body of the composition. "S. W." tries to make out that what I have said on the subject was based on insufficient acquaintance with it, but in this he is wrong. In my time I have had to make both coal-tar walks and carriage drives and put up with the infliction of their ugly appearance. The veneering of spar or other bright-coloured material of which "S. W." speaks usually laid on the top when the walks are

first made very soon wears off, as anyone who has had to do with them will have found, leaving the black mass underneath visible. The fact of having to put a coat of loose gravel on the top after the walks are made to hide the surface is indeed strong evidence against the use of such material. This I have seen done, and not more than half-a-dozen thunder showers fell before the loose surfacing was washed into the drains, which were choked with it, necessitating their being taken up and the asphalt as well, which was done away with, the owner of the garden remarking that he was rather pleased in having an excuse for getting rid of his ugly walks.

Anyone requiring a solid, impervious walk as dry and hard as the best asphalt, with none of its objectionable properties, and that will last for a lifetime, can have it by adopting the concrete walks which I recommended, but even with them there is an absence of the garden-like appearance which those possessing correct taste in such matters require.

T. B.

Chrysanthemums in America.—My gardener, Mr. John Farrell, has been successful this year in growing some of the finest standard Chrysanthemums ever shown in this country. He exhibited eight to the New York Horticultural Society, ranging in height from 7 feet to 8 feet 6 inches. We had one, Elaine, which was 9 feet 6 inches, but that was unfortunately broken by a severe wind storm. The craze for the queen of autumn in this country has been nobly met by Mr. John Thorpe, of Queen's, Long Island, and to whom we are indebted for some magnificent new seedlings. The display of cut flowers at our late show was large, among them being some new varieties of Chinese, Japanese, single-flowered, and Anemone-flowered. The most perfect specimens were a Comte de Germiny (magenta and gold), Jeanne d'Arc (white), and Lady St. Clair (white).—WM. BARR, *Orange, New Jersey.*

LATE NOTES.

Primulas (F. H. Lucas).—All the sorts you send are beautiful, but we at once singled out the brilliant crimson as the finest, the colour being quite as vivid as that of any sort we have seen exhibited in London. The pale pink sort, too, is beautiful; the rest are only ordinary sorts.

Violets.—We propose to illustrate in colour the finer forms of the various groups of sweet Violets now in cultivation—single, double, white, and Neapolitan. We shall, therefore, be grateful to any reader who will tell us where they are well grown and plentiful. The London fog is not kind to them.

White Plume Celery.—I am pleased to see that "J. S. W." (p. 78) and "T. B." (p. 92) agree in their doubts as to the merits of this new Celery. I do not think that either of them can have seen it, and they have evidently no experience of it; but what of that? As "J. S. W." wishes to know more about it, he cannot do better than obtain seeds of it and try it himself.—J. MUIR, *Margam Park, South Wales.*

Crocus Imperati.—Why is this little beauty so seldom seen outside a botanic garden? Few people visit such places in winter; hence it is very seldom seen at all. It is now fairly cheap (4s. 6d. per dozen), and is so lovely, that everyone who cares for early flowers should grow a clump of it. It was figured in THE GARDEN ten years ago (Vol. VII., p. 242), but the figure does not do it justice in its delicate tinting of pale buff and mauve.—GREENWOOD.

The rainfall.—"J. S. A." asserts that the rainfall of 1884 was half the average. I should, as one interested in such matters, be glad to know where that was, although from his observations he seems to imply that it was so generally in England; if so, it is utterly wide of the mark. Here, in Kent, our average for the three years, 1881, 1882, and 1883, was 29.40, in 1884 22.54, and I believe something like these figures applies to the greater part of England.—DELTA.

Landscape gardeners (C. Sch.).—Mr. F. L. Olmsted, 209, West 46th Street, New York.

Naming plants.—Four kinds of plant or flowers only can be named at one time, and this only when good specimens are sent.

Names of plants.—*Knocknolian.*—*Helleborus foetidus*—R. Young.—1, *Brassavola cordata*; 2, *Saccolabium rubrum* var.; 3, *Dendrobium luteolum*; 4, *Dendrobium speciosum*.—A. G. B.—*Chimonanthus fragrans* grandiflora.—J. McMillan.—*Trochilium pendula*.—E. J. H.—1, *Cyperus alternifolius*; 2, *Croton angustifolius*; 3, *Aloe verrucosa*; 4, *Eriostemon parvifolium*.—F. J. C.—Next week.—R. W.—*Odontoglossum Fossii majus*.—J. A. Newsham.—*Cattleya Warscewiczii* delicata.

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"This is an Art
Which does mend Nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare*.

WINTER GARDENS.

WHEN Bacon wrote his memorable essay on gardens, and regretted that fine gardening was so much more rare than good architecture, it was, without doubt, to open-air gardening that his allusions were made. A well planted garden is interesting and cheerful at all times and seasons, but winter is after all the true test and touchstone of the gardener's art. More especially is this true in the case of town parks and open spaces wherein a desert of bare earth but too often succeeds the flowers of summer. In spring and autumn we have greenery and the brightest of flower-colour everywhere, but just "now is the winter of our discontent," when fresh leafage or jewel-like glints of colour here and there are as precious as is the sunshine itself of these wintry days. After all, there are many plants in our gardens which will pass through our worst winters unscathed, and even were we confined to our native shrubs alone, we have Hollies and Ivies of kinds many and varied, and a judicious use of these, unaided by exotics, would at least give an air of cheerfulness to the beds and borders which are, alas! too often left desolate and tenantless from November until February. As a fact, we have hardy plants by the hundred with which to bridge over that period of desolation which begins with the fading of the Chrysanthemum and only leaves us when the "golden Crocus crowns the green."

Of all horticultural truisms, that particular one of Cowper's, "Who loves a garden loves a greenhouse too," is, perhaps, the most self-evident in our gardens to-day. You see hothouses or greenhouses everywhere, and far be it from our intention to deprecate their right and proper employment, since only by their aid can we ever hope to enjoy to the full the grace of tender Ferns or the delightful delicacy of tropical Orchids in our northern climate. But the glass-house, with all its excellences and comfortable conveniences, brought in its train some evils, not the least of which was that it rendered possible the expulsion of those dear old flowers which our great grandmothers loved as children. That it also opened the way for that era of gaudy bedding plants, a mania, the excess of which all true gardeners deplore, is, of course, well known. Then, as we have before said, the eagerness to be employed under a glass roof has actually demoralised our gardeners as a class, and so brought about an evil it will take years of good teaching to remedy. But the pleasures of a true and vigorous *renaissance* is ours, for not only have we brought back to the quaint and cosy country houses all the old favourites of Gerard and Parkinson—in a word, the flowers of Shakespeare's epoch—but so strong is this reviving love, that hundreds, if not thousands, of the beautiful wild flowers of Europe, Northern Asia, and of America never before cultivated are now to be found in English gardens. What now seems to us most necessary is some well-directed effort towards enlivening our gardens during the duller portion of the year, using

for this purpose plants that are perfectly hardy and beautiful in leafage at least, even if not in blossom. It is so easy to "paint the Lily," or, in other words, to make the garden gay in summer time—Nature does that, but to do so in winter is a far greater triumph.

Outdoor gardening, in a word, is like fine sculpture. We appreciate it only after having passed through the "valley of humiliation" of art. So also must the artistic gardener struggle through the flashy triumphs of hothouses and stove-houses, of bedding plants and glass roofs, ere the noble simplicity and ever-growing beauty of open-air gardening is revealed to him. Given a deep rich soil, well drained, of course, and its potentialities are as infinite as clay in the modeller's hands. It is the canvas on which may be painted a living picture of ever-changing beautiful things. We must have evergreen shrubs for groups on the Grass and drapery for tree trunks or bare walls. In smoky districts or near towns Conifers of all kinds are perfectly useless, and one must mainly employ glossy-leaved Hollies, Ivies, Aucubas, Euonymuses, and perhaps Rhododendrons in bold groups. The large-leaved golden Ivy is especially warm and bright in tone, and should be largely employed in suitable positions on walls or pillars, where its glowing colour may remind one of "sunshine in a shady place. Beside it for contrast the Coral Thorn or Pyracantha may be planted for the sake of its winter harvest of bright red fruit, as recommended by Parkinson 250 years ago. So also the oval-leaved Garrya may be employed, since even now its soft grey tassels dangle in the breeze, reminding one of the Willow catkins or Palms of early spring. The golden Japanese or winter Jasmine is also a most valuable shrub, and an Ivied wall bespangled with its golden stars is now a pretty sight. Then for variety we must have the Japan Allspice, the waxen buds and bells of which already glisten on its ash-grey shoots and exhale a perfume beyond description. The Strawberry Arbutus also has every shoot tipped with clusters of pale waxy bells and the round red fruits glisten warmly from among the last year's leaves. A few rich brown or vivid golden Wallflowers are peeping here and there, and the smaller blue Periwinkle is in flower, and by looking closely one may perceive the points of the Snowdrop and the broader tips of Daffodil leaves peering in groups among its trailing stems. On sunny mornings you may catch the breath of Violets and the magic perfume of dying Strawberry leaves, and the scent of Rosemary and the aromatic odour of Box and of golden Thyme is abroad. During the short dark days indeed every floweret, every fragrant green leaf is appreciated at its true value, and at no other time of the year are the results of good gardening so acceptable as at the present season, and after all there is no reason why our parks and gardens should not be cheerful and interesting, even if not absolutely showy, during winter. We can have columns of the golden Ivy before mentioned; the crimson shoots of the Dogwood may gleam here and there near to water margins in contrast with the slender wands of the golden Osier. We can have clumps or beds of the Christmas Roses, of which there are three or four noble varieties, each and all of them finer in leafage and in blossoming than is the common wild type now most generally seen. Of Yuccas, which are really great evergreen Lilies of noble appearance at all seasons, we have a dozen species all good, and all of which may be well grown in London gardens if

once well planted in beds of rich, good, well-drained soil. But to obtain beautiful effects all the year round in a garden demands much thought and some experience; and after all, gardeners capable of the highest effort in this direction are so much like the poets, that they must be born rather than made. F. W. B.

NOTES ON RECENT NUMBERS.

Freesias.—We should all like to grow these well, but which are we to imitate? Messrs. Smith say (p. 99), "Bottom-heat, we would remark, should be carefully avoided; we have always found this to mean no flowers and ruin to the bulbs." The beautiful Freesias "2 feet in height and laden with dozens of perfect blooms" (p. 102) grown at Blackheath, Clontarf, "were potted early and started in the brisk bottom-heat of a propagating house." Doubtless a larger amount of fresh air found its way to these latter, while Messrs. Smith may have tried theirs in an ordinary Melon frame. Which will be the better bulbs for blooming next year?

Open-air flowers.—"G. J." gives an interesting list (p. 100) of flowers in bloom in the open-air on February 3, but he does not say whether he is a Scilly islander or a Skye crofter. To those who do not happen to know his habitat by his initials, his list loses much of its value. The omission of the locality, as well as the omission of the date, often spoils what would otherwise be valuable communications.

Church decoration (p. 103)—There have been some eulogistic remarks lately on improved taste in church decoration, and many seem to revel in a description of pots of Eucharis, Poinsettias, Ferns, &c., massed on the altar steps. To me they always recall the idea of the ornamentation of a concert platform, or a stage for private theatricals, or a musician's dais in a ball room. At all events there is nothing to guarantee that these same plants will not afterwards do duty in such a capacity if they have not already done so. The old plan, ugly and overdone, as it often was, nevertheless consisted in a dedication of the beauties of Nature to the use of the church, and except in cases where the flowers were afterwards sent to a hospital (a practice with which no fault can be found) there is no prominent association with secular customs. I do not wish to set people altogether against the use of pot plants for church decoration, but I would suggest that the custom is very liable to abuse, and if the means are at hand the temptation to overdo it is very great.

Slugs.—We often see queries as to the best means of getting rid of slugs. "S. G." (p. 102) gives an excellent recipe for catching them, viz., a pinch of new bran. To those who have not tried it, though it has often been recommended, let me advise slices of raw Potato where bran cannot well be employed, either on account of its being likely to be disturbed, or because the remains of the heaps would be untidy. Let me also recommend for killing when caught a jug or jam-pot full of hot water, into which the sticky creatures may easily be dropped; it is a pleasanter method of disposing of them than chopping them up where there are large numbers, as sometimes happens out of doors among a bed of Iris, and it is less cruel than salt or lime, which tortures them; whereas the hot water kills immediately and cleans one's fingers, if used, at the same time.

Hybridisation.—Any rules that we can lay down for certain as to hybridisation are sure to prove most valuable, and Mr. Archer-Hind's experience (p. 112) may no doubt be considered one of the canons or primary rules on the subject. I amused myself two years ago by trying to cross all kinds of Orchids, and though I have nothing to show for my pains beyond a lot of seed-pods, not having succeeded in raising any plants, I noticed at the time that in cases where flowers with pollen masses of two distinct sizes were chosen the smaller pollen would fertilise the flower originally containing the larger pollen; whereas the larger pollen

would not have any effect on the flower of the smaller. This, of course, may only have been chance, but it would be worth noticing in other genera of plants, to see if it can be fixed as a rule.

Chimonanthus fruticosa (p. 117).—I gathered a number of seed-pods a little while ago from a plant on a wall in Sussex. We shall, no doubt, hear of many unusual seedlings this last autumn, owing to its great heat and dryness; and what a wealth of bloom may we not expect this year from the thorough ripening of the wood in all flowering shrubs! C. R. S. D.

PLANTS IN FLOWER.

Anthurium ferrieriense.—Of this new hybrid variety a wonderful spathe was shown on Tuesday last at South Kensington by Sir Trevor Lawrence. It measured 8½ inches in length by 6 inches in width, the colour being a crimson-carmine. This is by far the largest spathe that has yet been exhibited of this plant.

Violets.—I send you a few Violets for your opinion. In 1883 we obtained the second prize for Violets at a show in Plymouth, the first prize having been given for some grown under glass. In 1881 at the same show we obtained the first prize. We plant our Violets wide apart, just as we do Strawberries, in soil manured from a heap of decayed vegetable matter, the refuse of plants, leaves, &c., of the year before. The rock below in this parish is shale.—E. ROBERTS, *Tamerton Vicarage, near Plymouth*.

* * Extremely fine single Violets, large and fragrant, and of a deep purple, in the way of *Victoria Regina*.—ED.

Rhododendron Nobleanum.—This was in flower with us outdoors at the end of January, which is early for our high locality; yet the first three weeks of the new year were characterised by a low and steady temperature and several sharp morning frosts. I may mention that the prospects of getting a fine *Rhododendron* bloom this year are very cheering, for both old and young plants are well set with buds. This is our year to get a full display. As a matter of course, we always get a good show of blossom, but only a full display every other year; the plants flower so freely one year, that they require some rest the next to recruit their strength.—J. C. C.

Early Irises.—Mr. Ware sends us flowers of the following early flowering Irises from Tottenham, whether from the open air or from frames he does not say: Three forms of *I. reticulata*; the type cyanea, of a lovely sky blue colour, and *purpurea*, of a deeper and richer hue than that of the type. *I. Histrio* is very fine, and as it is so seldom seen is of exceptional interest. It is a bulbous Iris, having quadrangular leaves and flowers larger than those of *I. reticulata*, deep lilac spotted on the "falls" with deep purple. Besides these there are flowers of two other bulbous species, viz., *I. tuberosa*, the Snake Iris, and *I. scorpioides pallida*, the latter variety being of a very pale lavender tint, quite distinct from the original.

Anemone fulgens.—A bunch of glowing scarlet Anemones in mid-February, such as Mr. Smith sends us from Guernsey, cannot be passed over without comment. The flowers of *A. fulgens* are truly beautiful—such as cannot be matched for either brilliancy or elegance throughout the whole range of tender exotics. We presume they have been opened under glass, and what flower is more worthy of shelter and protection? These satiny black-bosomed blooms seem to us ten times more vivid now than later on in the season. Perhaps Mr. Smith would tell our readers how he manages to get his early Anemones so fine. He is, however, favoured with a much better climate than we have.

Roses in February.—The other morning (1st inst.) I cut a bunch of Roses, six or seven in number, chiefly Teas, from the open ground, quite sufficiently good for a drawing-room table. They included *Marie Van Houtte*, *Souvenir d'un Ami*, and *Souvenir de Malmaison*. The winter here has

been almost entirely of a negative character. There has been practically no frost, no snow, no rain (till January, and not very much then), no light, no sunshine, no mildness. The only positive conditions have been wind and rawness. Nevertheless, there has seldom been so little sign of growth at this season, except perhaps in bulbs, many of which, such as Narcissi, Irises, &c., are pushing strongly. Primroses and Violets are and have been pretty plentiful, and Mignonette is not yet killed in the beds.—GREENWOOD, *Monkstown, Dublin*.

Guernsey Freesias.—Again our office is redolent with the fragrance of Guernsey-grown Freesias, which Mr. Charles Smith has been good enough to send us from his Caledonia nursery. Each time the spikes seem to eclipse those sent previously. On this occasion he sends some really wonderful specimens of what he calls *F. Leichtlini* major, the spikes of which measure 2½ feet high. They are much branched, and on those spikes sent there are no fewer than 110 flowers and buds, the yield of three bulbs. This speaks for itself of the kind of growth our Guernsey friends manage to get from their Freesias. The details of their mode of culture were given in last week's GARDEN. This *Leichtlini* major variety is a strong growing plant, with broad foliage like that of an ordinary *Gladiolus*. The flowers are larger than usual, of a pale primrose tint, dashed interiorly with orange. On one spike there are thirteen flowers—the largest number we have ever seen on one spike. The perfume is scarcely so strong as that of *F. refracta alba*.

Callipsyche aurantiaca.—This is one of several *Amaryllids* which appear to owe their introduction to a resemblance in their leaves and bulbs to the *Eucharis*, and which have therefore been picked up by collectors and sent home as possible "good things." They are found in the same localities as the *Eucharis*, viz., the Andes of Peru and Colombia, as is also the recent introduction *Plagiolobium Horsmanii*, named in compliment to Mr. F. Horsman, who was the first to flower it, and to whom Kew is indebted for the *Callipsyche* now in flower in the *Begonia* house. It has brown truncated bulbs, a pair of *Eucharis*-like leaves, and an erect flower-scape which bears an umbel of about half-a-dozen flowers. These consist of six segments, each about 3 inches long, with a tubular arrangement, and slightly compressed laterally. The stamens protrude an inch or so beyond the flower segments, which are of a dull yellow colour. *C. aurantiaca* is not a beautiful plant when placed beside its brethren, the *Eucharises*, although interesting in the structure of its flowers. At least it is worth knowing, because of its resemblance when not in flower to much better garden plants. A figure of the Kew specimen has been prepared for the *Botanical Magazine*.—B.

Single Camellias.—Some new seedling single flowered Camellias sent to us by the raiser, Mr. Scrase Dickens, of Coolhurst, Horsham, disclose quite a new and unlooked-for type of flower beauty. Single and half-double Camellias have been, and still are, common enough in gardens, but those now before us are quite a distinct race, different from the ordinary large and coarse single Camellias. Keeping a sharp look out for the best single sorts he could find, and by raising quantities himself and selecting the finest, Mr. Scrase Dickens has succeeded in getting together a collection of most beautiful varieties remarkable for the refined form of the flowers, and rich and varied in colour. Some half dozen sorts are sent, all of which have medium-sized flowers with petals of firm substance, and so broad as to quite overlap. The colours include a rich crimson, a carmine, a rose-pink, a salmon-pink, and, prettiest of all, a pure white. All these have a cylindrical mass of golden-tipped stamens in the centre, which lend such beauty to the flowers. We quite expect that these single Camellias will be the forerunners of a race of varieties which will be of great value in gardens, and that they will become popular among those who can appreciate real flower beauty goes without saying. Mr. Scrase Dickens is sanguine

of eclipsing even his present set of single sorts, as he is employing every means to do so. We hope shortly to give a coloured plate of these Camellias in THE GARDEN.

ORCHID NOTES.

Varieties of Cattleya Trianae.—We have received from Mr. Bradshaw, Baron Ferdinand Rothschild's gardener at Waddesdon Manor, flowers of three exceptionally fine varieties of *C. Trianae*, each of which it would be difficult to eclipse, even among the pick of thousands of imported plants. One of these is appropriately named *venosa*, inasmuch as the labellum of the flowers is abundantly reticulated with veins and stripes, which extend far into the throat. The flower is large, and the delicately tinted sepals stand out boldly, so as to form a symmetrical flower. The second is a magnificent variety, at once reminding one of the rare *C. Russelliana*, the labellum being of unusual brilliancy, the colour, the richest amethyst imaginable, being set off by the broad mass of chrome-yellow in the throat. The sepals are pale rose, rounded in outline, and very broad; this certainly deserves a distinctive name. The third is not inferior to the other two, but is different, as the labellum has a distinct defined margin of rose, the body colour being an intensely deep rich purple shaded with carmine. Rarely have we received three such fine varieties by one post as these.

Orchids at St. Albans.—Already the houses at Messrs. Sander's Orchid nurseries are putting on a gay appearance, and shortly there will be such a display of Orchid bloom as could not be seen elsewhere, for thousands upon thousands of plants, particularly *Cattleyas* and *Ondoglossums*, massed in the capacious houses will be in bloom. At the present time the *Phalanopsis* house is the gayest, the plants being all in the height of their flowering season. The new house specially built here for *Phalanopsis*, and which was described a short time since in THE GARDEN, seems to suit the requirements of these plants admirably, as the thick fleshy and spotless leaves and large flowers clearly indicate. Some of the spikes are carrying no fewer than fifty flowers, and the whole aspect of the house is charming in the extreme. *P. Stuartiana* is represented by several forms, all more or less distinct from each other, but there are two which are a long way ahead of the rest; these are *notilis* and *punctatissima*. The first is tolerably well known; the flowers are larger than those of the type, and the spotting is richer and more pronounced. In *punctatissima* the whole flower is completely covered with minute dots in addition to the usual spots on the labellum and two lower sepals. It is therefore most distinct and extremely lovely. There is among the *Schillerianas* likewise a great variety, as may be imagined where such quantities are grown. These vary more in the depth of colour than in the size of the flower, though there is one that is much superior to the others in this respect, as the blooms measure over 3 inches in diameter and have rounded sepals, which make a well filled out flower. The colour, too, is a deep rose, shaded off at the edges of the sepals to almost a white. Besides the commoner kinds of *Cattleyas* in bloom there is one that deserves more notice from cultivators than it usually gets. This is *C. bogotensis*. The flower resembles that of a *Trianae*, but the tube of the lip is short and thin; in this particular it differs from *Trianae*, to which it is undoubtedly nearly allied. The sepals of *bogotensis* are rounded and partake of the form of *C. Percivaliana*, while the lip is deeply veined with rich purple, the lower lobe being of a deep plum colour. Among novelties which one is always sure to meet with here I noticed a new *Saccolabium* in the way of *S. Holfordianum*, which has a broad, peculiarly formed lip. It will, I think, be welcome by orchidists. These are a few of the things I noticed in a hurried run round these remarkable nurseries during the past week.—VISITOR.

TREES AND SHRUBS.

THE BLACK POPLAR.

As a quick-growing shade tree the Black Poplar is unequalled amongst the deciduous trees which are perfectly hardy in the climate of Britain. In tolerably rich moist soils it soon attains a large size, and its general aspect in the landscape is admirably shown in the accompanying illustration.

It is found in a wild state nearly throughout the whole of Europe, and is also widely distributed in Northern Asia. The earlier British florists claimed it as a native of Britain, but there seems to be no doubt that the tree is not really indigenous. Some of the older writers, too, on the other side of the Atlantic classed it as an American tree, but it is now judged to be an alien, and was doubtless introduced from Europe, although nothing is known of its early history either here or in the States. Perhaps, scarcely any other tree which is cultivated to so great an extent as the Black Poplar has "sporting" so little. Very slight variations occur, it is true, in the size of the leaves and the colour of the petioles, &c., but few of the forms are distinct enough to propagate under different names. One of these, however, has been distributed from Continental nurseries under the name of *Populus fistula*. This is in all probability a corruption of *Vistula*, on the banks of which river *P. nigra* grows to a large size, not unfrequently to a height of 90 feet. In the Imperial Botanic Gardens at St. Petersburg there are two enormous trees, one nearly 6 feet in diameter, which are said to have been planted by Peter the Great; they are now in a state of decay. The wood of the Black Poplar is very light, and by no means very valuable. It is, however, much used for carving, charcoal, &c., and the bark for tanning. In Holland it is extensively grown along the canals, and regularly cut down about every quarter of a century. The wood there is largely used for making wooden shoes and other articles.

Royal Gardens, Kew. GEORGE NICHOLSON.

CONIFERS AT CASTLE MENZIES.

In a paper descriptive of "Taymouth in Winter" I advised those of your readers who wished for grand scenery, and at the same time not to be dissociated from horticulture entirely, to take the train and let themselves be borne thither. The manifold beauties of the Athole and Breadalbane highlands, except in the neighbourhood of well-known centres like Pitlochry, are apt to be left unsought in the

rush to sail down the canal to Oban and the western isles. The greater part of the visitors to Aberfeldy proceed to Kenmore, and from thence over Loch Tay to Killin. Comparatively few penetrate the wild grandeur of Glen Lyon, celebrated in Fingalian lore. The road (General Wade's) from Aberfeldy to the glen passes through the village of Weem, in which is Castle Menzies, then up the strath of Appin and along the river side to Fortingal. Fortingal, besides having

leading to Fortingal and Glen Lyon. The other trends northward by the side of the Keltney Burn. If a divergence is made from the latter just below Loch Kinardochy, the traveller can proceed to Kinloch Rannoch, the road going close by Schiehallion. Even in the wild moor of Rannoch we are not cut off from horticulture, for is there not Dunalistair, fair Dunalistair, made beautiful both by artifice and Nature? A coach plies between

Struan, traversing Glen Erichdie. At Struan is a railway station for those whose cry is northward ho! and near it also are the beautiful grounds of Blair Castle for those who are not in a desperate hurry.

Castle Menzies is situated near the base of the Rock of Weem. This is a hill which presents an appearance of being cut in half, so precipitous and rocky is the side it presents to the castle; albeit, trees, deciduous and evergreen, have managed to moor themselves securely all the way up, and Rhododendrons are thriving in the shallow rock-imposed soil. Rising, as it does, to a height of 600 feet on the northern side, the situation of the castle grounds is effectually screened from all winds from this quarter; unfortunately, however, it is fully liable to gales sweeping up or down the Tay valley, and numbers of the fine old Sycamores and other trees in the park have suffered severely. The soil is of an alluvial nature and of considerable depth. Sir Robert Menzies is a very enthusiastic planter. His lands reach to the moor of Rannoch, where his judicious planting has done much to vary and add a little shelter to this drear abode of sheep farmers. He is a far- and - wide traveller himself, and has had intimate relations with such collectors as Jeffrey and Browne. In the kitchen garden, which is situated on the steep slope of the Rock of Weem, is a very interesting nursery of seedling trees. All the seed sown has been collected for Sir Robert in its native habitats. Grafted trees are notoriously not so suc-

cessful as seedlings; and if Deodars are to become fine tall trees in Scotland, it must be from seedlings exposed to every chill wind from their birth.

There were quite 5000 young *Albertianas*. This has proved itself to be one of the hardiest and fastest growing of all the Firs. Enormous numbers have been planted all over the estate, including bleak Rannoch. It is pleasant to be able to forecast in the mind's eye what a beautiful verdurous appearance a wood of this tree will present throughout the whole year. Its only real rival among the introductions of this half century for hardihood and quick growth combined is *Abies grandis*. Large quantities of seed-



Black Poplars at Bablock, Hythe-on-the-Thames. Sketched by Alfred Parsons.

Roman remains and being the reputed birthplace of Pontius Pilate, is known throughout Scotland for its famous Yew tree. This tree, which stands in the kirk-yard, is very probably 3000 years old. In 1771 Pennant states that it measured 56 feet in circumference. The eaten-out trunk, which now remains, is 34 feet. In one of the edicts of James I. it is enacted that on the Sunday, after service, the men should meet and practice archery. What a number of tough Yew bows must this venerable guardian of the dead have afforded! And how different must the Scotch Sabbath of those days have been from what it is now! A little way beyond the junction of the Lyon with the Tay the road bifurcates, the less important

lings are being raised of *Pinus Coulteri* and *confortia* and of *Salisburia adiantifolia*. From Chinese seed there are thousands of *Cryptomeria elegans* under the name of Sojo. A stock of *Pinus tuberculata* and a pretty golden tinged one under the name of Matzu, both from China, are growing up with very few gaps. The Deodars, from Indian seed, are very strong and vigorous. The fresh and glowing neutral tints from a plot of foot-high Deodars are peculiarly beautiful. Adjoining are rows of *Thuja Lobbi* from home-saved seed off a tree imported from British Columbia. A batch of young *Pernettyas* completed a remarkably interesting nursery. The view from where they are growing is very extensive, taking in as it does the Tay from its effluence from the loch. Drummond Hill and Ben Lawers, and the other hills girding the loch are plain as plain can be; forty miles off, but distinctly visible, is Ben More. On a winter's day, when the snowy caps are glistening radiantly in the sunlight, rivaling the gleam of the winding river, when the russet hue of the leafless trees is sharply contrasted with the whitened fields, well—one forgets the cold.

The trees in the grounds have a great reputation in Perthshire, but they are somewhat disappointing. It is very true, as Wendell Holmes says in his delightful *causerie* about trees (those with a girth of 20 feet he styled his children), that "provincialism knows no limits." A *Wellingtonia* that would strike a southerner as nothing out of the common is boldly claimed to be the tallest in England. Mr. Hunter in his "Woods and Forests of Perthshire" makes the same statement. His is the journalistic pen of a ready writer; such pens are apt to run away. *Picea Nordmanniana* is represented by two or three well-grown specimens. Comparing it with the specimens of *nobilis* here, one would affirm that it is altogether a stronger and stiffer grower, and better able to keep its head on during stress of weather. The gale of January 27, 1884, did great damage at Weem, and took two or three of the largest branches off a fine *Sycamore*, with girths of 28 feet and 18 feet 6 inches at heights from the ground of 1 foot and 5 feet. Other colossal deciduous trees are a Spanish Chestnut, 21 feet 3 inches at a height of 3 feet, and a Tulip Tree 10 feet 6 inches at the same altitude. Up the Rock of Weem, although contrary to expectation, will be found many massive *Weymouth* and Scotch Pines and Spruces. The castle itself, a good part of which dates from 1571, is picturesque both from construction and position.

The best conifers are planted between the castle and the chief entrance. Many are too much sheltered by growing surrounded by wood, and have become drawn up and rather lanky in appearance. Nevertheless, the lessons that can be learned from them are valuable. None but the hardiest will succeed here, and as a great deal of the planting took place soon after the introduction of the various trees, enough time has elapsed to make them good objects for criticism. Of course there may be reasons, other than surface ones, why such and such a tree is unhappy, and trees that fail here may be doing well in equally unfavourable districts; but it seems to me that a cry of "cave" from an inspection of these trees ought to be valuable.

Pinus Jeffreyana, *ponderosa*, *Pinaster*, *excelsa*, and *macrocarpa* do not seem at home. But *monticola* and *Cembra* are as vigorous as could be wished. One of the specimens of *Cembra* is grand in every sense. The *monticolas* are younger trees, but, as at Murthly, robust and quick of growth.

Picea grandis, which is every whit as hardy as a Silver Fir, is perhaps the fastest growing tree on the estate. Although the leaders have been known to be 3 feet in height, they seem to bend with and not to resist the wind, and consequently few are whirled earthwards. The best *Albertiana* is 64 feet high. When I state that it is a seedling raised from home-grown seed, your readers will cease to question if Sir Robert is in error in planting it so extensively as he is doing. Very few will be able to fix upon a better *Abies Menziesii* than this—75 feet high, 11 feet 3 inches in girth at 3 feet up.

Planted by the side of a pond just inside the lodge gates, its wide-spreading branches are gently laved by the water and the roots must be growing, many of them, in water. The very next tree is a tall Silver Fir, with a girth of 14 feet 9 inches at the same distance up as the *Menziesii*. To say that the *Menziesii* was the handsomer of the two would not be true, but that it is of quicker growth is undoubted. *Picea Lowi* is very prosperous here, but the annual growth is not equal to that of *grandis*. *Douglases* are doing fairly well; one is nearly 80 feet in height, but collectively they have not the robustness displayed at Murthly, Scone, and Stanley. Young plants of *A. orientalis* and *Alcoquiana* are growing well beneath the shelter of trees, but they are too small as yet for any deductions as to their hardihood to be drawn.

Thuja Lobbi (*Menziesii* it is called here) is thriving, as it invariably does, and so would *Sequoia sempervirens* if it were not so cruelly lashed by the winds. *Thujopsis dolabrata* and *Copressus nutkaensis* leave nothing to be desired in regard to hardihood, neither does *C. Lawsoniana*; but the rate of growth of all three is much less than that of *T. Lobbi*. *C. macrocarpa* is a failure.

A Deodar avenue was planted twenty-nine years ago; the trees are now 30 feet high. It is doubtful if they will ever be better; many are leaderless. The spread of the branches laterally is wide; this, with the many-tinted foliage, saves the avenue from insignificance. The *Wellingtonias* planted about the same time are taller, but they are thin looking when one thinks of the specimens one knows in England. Here and there it may do well so far north, but we have trees just as pretty that can be relied upon, *Cedrus atlantica* for one.

The glass houses are well worth a visit. The Vines and Peach trees are very old, but so well managed, that the results are eminently satisfactory. In one house was a large number of seedling *Calycanthuses* from the Yellowstone Park. A large conservatory is entirely devoted to *Camellias*. In one part they are arranged in pots on a staging; in the other, the greater, they have been planted so as to form a dense oblong of foliage. This thick *Camellia* hedge is 21 feet long, 9 feet broad, and 14 feet high. It has been planted thirty years. The buds were so close together, that when the flowering season comes the blooms will touch in almost every part. They are allowed as little artificial heat as possible.

A large collection of fruit trees has been planted. The French kinds of Pears grow freely enough and form wide wall trees. They bear but sparsely, however, and seldom mature the fruit to any comparative degree of goodness. The old native Pears, on the contrary, do excellently well. *Hessle*, *Moorfowl*, and *Swan's Egg* yield abundantly and are of excellent quality. *Hacon's* *Incomparable* and *Winter Nelis* are likewise good, although not so prolific as the three first mentioned. *Apri-cots*, *Cherries*, and *Plums* do every whit as well as in many lowland places. The same may be said of bush fruits and *Strawberries*. The upper part of the kitchen garden is an Apple orchard. Ten years ago the trees were profitable; now, and for the last five years, the yield has been but scanty. It was the same thing, I was told, at Blair Castle gardens. In many instances the trees have flowered well, but the previous autumns have been cold and sunless; consequently the wood has not been matured. Spring frosts also in this district are very prevalent, and altogether fruit culture is an extremely difficult matter under such a treacherous sky.

Cerasus ilicifolia (p. 116).—I am glad to read Mr. Nicholson's account of this shrub, for it has been a favourite with me for several years, and I have often wondered that it is not more grown in the southern counties. Mr. Nicholson says that as far as his knowledge extends no fruit has as yet been produced in this country. I have a distinct recollection of once seeing a beautiful spray covered with scarlet fruit in THE GARDEN office, but I forget where it came from. It is probably rather tender, for after having it for nine years I

lost it in the winter of 1880. I have a young plant which last year gave promise of fruit, but the fruit all dropped off before it was ripe. I fancy it fruits at Paris. According to Pretzel and Lavallée it is figured in Hooker-Beechey Voy., t. 83.—H. N. ELLACOMBE, *Bitton Vicarage*.

FRUIT GARDEN.

APPLE CULTURE IN HEREFORDSHIRE.

It is gratifying to find owners and occupiers of large orchards in this and adjoining counties at last taking a lively interest in the cultivation of the Apple; and it is well they are doing so, as it has been proved by the congress held at Chiswick and the excellent report drawn up by Mr. Barron that fruit of the finest quality can be grown in this country. It is also now generally admitted that the flavor of our own Apples is superior to that of Canadian or American fruit, for which we have to pay many thousands of pounds annually. With this incentive to progress, I would strongly advise the proprietors of orchard lands to take the matter of renovation and improvement in hand in a scientific manner and with the full determination that our transatlantic cousins shall not cut the ground from under our feet in our own markets. In this county (Hereford) there are hundreds, nay thousands, of acres of orcharding rendered almost valueless for potting purposes through the most abject neglect of the first principles of cultivation. Watercourses are choked, the land is water-logged for want of draining, and the elements of air, warmth, and light are excluded from the centres of the trees by an accumulation of matted spray and Mistletoe. Indeed, to such an extent has this interesting parasite been allowed to flourish, that it is questionable if the Mistletoe growing in some orchards would not, in our large northern towns, realise more than the crop of Apples. But the time for this kind of cultivation has gone by, for however pleasing a bunch of Mistletoe may look suspended in the hall or depending from the branch of a tree, it is high time it was pretty well thinned out of our orchards, and there will then be plenty left, as it is found growing on no less than thirteen different kinds of trees in this district alone. Assuming, then, that the occupiers of these neglected orchards have been providentially bitten by the Apple mania, and have discovered that poor washy cider at threepence per gallon does not pay so well as good marketable fruit at four or five shillings a bushel, we may now hope that an effort will be made to improve these never-dry, Lichen-bound trees. The first operation will be the scouring out of all watercourses and a thorough system of drainage, as it is perfectly useless and hopeless to try to grow good crops of any kind where the ground is cold and full of stagnant water. It is not here necessary to go into the details of draining, as much depends upon the nature of the land; the drains should, however, be sufficiently deep and near to each other to drain the water from beneath the lowest roots of the trees. Good drain pipes should be used, and in the event of the lower stratum being stiff and clayey I would suggest filling in with stone brash or some porous material pervious to the passage of air and water. If these materials cannot be obtained, a quantity of the thinnings from the trees may be pressed in to the depth of a foot or more; the use of wood is not, however, recommended, as in the course of time it begins to decay and forms food for the roots, which eventually choke up the pipes. If the land is not required for grazing purposes or for tillage—as is often the case in this neighbourhood—the beneficial effects which follow draining will be greatly facilitated by leaving the cuttings open until the approach of spring, when the partially pulverised soil can be returned and the worst part of the clay can be left on the surface for future management.

THINNING AND PRUNING.

Having brought the draining operations to a close, the next important point will be the removal of old and worthless trees, the heading back of others for grafting with better kinds, and

the thinning out of the heads of the remainder. Although there is no great art in thinning out the matted head of an old standard Apple tree, the work should be performed by a man who takes an interest in pruning, and knows how to use his tools, consisting of a billhook, two saws, one of them with a long handle, and a strong knife for smoothing off the bark after the removal of large branches. If the trees are old and have been long neglected, the first thinning should not be too severe, otherwise the check might defeat the object held in view; therefore, the first operation should be the opening out of the centre from the base upwards to let in light and air, and to give the pruner freedom of action in the removal of spray and interlacing branches. When these have been cleared away, and each fine branch radiating from the bole of the tree has been set free to the action of the wind, an important factor in the development of clean, healthy, fruitful wood, the final thinning of the extremities may be allowed to stand over until another year. Immediately after each tree is pruned, scrape the main branches and stems with a piece of hoop iron to divest them of Moss and Lichen, dress the largest wounds with thick lead-coloured paint, and wash with a mixture of quicklime and soot reduced to the consistency of paint with hot water.

HEADING BACK.

Old, but otherwise healthy, trees of superior dessert kinds need not always be removed root and branch, as many of them, after the ground has been drained, can be resuscitated by heading back, scraping and washing, to free them from Moss and the larvae of insects. When the young growths, which will be too numerous, are a year old they will require judicious thinning to lay the foundation of a well-balanced head, and their subsequent management will be precisely the same as that which will apply to newly-planted orchards. But where the trees were originally planted too close together, the best result will follow the removal of old trees, particularly if they are inferior sorts and interfere with the full development of others which are already profitable. One of the greatest and most prevalent mistakes in orchard planting is overcrowding, often with inferior kinds lacking quality, size, and colour, three points highly essential to their value when placed in competition with fruit of foreign growth from a brighter clime than our own. Wherever these conditions exist the removal of all second-rate sorts should be grasped with a firm hand, as it cannot be too well known that strong-growing kinds like the Blenheim Orange produce the finest fruit where they have plenty of room for development and extension. Moreover, every tree should stand clear on its own ground with sufficient space for getting round it with a ladder to handpick the fruit.

GRAFTING.

In many cider orchards in this part of the country there are a great number of what are here termed Kernel Apples, or French fruit, from which cider of inferior quality is made. But, judging from the excellent report of French Apples drawn up by Dr. Bull, of Hereford, and my neighbour Mr. Piper, of Ledbury, who attended the great fruit congress in Normandy last year, our so-called French kinds have no claim to that country at all, as they saw nothing there like them, neither were the samples they took known to the French growers. The trees are, however, clean, free growers and good croppers; but the cider, although strong, is not pleasant to many people's taste, and it does not "stand the cup;" in other words which may be better understood, it turns colour when drawn from the cask and exposed to the air. Now, as many thousands of these trees exist, they are admirably adapted for grafting with better kinds, a list of which will hereafter be given. The prevailing mode of grafting in the west-midland orchards is known as the triangular notch system, and is in every way superior to cleft grafting, of which it is a modification. Early in February the heads of the trees are sawn off to within a few feet of the crown of the bole, and the operation of grafting is commenced early in March and continued up to the beginning of May.

The wood selected for scions by native operators would rather astonish an expert from a metropolitan nursery, as nothing under two and sometimes three-year-old wood is used. The grafts are taken off some time before they are wanted for use, and are laid in to retard the swelling of the buds. When the proper time arrives, the expert shortens back the previously lopped trees, trims the bark to a smooth edge, makes rather deep saw cuts, one, two, or three in each stump, according to its size, pares the edges smooth and about half an inch wide at the crown. He then cuts the scion triangular shaped, drives it home with a small mallet, making all the edges of the bark unite, ignores the use of ties or ligatures of any kind, applies his clay, and rarely fails in making ninety per cent. grow.

SELECTION OF SORTS.

In the selection of varieties for market purposes soil and situation should be taken into account, and choice kinds that grow well in the locality should not be overlooked. On the deep red marl and red sandstone by which we are surrounded well-managed trees of all kinds produce fine highly coloured fruit, and, as a natural consequence, the cider is rich, sweet, and deep in colour. The limestone is equally favourable to the growth of trees on the Crab stock, but being thinner and colder, the fruit does not colour so well, the cider is not so rich and highly coloured, and tender kinds, if they fruit freely, do not always ripen up and finish satisfactorily. If the owner of a warm, sheltered orchard were to consult a conscientious London salesman, he would most likely say, "Work up a good stock of early cooking and dessert kinds," assigning as his reason that the situation would enable him to get them early to market, when, considering that there would be no storing in the fruit room, he would realise good prices. Amongst early kinds may be mentioned all the Codlin class, including Lord Suffield, the never-failing Echlinville Seedling, Hawthornden, and Warner's King. These are white Apples, and still head the list of early kitchen Apples. In such an orchard, if confined to one early dessert Apple that would sell well in any market, I would plant Worcester Pearmain. It is not a rich Apple, but it is very prolific, brilliant in colour, and fruit of it in our northern markets realise sixpence a dozen wholesale. Where mid-season kinds are grown, they should be of the highest standard quality, as they will have to compete with imported fruit. King of the Pippins, Ribston and Cox's Orange Pippin, and that universal favourite, Blenheim Orange, cannot be too extensively grown, as they are known everywhere and command the highest prices. Amongst late kinds, the handsome Court Pendu Plat, known here as Garnons, or the Wise Apple, because it flowers very late and so escapes spring frosts, should be extensively cultivated. It does not make a large tree, like the Blenheim, and being in every respect late, it requires a warm, well-drained soil and plenty of sun and light to colour it properly. There are, it is hardly necessary to say, hundreds of varieties to choose from, all of them more or less good in their way, but all of them are not alike suitable for market purposes, as has been discovered by the growers around London, who go in for a few of the leading kinds that do well on their ground and are well known amongst the dealers. New and but little-known kinds will, of course, be grown, and if they possess the points I have named, viz., quality, fair size, and colour, no power can prevent them from finding their way into commerce.

CLEARING UP THE ORCHARD.

Assuming that the month of March is closing upon us, that pruning, thinning, and grafting, or heading back for this operation have been brought to a close, it will be high time to see about disposing of the lop, top, and spray. This may be made up into faggots, or, better still, having been produced by the land, the best course will be to reduce it to ashes, and if, in accordance with my suggestion, the clay taken out of the drains and replaced by stone has not been removed, it may be charred at the same time. If the fires are made under the trees, care must be observed in

their management, as a bright blaze might do injury while, on the contrary, a number of well-tended smoke-producing fires at regular intervals would prove beneficial in destroying insect pests which develop into what is commonly called blight. The ashes will eventually be spread over the surface, and in the event of the ground being poor, the addition of fresh soil, road scrapings, or well-rotted manure, in fact anything that will benefit the Grass, will assist the trees also.

Eastnor Castle, Ledbury.

W. COLEMAN.

SUMMER AND AUTUMN RASPBERRIES.

In many gardens Raspberries are relegated to some out-of-the-way place, or, worse still, they are dug between, and have all their surface roots injured. In order to give a plantation a fair chance, select a piece of light sandy land and give it a heavy manuring, when it should be trenched as deep as the nature of the soil will permit, or from 2 feet to 2 feet 6 inches. In doing this it is not advisable to bring the bottom to the top, but simply to break it up, mixing the manure with it at the same time, as then the roots of the plants find it out when most needed, and feed on it when carrying their fruit. The trenching done, the next thing is to plant, and the proper distance to put the young canes in the rows is 4 feet apart and the same distance asunder, placing them quincunx fashion; after that the canes should be cut down near the ground, as it is useless attempting to take a crop the first season. This being so, it would be waste to let the land between the plants be idle, and therefore Cauliflowers, Lettuces, Onions, or such like low-growing things may be sown or planted between, but not sufficiently near to shade or interfere with the Raspberries. As soon as these break in the spring and send up shoots, the three strongest should be selected and the others broken off or rubbed out, and when autumn comes round it will be necessary to decide how these canes are to be supported. Some use wooden stakes, but these are objectionable, as they are continually rotting, and last, at the longest, only about two years, and if they have to be purchased they become expensive, which being the case, it is better to go to a little more outlay at first and buy iron rods, as though dearer to begin with, they become cheap in the end, for they are almost imperishable if the ends are dipped in tar to begin with and the other part is painted.

The proper length to have them is about 5 feet 6 inches, which admits of 4 feet standing clear out of the ground, and the 18 inches in is sufficient to steady them, but they may be stiffened considerably by slightly twisting the canes reverse ways up them instead of just tying them to them. Strained galvanised wire also forms a good support for Raspberry canes, as the canes may be spread out singly and every shoot exposed, but when wire is used it is necessary to have stout iron posts at each end, or very hard wooden ones, if they are to be lasting. Where economy has to be studied and stakes and supports done without, it is a good plan to bring a portion of the canes over from one stool to meet the half bent over from the other; this forms an arch, when by tying the points together they will in that way stand a good deal of wind and do very well. After bearing, the point is to clear away the old stems as quickly as possible, by doing which full light and air are at once let into the young suckers, an important matter, as by having full exposure they ripen better and yield much finer fruit than they otherwise would do.

The staking and tying have been already referred to, but when the plants are two years old as many as five or six canes may be left, but on no account should the ground among them be dug or forked, as neither can be done without disturbing the roots. Instead of the digging, when the pruning, thinning, and tying are complete, some rotten manure should be wheeled on and spread over the land as a mulching and so left to rot away, as the plants feel the benefit of it when decomposing by having its juices washed down, and the shade it affords keeps the soil moist by preventing evaporation, which goes on at a great rate when the surface is bare and ex-

posed to the sun. There are many sorts of Raspberries, but none equal, taking all points into consideration, to the old Fastolf and Yellow Antwerp, which are summer bearers, and the October red and yellow for autumn, all fine-fruited kinds and of good flavour.

Although autumn sorts bear on the old or summer wood, the best way to treat them is to cut them down every winter and top-dress the ground instead of letting the plants exhaust themselves by carrying two crops. To have these autumn kinds good they must have a sheltered, sunny position, or the fruit will not ripen. S. D.

EARTHING UP STRAWBERRIES.

"J. S. W." naturally enough is sceptical as to the value of earthing up Strawberries because it is a practice but little in vogue in this country. I remember, however, that when paying Swanley a visit on one occasion Mr. Cannell conducted me over some large breadths of Strawberries growing out in the market farms there, and I noticed that the method of keeping the ground clean was to run a moulding plough up between the rows during summer, thus casting soil to a depth of some 3 inches or 4 inches over on to the plants in the rows, not covering them of course, but practically earthing them up. One of the objects sought for in this plan was to keep the roots well surfaced with soil, and I observed when there in midwinter, and men were engaged hoeing about the plants, levelling the soil, and destroying the weeds prior to the passing through the lines of a horse hoe, that great care seemed to be shown in keeping the loose soil well laid about the plants as a dressing. Of course it would be absurd to adopt this style of earthing or any other merely to keep old plantations unduly long in the ground, as such breadths would not be profitable in this country even if they may be so in America. A. D.

FOREIGN FRUITS.

UNTIL within comparatively recent times the better kinds of fruits that found their way to this country from abroad were confined to small, half-green shrivelled Pines from the West Indies and to indifferent examples of Grapes. The latter usually made their appearance, packed in barrels, in autumn, and they still come in quantities, but, like the Pines just named, do not much interfere with the early or mid-season fruit of home production. The natural consequence of the competition between home and foreign-grown fruits has had the effect of bringing down prices, even for the best quality, to a point that a few years back would have been set down as unremunerative, at least to such of the home producers as have to reckon the cost of production. In reference to this there is one thing that cannot fail to be clear to anyone; if the prices that the best home-grown Grapes now fetch leave anything appreciable after their cost to the grower is deducted, the profits a few years back must have been very satisfactory indeed. Pines, it is needless to say, are now grown in but few places compared with what they used to be, a circumstance owing to two causes: their use not being so fashionable as in times past, and to the greater cost of home-grown fruit compared with the foreign inducing many who use Pines to buy what they require rather than incur the cost of growing them.

Predictions are frequently heard that the low price at which good Grapes can now be bought for is likely to cause their cultivation to be given up in many private gardens, owners buying what they want, and thus effecting a saving. If the matter was likely to be determined on a simple question of cost, this prophecy might turn out to be correct, for the leading market growers, who now grow Grapes by the acre, can no doubt produce them at a lower figure than can be done in private gardens; but it is not likely that a consideration of this kind will influence more than a few individuals. Gardening as it exists in this country has so much to commend it, that the question of pounds, shillings, and pence stands low in the calculation compared with that which

goes to gratify the eye, and it may safely be said that, apart from their use, a crop of well-managed Grapes is to most people as pleasing a sight as anything they meet with in a garden, leaving out of the question the advantage of having them as good for eating as they are to look at, a condition oftener wanting than present with foreign Grapes early in the season. The same applies to even the best of the foreign Pines, confined as they are almost wholly to one sort—the smooth Cayenne—which, although good looking in its best form, is not equally good in quality. With fruit, as with a good many other things, appearance goes a long way with many people, but not with all, and those who want a Pine for eating as good as it can be had will have to fall back on home-grown fruit, such as a Black Jamaica or a Queen.

As to the foreign Strawberries that each season make their appearance, gathered ten days before they are ripe, and Cherries as hard as bullets, which, like the Strawberries, are so far from being ripe as to be flavourless, they find purchasers who evidently buy them more for the name of having them than for anything they possess in common with good ripe fruit. Foreign Apricots are better in appearance than the Peaches that reach us from abroad, but at best they are comparatively so far flavourless, that it is a wonder the quantities that come over find buyers; their texture, like that of all the soft fruits named, is such that, even with all the despatch possible in bringing them over, they require to be gathered before they possess little more than a trace of their natural flavour.

The same remark applies, only in a less extent, to soft fruits of English growth that are marketed. To admit of their travelling without bruising and their keeping sound until disposed of they must be gathered two or three days at least before they are ripe, a circumstance which causes them to be so far deficient in flavour as not to bear comparison with the same kinds if allowed to remain until quite matured. Anyone who has had experience with the kinds of fruit named cannot fail to have noticed that it is during the last two or three days when the ripening process is completing that full flavour and sweetness are acquired. It is needless to say that soft fruits which have reached this stage are useless for market purposes—a fact which shows conclusively that those who would have them as they should be must grow their own. T. BAINES.

Does canker injure fruit?—None of your correspondents who have written on canker in Apple trees have referred to this point. It is natural to suppose that it must do so; but it is certain that cankered trees bear fruit freely, and it is a common notion among old gardeners that some varieties of Apple trees—Codlins, for instance—do not bear till they become cankered. This notion probably arises from the fact that canker is so apt to show itself when young trees are beginning to bear. I have small experience, most of my trees being young, but the best bearing tree I have is an old Nonpareil, which is scarred all over by old and deep canker. It will, I think, interest many of your readers if some of your experienced growers will report whether canker affects (1) the quantity of fruit, (2) its quality as to flavour, (3) its keeping power, and (4) its liability to attacks from insects.—W. M. C., *Clapton*.

Fruit prospects in the south.—If a backward condition of the flower buds will help us as regards having a good fruit crop we ought to have a grand fruit harvest this year; even in this, the most southern part of Hampshire, fruit buds as yet show scarcely any signs of moving; yet they are plentiful enough on nearly all kinds of fruit trees and bushes. My impression is that the thorough ripening which the wood got last year has much to do with the dormant state of the buds this spring, as we have ample evidence that half-ripened wood hardly takes any perfect rest; on such wood the leaves hang until the buds are again active, but, thanks to an exceptionally fine autumn, the wood ripened thoroughly, and the foliage died off with that fiery tint that one delights to see late

in the season, Pear trees being especially rich in colouring. Though we have had no severe frost, the winter has been cold and dull; consequently vegetation has made less progress than in seasons when severe frosts at night are followed by bright sunshine by day. I find, too, by comparing dates that hardy spring bulbs are very late in putting in their welcome appearance this spring.—JAMES GROOM, *Gosport*.

INDOOR GARDEN.

PRIMULA FROM BURGHLEY.

A FEW weeks ago Mr. Richard Gilbert sent us an account of his mode of growing double Primulas, and along with it a specimen of his growth. An engraving of this plant we now reproduce. Mr. Gilbert, it will be remembered, was the originator of numerous beautiful varieties of double Chinese Primulas, some of which were illustrated in colour in THE GARDEN some five years ago. The value of double Primulas as winter flowers cannot well be over-estimated, and now that they are comparatively cheap, every greenhouse should contain them. So much has been written from time to time in THE GARDEN respecting their culture, that but little is left to be said on that subject. Mr. Gilbert's most recent account in reference thereto will be found at page 528 of our last volume.

CHINESE PRIMROSES IN AMERICA.

THESE charming plants have been greatly improved during the last ten or fifteen years by careful cross-breeding and judicious culture. The flowers have been materially increased in size and enhanced in colour, form, and substance; the variety of shading has been greatly extended, and the habit of the plant much improved, but in all this, so far as I am aware, American florists have no share. It has been said that Chinese Primroses are everybody's plants, and it is true. All in possession of a frame or facilities for starting the seed early, a little common sense and care in summer, and a sunny window in winter, may have these beautiful flowers in abundance. No greenhouse is needed, and I know of no other plant that will bloom so surely, profusely, and continuously with so little trouble. As an experiment I once kept a few plants for six years, and during all that time I do not think they were out of bloom eighteen months. Of course, the plants became long-legged and unsightly, but the flowers were there. Still, it is much better to grow new plants every year or two. Stocky plants with fine vigorous foliage will thus be ensured, and this is almost as important as the flowers themselves. With respect to its foliage, this branch of the Primrose family is most beautifully endowed, and there is now a charming variety in form, colour, and other characteristics. Some of the Fern-leaved sorts are deeply serrated and crenated, and occasionally the leaf is lanceolate, similar to the common Fern itself. Then in most of the coloured sorts, especially the doubles, the reverse side of the leaf will be found brightly coloured and veined, contrasting handsomely with the fresh green of the upper surface. Thus the Chinese Primrose is a charming plant, even when not in bloom, and, though it never flowered at all, it would be worth a place in foliage collections. The little seedlings as they grow are wonderfully interesting and pretty in their tender green woody freshness. I know of nothing more suggestive of the cool and shady wild wood, and the odour of leaf and flower aptly augments this verdict.

SINGLE AND DOUBLE SORTS.

Double forms of the Chinese Primrose, I think, came in cultivation some years after the introduction of the single flowers, and then not more than one or two colours could be had double until within the last decade. I well remember the pleasing impression made upon my mind by the coloured plate published in THE GARDEN about five years ago. It represented the attractive new doubles raised by Mr. Gilbert, of Burghley, and afterwards sent out by Messrs.

Osborn. I tried to plan a way to get some of the plants here, but failed, and now I have at least one on my window-shelf which is identical with one of those figured, and it is grown from seed.

There has been some controversy over the comparative value and attractiveness of singles and doubles, some preferring one, others the other. Now I want both, claiming they are equally effective, each in its place. I shall have no quarrel with the stiff-necked professional florist who wants a bold, flat, uncrumpled, staring, glaring surface on his flowers, and sees little or no beauty in the many crimped petals of the double. The single Primrose is unquestionably the most attractive and showy, though I prefer in them a little crowding and overlapping of the petals, just enough at least to give a slight fluted surface; it seems more graceful than the cold saucer aspect otherwise presented. But I like the full double flowers equally well, and they are much more enduring. The corolla does not leave the calyx as in the single forms, which drop it soon after expansion. The doubles are thus much more valuable for bouquets, and remain fresh longer on the plants. For this reason, if for no other, they should be in every collection. They can now be had in a great

and is quite as attractive. In regard to size, if I can get a diameter of an inch and a half in my Primroses it is enough. This tendency to colossal magnitude and monstrosity in our gardens of late years, both in the floral and vegetable departments, is distasteful to me. This great clamour for everything big seems absurd, at least in the realm of Flora. Nature has not made the exquisite Lily of the Valley very big, but, oh, how beautiful it is! and who would tolerate it any larger? And yet I know florists want large saucer-eyed Primroses.

It has occurred to me that writers in speaking of the Primula family should be more explicit and designate which branch or species is meant. The Auricula-leaved kinds are quite distinct from the Chinese and require different treatment. Why not adhere to the term "Chinese Primrose" in referring to the latter and use the generic name "Primula" to cover the other species, including *P. vulgaris*, *P. veris*, *P. elatior*, and the other forms, save, perhaps, *Polyanthus*, which is now generally known by that name? It would prevent much confusion, I think. As a case in point I note the excellent article of Mr. Gilbert on "Double Primulas and their Culture" in the current issue of THE GARDEN now before me,



A double white Chinese Primula grown at Burghley.

variety of shades in your country, but not in ours, as the old white seems to be about the only double offered at the florists' shops in America. And, what is still more strange here, very few of the single Primroses in any colour are offered for sale or grown for market in any shape; in fact, the Chinese Primrose is comparatively unknown in this country, except the old double white, which is usually kept in stock by every florist, and this is generally considered somewhat difficult to propagate, and the price is often high. Very little is known here of the many excellent features possessed by this plant for window culture. When its habits and beauties are better understood, it will replace many other plants now used so unsuccessfully in window gardening.

The semi-doubles are also very pretty and effective. These do not drop, and the little tuft of petals in the centre is pleasing. They come readily from seed and bloom abundantly in varying shades of colour, ranging from pure white, through the faintest blush, light and deeper pinks, and darker reds, magenta, crimson, and purple.

Another pleasing feature of the newer Primroses is the fringed or fimbriated margin of the petals. This adds much to their beauty and is considered indispensable to a perfect Primrose by most florists. The points of a well-formed specimen now are size, substance, form, and fringe; and of late the character and colour of the eye or throat-margin has become important, and florists have laboured to get a clear, well-defined lemon colour at this central point. And yet I do not know but the usual light pea-green of Nature harmonises just as well

How many outside of professional florists will understand to which species he refers? When it is remembered there are now over 200 known species belonging to the genus *Primulaceæ*, it would seem that some careful distinction should be observed.

Early last spring I procured three packets of the best Chinese Primrose seed to be had in New York. One was from double scarlet flowers, another best Fern-leaved sorts, and the other from Holborn Prize specimens—so marked, at least. I planted carefully on gentle bottom-heat in the latter part of April. A fair proportion germinated promptly of two of the packets, especially the double seed; only two plants started of Holborn Prize, however. All grew nicely, and I was much interested in the pretty little seedlings. They were potted singly and repotted as became necessary. In regard to their special treatment, previous numbers of THE GARDEN have contained ample directions, and I will not repeat them now. Before the end of September the plants had attained vigorous growth, flower-stalks were pushing up, and two or three were already in bloom. On the approach of cold weather I transferred the entire collection to a sunny bay window in my study, keeping the plants in 4-inch pots for the most part and giving them full light. I was very proud of them then, and have been still more pleased ever since. Early in November nearly every plant was in bloom, and they have afforded a gorgeous shower of blossom ever since. They average twenty-five flowers each continually, and one has thirty-five now. I have three full and

beautiful doubles, two extra full and perfect; colour pink-magenta, as near as I can describe it, on obverse side of lower petals and reverse side of centre row, other sides much lighter shade, forming a pleasing contrast by the plaited ruffles into which the petals are crowded. Then the margins are delicately and regularly fimbriated. These continue to bloom profusely; flowers $1\frac{1}{2}$ inches in diameter, foliage good, maroon under-side and leaf-stem. Then I have five very attractive semi-doubles, varying in shade from the faintest pink to a much deeper hue. They have a tuft of petals in the centre in addition to the main row. One of these latter, strange to say, came from the Fern-leaved packet. Another has a bright pea-green centre surrounded by light pink, much of the central tuft being green, the flower presenting a novel effect. The other six plants obtained from the double seed are single flowers, and most of them are exceedingly attractive, varying in size from $1\frac{1}{2}$ inches to $1\frac{3}{4}$ inches. Light and deep pink, crimson, lilac, and purple are the colours. Some of them have canary-yellow eyes edged with a margin of white; all the stained centres are very showy; some are six-pointed and have six petals instead of five; all are a mass of bloom, and most of the margins are beautifully fringed.

Of Fern-leaved I have five beautiful whites, the flowers being large, pure white, nicely fringed, and bright-eyed. The foliage, however, is not very much more ferny than that of other kinds, with one exception, and in that specimen I think I have a valuable acquisition in the shape of a Fern leaf. The plant came up late and is yet quite small, but the leaf is already 5 inches long by half as wide; it is deeply and closely furrowed, and the edge is serrated like that of a Fern. The flower is white and large; it is in a 3-inch pot. Another Fern kind has large light pink flowers in abundance. Of the Holborn Prize I had only a few seeds, only two of which germinated, but both are very beautiful. One is a velvety lilac, varying from light to quite a deep purple; the other has the faintest tinge of lavender, almost white. Both are unique and delicate; flowers very large and exquisitely fimbriated, and they are exceedingly floriferous. This seed was a recent importation, and proves to be very choice. Such is a hurried outline of my success with Primula seedlings, and I am delighted with the attractive collection of plants thus obtained. They will doubtless remain a mass of bloom for many months to come. In conclusion, my advice to every lover of winter flowers, and especially window gardeners, is, procure the choicest Primula seed only, no matter about the cost, and then plant carefully, give proper attention afterwards, and they will not fail to reward you bountifully.

Kingston, N.Y.

H. HENDRICKS.

A FEW GOOD PLANTS.

A very useful plant for this month is *Toxicophleba spectabilis*. It has a white *Bonvardia*-like flower with a pleasant fragrance. It is very easy to cultivate and well worth growing, owing to its coming into flower in winter. A striking plant is *Gynura aurantiaca*. The stem and the back of the leaves are covered with purple hairs. This colour is so variable when watched at different angles, as to appear like shot silk. A small plant of it, with a shield of *Anthurium Warocqueanum* behind it, makes a curious combination. The inexperienced are sometimes at a loss to know what plants will stand a sustained residence indoors. Here are three about which there need be no hesitation, viz., *Farfugium grande*, *Aspidistra lurida*, and *Curculigo recurvata argentea*. This last mentioned has been known to stand in a restaurant for over two years without showing signs of failing health. A good Palm for table decoration, and quite as graceful as *Cocos Weddelliana*, is *Calamus ciliaris*. Finally, a great deal more use might be made in conservatories and green-houses than what is of the climbing New Zealand Fern, *Arthropteris filipes*. It is a dwarf growing little plant that will cling to a piece of wood or

overrun any bare corner in a conservatory rock-work, and go no further.

CROWEA LATIFOLIA has handsome violet-coloured flowers, and keeps on producing them till the end of January. It is not of much use as a flower for cutting, but for a warm conservatory it will be found very serviceable. Correa magnifica is more interesting than pretty. But both these epithets can be applied to Correa ventricosa. Young plants in small pots are now flowering profusely. It is available for table or room decoration, and also in some degree for bouquet-making. It is curious why more people do not grow Zephyranthes (Amaryllis) Atamasco and one or more of the pinky varieties; they will stand gentle forcing very well. Another greenhouse flower, of which the merits are pretty well known is Hibbertia Reidi. I call attention to it as being a good free-flowering plant for anyone who may only have one or two houses, and is shy of making additions, on the ground that they will not do with him as well as with his better-off neighbours. M. C.

GRAFTING EPIPHYLLUMS.

FEW, if any, stove plants are of more value than Epiphyllums, as they come in at a season when flowers are scarce and last a long time in perfection; moreover, they admit of being grown in a variety of ways. They may be had either as dwarf pyramids or standards, or by grafting on the Pereskia, made to hang down from the rafters. If this last mode of cultivating them be decided on, the way to proceed is to run the Pereskia up from the front of the house, and when it reaches the top or has got to the desired height, it should be stopped and the grafting proceeded with. Now is a good time for carrying out the operation—i.e., as soon as the Epiphyllums have done blooming and before they start into growth. The grafting is a very simple process; all that is necessary is to make a cut in the side of the Pereskia extending about a quarter of the way through the stem and in length half an inch, when all will be ready for the graft. This should consist of from 2 inches to 3 inches of shoot, which should be trimmed wedge fashion. It may then be put into the cut made in the stock and there secured by binding a little Moss over and carefully tying all together, after which all that is necessary is an occasional syringing, to keep the scions from flagging till the two have united. The proper distance apart in which to place the grafts is about 9 inches or a foot, which is quite near enough for plants on rafters, as the shoots will meet and touch, but for pyramids they may be a little closer where a fine effect is desired. To have regular symmetrical specimens the scions should be worked on different sides of the stock, commencing at about 6 inches from the bottom and continuing on at the same distance right up to the top. If this is done and the grafts secured by being tied in, as already mentioned, they will make grand plants in two or three years, but if not wanted larger they may be kept to any size by annual pruning or shortening back of the shoots, as when these are severed at the joints they break again from the points and make the plants more dense than before.

The proper time to prune or thin out the shoots is immediately after the blooms fall, following on which the plants should be kept a little drier to give them a slight rest, when by syringing and raising the temperature they plump up, break freely, and make plenty of growths. To get this firm and well ripened is the next thing to aim at, which desirable end may be accomplished by having the plants in light, sunny houses, with little moisture in the atmosphere and plenty of air during the summer; under such favourable conditions the young shoots cannot fail to become thoroughly hardened, nor to set an abundance of buds. The most suitable temperature for Epiphyllums during the autumn and winter when in flower is from 55° to 60°, in which degree of heat, if dry, the blossoms come rich in colour, and do not damp or go off nearly so quick as they do if

subjected to the air of a stove. To get standards, nice straight-stemmed Pereskias should be chosen and cut back to the height required, when by splitting the top the graft may be inserted there, where it will soon form a fine head. For table decoration Epiphyllums grown in this way are quite unsurpassed, and no one who has heat enough and the convenience to keep a few should be without one or two sorts, the best of which will be found given below. To have Epiphyllums as dwarfs they must be grown on their own roots from cuttings; when they only just clear the top of the pots they are in, and depend gracefully down the sides, they are lovely objects when in bloom suspended in a window, where they stand well and make a magnificent show. Dwarfs are also very suitable for cultivating as roof plants in small wire baskets, as the Epiphyllum being, as its name implies, an epiphyte, requires but little soil, and that which it does best in is peat and loam, with a good sprinkling of sand to keep it open and porous.

Of varieties there are many, the most distinct being *E. truncatum*, *E. Ruckerianum* superbum, *E. Russellianum*, *E. Bridgesi*, and *E. violaceum*. Epiphyllums are not at all subject to insects, and the only parasites that assail them are green fly, which sometimes get on at the time of the plants making their growth or when forming their flower buds, and the way to get rid of them is to fumigate with Tobacco, which will clear them all off. S. D.

RHODODENDRONS IN POTS.

FOR the decoration of conservatories and for affording a supply of cut blooms during January, February and March I consider Rhododendrons unequalled. Many of the sorts, too, are singularly beautiful, the markings and colours, in my estimation, even surpassing those of the Indian Azaleas, while the foliage of many of them is by no means to be despised. In fact, it is the wealth of noble leaves that sets off the trusses of bloom to such good advantage, and it is in this respect also that Rhododendrons surpass Belgian and Indian Azaleas. It must, however, be conceded that Azaleas are much more floriferous than Rhododendrons; but though the trusses of the latter are fewer in number, they are more attractive. Unfortunately, if they flower very freely one season, the choicer sorts, unlike the old *R. ponticum*, rarely set any flower buds for the next season. Hence the necessity of having two batches of plants and forcing each every alternate year. We have a number of strong old plants, which rarely fail to flower well every year on about half the growths. They are in 12-inch pots and have been so for four years, and at present show no sign of being in need of a shift. During summer they are placed in a rather cool position and kept regularly watered, varied with an occasional supply of weak liquid manure. When our early Peach house is started—usually early in December—Rhododendrons are introduced into it, and in about four weeks they are in bloom and fit for the conservatory. Another set of plants succeeds them in the Peach house, while a third batch of plants open their blossoms in a cool house, in this manner maintaining a good succession. In spring the plants are duly hardened off and then returned to their summer quarters. Nothing could be more simple than this, and no plants give us less trouble. The smaller plants that show no sign of blooming freely next season are planted out in good light soil, and here, without any very perceptible increase in the size of the ball, they yet make fairly good progress, being usually fit for lifting during the second autumn after planting. They are given pots a trifle larger than the ball of soil, and a little good peaty soil is well rammed round them. They are then placed in a convenient spot; their pots are covered with rough litter to protect them from frost, and are ready for forcing whenever they are wanted. We find Rhododendron blooms to be of great service; they are singularly pretty and effective when bedded in Moss and Fern fronds on the dinner-table. The trusses are used in different fashions for two nights, not necessarily successive, and then they are broken up and the individual flowers used in

some sort of scroll work. The trusses, with or without their leaves, are also available for specimen glasses, and large vases filled wholly with Rhododendrons are most imposing. We also break up the trusses when making hand bouquets, the flowers being formed into triplets, and when wired and stemmed prove excellent substitutes for and more durable than the flowers of Azaleas. For pot culture and forcing I prefer the early flowering hybrids, and I may add it is not yet too late to procure any number of them well set with buds from the nurseries. None are more serviceable than the scarlet, rose, and other varieties of *Nobleanum*; *Blanche Superb*, pure white; *Brilliant*, a good scarlet; *Broughtonianum*, rosy scarlet; *Marian*, shaded pink, beautifully spotted; *Lady Duckworth*, clear pink; *Auguste Van Geert*, chocolate-purple, prettily spotted; *limbatum*, white, crimson margin; and *campanulatum*, creamy white. These are all worthy of a place in every collection. W. I. M.

FEEDING ROOT-BOUND PLANTS.

IF there is one thing that strikes a visitor to the flower market in Covent Garden more than another it is the apparent disproportion in size of the pots to the plants growing in them, and many wonder how it is possible to impart such vigour, size, and floriferousness under what in one sense at least must be considered unfavourable circumstances. Take, for instance, *Pelargoniums* of the show and decorative types, 18 inches high and as much through, with foliage in the perfection of growth to the rim of the pot, and bearing a dozen trusses of bloom, all the soil they have to grow in individually being contained in the small compass of a 6-inch pot. It is evident that long ere such plants arrive at their flowering stage they have become quite root-bound, and that the soil must be almost deprived of its nutritive properties. Therefore, to constant feeding in some form or another is to be attributed the luxuriance they exhibit, which proves that the quantity of soil at the disposal of the roots is not of paramount importance, and that vigorous development may continue just as well after the compost becomes exhausted; i.e., if nutriment is given in another way. It is doubtful if this is so well recognised as it should be by the generality of plant growers, and plants are often shifted on when liquid or concentrated manures would serve the purpose equally well. It also frequently happens that for the want of a little timely feeding the career of the plant is so checked, that weeks elapse ere it can recover; and every plant grower is aware of the difficulty of inducing free growth when the tissues have become hardened through want of food or some other cause. An error often committed is that of allowing plants to absolutely need food before it is given them; a little observation will enable anyone to accurately note the moment when the roots have thoroughly permeated the soil; then a slight top-dressing or occasional supplies of weak liquid manure will maintain it in fertile condition. By way of experiment I grew a *Vesuvius Geranium* in a 4½-inch pot for eighteen months, and it continued to bloom without cessation during that time, producing upwards of 200 good trusses of bloom quite equal to those obtained from plants growing in the open air. It became at length so large, that the weight of the pot and soil were insufficient to keep it upright. Had it been shifted on it might have become larger, but could not have been more floriferous in proportion to size. A slight dressing with Clay's fertiliser from time to time and plenty of water in fine weather sufficed to maintain this healthy vigour.

A large specimen of the old bronze Model has been six or more years in the same pot; the stem is gnarled like that of an old Oak; it looks as healthy as ever and makes good growth every season. In recent numbers of THE GARDEN I have alluded to the satisfactory growth made by Lilies and Callas when allowed to remain more than one year without change of soil, and instances are plentiful enough of Camellias, Azaleas, and many other hard-wooded plants remaining in the

same pots for years and yet continuing healthy and blooming. Roses being, as is well known, gross feeders, would naturally be considered as most unlikely to do well without change of soil, and yet one of the finest groups ever seen was that exhibited last year by the Messrs. Veitch, the plants composing it having been four years in the same pots. Their luxuriance and the size and perfection of bloom was the subject of comment in the gardening papers, and it was stated that this was obtained by applications of Clay's manure as the plants appeared to need food. If Roses can be grown to such perfection in this way, it seems natural to suppose that most plants may remain several years without change of soil if well attended to in the matter of feeding.

As to fruits, we know that Mr. Rivers and others have grown Pears, Peaches, Plums, and other fruits in the same pots for years without any lessening of their fertility, and I have had abundant proof that Strawberries will bear well under the same conditions. At one time we used to grow a great number of pot Strawberries, which remained from two to five years in the same pots. If anyone should doubt the quality of the fruit they bore, all I can say is that it was quite as good as that from young plants, and often realised 10s. per pound the latter end of May. The roots made by these old plants were stronger than those made by young ones, and they naturally did not require the care in watering, the pots being always full of roots. During the summer they had several dressings of soot or some concentrated manure, the superfluous crowns being thinned out when they began to grow freely. Soot is an excellent manure for root-bound plants, and may be used either in a liquid state or as a top-dressing. If in the latter way, it should be mixed with one-third of its bulk of sand, which prevents it floating off when watered, and binds it down solidly to the surface of the soil. The best way of using it in liquid form is to tie it up loosely in a coarse bag and sink it in the water tank; then it is quite free from sediment and may even be used for syringing. In this way it may be used freely with perfect safety, and all root-bound plants should get it as soon as the days begin to lengthen, as it gives colour and solidity without stimulating over much; it prepares the way for stronger food.

Camellias, Azaleas, Neriums, and peat-loving plants, such as Ericas, Epacris, Boronias, Leschenaultias, and to which forcing nitrogenous manures are not applicable, are all the better for occasional doses of soot water, especially in the case of specimens which, having come into pots as large as it is desirable to have them in, begin to look yellow. The effect of soot in such cases is almost marvellous, as in the course of a short time the foliage takes back the rich green hue natural to it. Peruvian guano is a strong forcing manure, and at one time we used it for pot Strawberries from the time the first fruit set, using soot water only in the early stages of growth. Every few days we put some in the tank, so that at each watering the plants got a little. Under this treatment they grew freely and the fruit swelled up finely. Many complain that guano burns the roots, but this is caused by using it too strong; the water should only be just coloured and should be quite clear. As a top-dressing guano very quickly makes itself felt, but if the dressing is not renewed in time the plants soon go back again. Under glass, too, one cannot use it as a top-dressing, at any rate not where the plants are fully exposed to the sun, as there would be danger owing to the strong ammoniacal vapour. Clay's fertiliser, on the contrary, appears to be perfectly safe; we have employed it for some years as a top-dressing for pot Strawberries, and it takes the place of liquid manure when the fruit is swelling. It gives great substance and vigour to the foliage and size to the fruit. It parts with its fertilising properties slowly, and does not seem to lose them when exposed to the sun and air, which cannot be said of all concentrated manures. I have used it for various kinds of soft-wooded plants, such as old Fuchsias, Geraniums, Cyclamens, &c., and invariably with good results. J. CORNHILL.

Hoya carnosa.—I have often noticed it stated that *Hoya carnosa* is a stove plant. I have had one in my greenhouse for several years which blooms profusely every season, and the temperature of the house falls in winter, as it has recently done in the night, to 40°, and after the middle of May there is no artificial heat at all in the house. This information may possibly be useful to those who having only an ordinary greenhouse would like to grow this interesting and beautiful plant.—W. J. T., *Brixton*.

BOOKS.

THROUGH MASAI LAND.*

THE preface to this interesting book tells its purport. When an author says, "I resolved to clothe the bones of a mere report in the flesh and blood of a narrative," the reader expects to find a description of the scenery and the incidents of travel vividly delineated, imagination is aroused, and made alive to the beauties of Nature and the perils of the traveller, and if to these a desire to embark in the same field of enterprise be added, the author must have performed his task of relating his travels in an attractive manner. This we must accord to the enterprising author of "Through Masai Land." On the beauty of the country he dwells with enthusiasm, and though the difficulties and dangers that beset African exploration are doubtless great, still the author appears to have been capable of surmounting them. The following will convey some idea of the scenery through which he passed:—

"Gazing eastward the eyeroams over the Taveta Forest and over the yellow, burnt-up plain beyond, till the view is bounded by the range of Bura and the peak of Kadiaro rising above the horizon like dangerous black rocks from a muddy sea. Turning to the south-east, we note in the foreground the hills and dales at our feet, carved out by numerous noisy torrents. Here a 'gallery' forest arches over a rushing stream, there a bush-clad ridge; now a beautiful glade, anon a piece of park-like country. Such is Chaga, if you add curling columns of smoke and parti-coloured plantations. In the same direction, but beyond the base of the mountain, the eye takes in a rich expanse of forest and jungle, dotted here and there with strange little sugar-loaf peaks, which tell of former fiery vents of Vulcan's forge below. Attention is finally arrested by a glimpse of the silvery, shimmering sheet of Jipè seen past the edge of the Ugoni range, though far away beyond in the haze of distance may faintly be traced the Parè and U-sambara Mountains. To the south the view extends over the well-watered depression of the Kahè country to the interesting mountains of Sogonoi. This whole district—one of the richest in Africa—is practically uninhabited, except in some dense forest patches, owing to the terror with which the Masai are regarded. The expanse towards the west is most picturesque and varied, for there, looking over Machamè (a Chaga state), we see the clear sweep of the sunny slopes of Kilimanjaro from top to bottom, with the Shira flanking its shoulder scarred and rugged, its black gloomy rocks and narrow gorges contrasting with the smiling aspect of Machamè at its base. Behind are the magnificent, though simple outlines of the wonderful volcanic cone of Meru, which springs up to a height of nearly 9000 feet from the surrounding plain and stands in all the severe and placid dignity of a cyclopean pyramid. Of the scene to the north, which closes in this glorious panorama, I will not attempt to give any description."

"We were now considerably over 6000 feet in elevation, and I was thrown into ecstasies of delighted surprise in observing several very

fine coniferous trees (*Junipers* and *Podocarpi*) rising to a height of little short of 100 feet, among magnificent Cape Calodendrons, splendid flowering trees never before found north of Natal. The whole scene was singularly rich and varied with the numerous trees of temperate aspect and the dense undergrowth of bushes, mostly covered with charming flowers, which emitted a rich, though heavy, perfume. Beautiful glades honey-combed the forest and cattle paths connected them with each other."

"On the eastern half of this divided plateau rises, as we have seen, the snow-clad peak of Kenia and the picturesque range of the Aberdare Mountains, which runs almost parallel with the central line of depression. A more charming region is probably not to be found in all Africa, probably not even in Abyssinia. Though lying at a general elevation of 6000 feet, it is not mountainous, but extends out in billowy, swelling reaches, and is characterised by everything that makes a pleasing landscape. Here are dense patches of flowering shrubs; there noble forests. Now you traverse a park-like country enlivened by groups of game; anon, great herds of cattle or flocks of sheep and goats are seen wandering knee-deep in the splendid pasture. There is little in the aspect of the country to suggest the popular idea of the Tropics. The eye rests upon coniferous trees, forming Pine-like woods, and you can gather sprigs of Heath, sweet-scented Clover, Anemone, and other familiar forms. In vain you look for the graceful Palm, ever present in the mental pictures of the untraveller."

That the book is cleverly written these extracts are sufficient to show. It is also well illustrated and printed. J.

NOTES.

The winter Jasmine.—*Jasminum nudiflorum* is such a bright and cheerful wall shrub, that it should be planted in various aspects so as to prolong its season of blossoming. It has been in bloom here for three months or more, and one plant on a western wall has only just begun to flower. Can anyone interested in Japanese shrubs tell us if there are two or more varieties of this Jasmine? I think I could convince any visitor that we have two forms—one of a rapid lanky habit, and the other dense and bushy, covering the wall like a sheep's fleece with its short pendent flower shoots. Apart from its different habit of growth, its flowers do not open until long after those of the loose-habited variety on the same wall and in the same aspect. Again, the long shoots of the latter form root freely treated as cuttings or as layers, but not so the dense-habited kind, which I find extremely difficult to increase.

Fungi as food.—It seems a great pity that there is no sure and safe method of distinguishing between the edible and the poisonous fungi, or, to put it familiarly, between Mushrooms and Toadstools. There seems to be nothing for it at present but experience in the fields with a "wise man" familiar with the whole tribe! At least one American humourist, however, has suggested a royal road, "If yew air in doubt," he says, "you eat the fungus. Then if yew live, 'twas a Mushroom; and if yew die, 'twas a Toadstool!" Nor is this joke so ridiculous as it at first sight appears. At any rate the experiment is made every year, and, as a matter of course, we hear of the "accidental deaths" which result from such trials. In Italy, we are told, that one of the species reputed poisonous, and so excluded from the markets, is our common meadow Mushroom (*Agaricus campestris*). In Russia nearly all kinds are gathered indiscriminately, and are eaten after they have been pickled in salt or vinegar for some time. But is it not possible for our fungologists to help us in the matter of discrimination, or are we to take Mark Twain's advice for all time?

Snowdrops.—These lovely heralds of the spring and harbingers of the thrush's song are ten days later with us than last year, but just now several kinds are in bloom. It is commonly

* "Through Masai Land." A journey of exploration among the snow-clad volcanic mountains and strange tribes of Eastern Equatorial Africa, being the narrative of the Royal Geographical Society's expedition to Mount Kenia and Lake Victoria Nyanza, 1883-1884. By Joseph Thomson, F.R.G.S., author of "To the Central African Lakes and Back." Sampson Low, Marston, Searle, and Rivington.

thought that Snowdrops are earlier, and at all events finer, in the north of England and Scotland than in the south. Is this so or not? At any rate, some of the finest flowers I ever saw were sent to me from Dunrobin Castle, where Mr. Melville has raised several fine seedlings. Those who grow only the common Snowdrop and, perhaps, the broad-leaved or Crimean variety, may like to know that there are at least ten or twelve distinct forms of this popular flower. The finest are *Galanthus Imperati*, *G. plicatus* major, *G. Elwesi* major, and *G. Melvillei*, a seedling raised at Dunrobin Castle. These have great pearly buds of varying shape, and are really lovely if pulled early, i.e., just before the buds expand, and brought into the house to open under one's eyes.

Helleborus niger.—No doubt Mr. Woodall (p. 77) is quite right in considering that all the forms of this plant are merely varieties, but in describing *maximus* or *altifolius* as being sterile he is in error. The late Miss Hope, of Wardie, found it sterile—that is to say, seedless—in her garden, but I saw ripe seeds plump and black on a plant growing at Straffan in 1883. The varieties of *H. niger* are very numerous; a dozen at least could easily be defined by photographs or by carefully made drawings, although it is not so easy to distinguish them by words. To assume that any given plant must needs be a hybrid merely because it is intermediate between two other forms is only misleading, and in the case in point the Riverston plant could only be a cross-bred variety, since two varieties only, and not two species, are its supposed parents.

Galanthus Imperati.—This is now blooming with us for the first time, and is, as I consider, a great beauty in its way. In its bud state it is perfect. For years I had grown a very large and fine form of the Crimean Snowdrop (*G. plicatus*) under this name; then I bought a few imported bulbs named *G. Imperati*, only to find them to be *G. Elwesi* at blooming time. Now, however, we have the true plant, with its long fusiform buds depending among the pale glaucous leaves, which are like those of the common Snowdrop, but perhaps a little broader. Of all the Snowdrops we find *G. Elwesi* the earliest and decidedly the most variable, some forms scarcely so good as the common Snowdrop, while others bear great inflated buds—*G. Elwesi*, to wit, figured in these notes a year ago. Plant a few bulbs of Snowdrops near a clump of *Cyclamen Coum*, and you have a picture.

The Orchid conference.—The idea of holding an Orchid conference is a good one, and one that if properly recommended to amateurs and trade growers must needs prove a great success. Orchids were never more popular than at present, and if a grand exhibition of them can be held at South Kensington during the ensuing London season, all the town will go to see it, as well as many country visitors. Apart from plants in flower especial provision should be made for cut specimens of rare or curious species and varieties. The parcel post offers such facilities for transit now-a-days, that many country growers would gladly send cut specimens who might reasonably object to send plants long distances. With a little organisation valuable results may be obtainable, and questions of culture and nomenclature satisfactorily settled by experts in this branch of horticulture.

Iris fimbriata.—If the plant alluded to by "A. R." (p. 78) is the same as that graceful evergreen species, otherwise known as *Morea fimbriata* or *Iris chinensis*, I can corroborate all that has been said in its praise. Even when not in bloom the plant has a fresh and pleasing habit, but its fringed flowers are really lovely. They are produced in panicles and open in gradual succession, so that a plant with three or four blooming growths continues in blossom several weeks. It is readily increased by offsets, which are freely produced and blossoms profusely if grown strongly. Years ago several large pots of this species used to flower every year in the succulent house at Kew, where it used to obtain great admiration from visitors.

Purple-leaved Ivy.—Of the rich bronzy beauty of this plant there is no doubt whatever, and if planted at the foot of a wall along with the true large-leaved Golden Ivy, the effect of both is enhanced, and the result is a living picture. *Hedera atro-purpurea* was sent to me by the late Mr. Williams along with other rare plants, which seem to have been peculiar to his garden, since I never heard of them, except in connection with his name. Its leaves have a solid bronze-like appearance, and, as indicated (p. 77), are most valuable for cutting. A bit of old stone wall covered with this dark-leaved Ivy and *Jasminum nudiflorum* would be pretty, as its leaves would emphasise the brilliancy of the golden flowers. One peculiarity about the variety is that the leaves are at their best, in colour I mean, during the winter season.

Vinca acutiloba.—Anent this bright green winter Periwinkle (see p. 109) a friend in Ireland sends me the following note: "I am glad to see you have a word of praise for this large white-flowered Periwinkle. I found it in quantity along the Riviera. Last November, and even into December, I had bunches of it on the drawing-room table with *Chrysanthemums*. It does not flower as large or handsome as in its own warm climate, but it is always acceptable and a link with the pleasant past. I have just been out to the garden, and see that its blooms are trying to open. It is also found in Greece, I believe, and generally over S. Europe."

Corbularia citrina.—This pale lemon-coloured *Narcissus* is opening its first blossoms in the greenhouse, and a great beauty it is, very variable in size and with some little variety of tint also, but yet quite distinct in all ways from the common kinds of Hooped Petticoat with their deep golden-yellow flowers. Mr. J. D. Llewellyn told us long ago that this fine variety grows abundantly near Biarritz, peeping up among the rocks and stones along with the lovely blue-flowered *Lithospermum* and other wild flowers of the district. I am afraid it will not be quite hardy on the majority of soils, but as a pot plant in a greenhouse or frame it has but few rivals at this season.

Feeding the flowers.—The old northern farmers have a saying that "Muck is the mother of money," and what is true of the farm is true also of the garden—the market garden to wit. After all we may get a good deal of floral beauty from the manure heap if we will, and in a well-managed garden nothing is lost; but we must be very careful in our use of manurial stimulants, and more especially in the application of crude solid manure to all plants, especially to bulbous ones. The old-fashioned plan of planting Potatoes was to lay the tubers on a layer of stable or farmyard manure in the trenches or rows previous to their being covered with earth, and even yet the direct application of crude manure to newly planted tree and flower roots is practised. The golden rule is that manure should never be placed in contact with a tuber or a bulb, but should, if used at all, be so placed that the roots may find their own way to the manure if so disposed. Mulchings, apart from their mechanical action in preventing radiation and evaporation of earth moisture, act as manure water during rain.

Flowers of spring.—There is no sunshine, the birds are silent, and a drizzling rain filters down from a leaden sky. Here and there comes a gleam of mellow light from a closed-up *Crocus* bud or from the *Aconite* flowers, but the long tassels of the *Garra* bush, which were yesterday swaying and dancing in sunshine and the wind, now hang as if limp and lifeless among its cool grey leaves. It is not a morning on which to become enthusiastic about anything, and yet snugly ensconced at the foot of the rockery in a friend's garden a flower has opened its velvety petals and displays a glorious richness of colouring unsurpassed in its way by the tenderest or rarest of exotics. It is only *Iris reticulata* Krelagei, but there is a something in its vernal freshness that makes even Orchid flowers themselves look tame and insipid when compared with this little *Iris*, so richly is it dressed in ruby-purple and gold.

Cultural progress.—Of course all real progress is slow, and this much seems especially true of garden practice. The phrase "While doctors differ patients die" is as true of gardening as it is of medical science, and for a similar reason, since in either case it is rare to find all the conditions of any two cases exactly the same. What we want is the establishment of accurate standards—a registration of demonstrable truths. Gardeners have been groping in the dark ever since the beginning, and even nineteenth century progress has not helped us so much as one would naturally suppose. True records of actual facts are valuable, but what we desire to know with mathematical accuracy are the laws which govern vegetable life beyond all disagreement or controversy. We may never acquire this knowledge perfectly, but it is the goal to strive for, and the nearer we approach it the better. VERONICA.

GARDEN FLORA.

PLATE 479.

AMASONIA PUNICEA.*

It seems somewhat strange that so beautiful a plant as that represented by the accompanying plate should have been known to science for nearly a century, and yet not introduced until lately to European gardens. So long ago as 1796 a German botanist named Martin Vahl published descriptions of plants from Central America in a work which he called "Eclogæ Americane," and among them was this *Amasonia*, the materials for the description of which were derived from the island of Trinidad. Early in the present century it was gathered by Humboldt in forests bordering the river Orinoco, and not many years afterwards it was discovered by Martius in the Brazilian province of Para, and also in the region of the Rio Negros. No further notice appears to have been taken of it till nearly four years ago, when Messrs. Veitch's collector, Mr. David Burke, brought living plants of it to their Chelsea establishment from British Guiana, where it must have escaped the observation of the keen-eyed Schomburgk, as the name is not in his "Versuch Einer Flora von Britisch Guiana," although the typical species, *A. erecta*, is there mentioned. It is therefore evident that this species of *Amasonia* has an extensive range in Equatorial America, where it affects hot and moist situations. *A. punicea* is a low suffrutescent shrub, with erect stems furnished with spreading foliage. The leaves, which are elliptic-lanceolate, have serrate margins and are about a foot long; the inflorescence is terminal, the crimson peduncle being about as long as the leaves and slightly nodding. As a horticultural plant it is unquestionably one of the most beautiful of recent introductions, its value as such being greatly enhanced by the persistence of the brilliant-coloured bracts, which retain their colour for upwards of three months. The merits of this distinct and ornamental stove plant have been recognised by the floral committee of the Royal Horticultural Society by the award of a first-class certificate. *A. erecta*, the plant on which the genus was founded, is a small shrubby plant with inconspicuous flowers and small red and yellow bracts; it is scattered over the savannahs of Venezuela and Guiana. Four other species (six in all) are described by Schauer in De Candolle's "Prodromus," but none, with the exception of *A. punicea*, appear to possess any attractions for the horticulturist. The *Amasonias* are verbenaceous plants, and come near *Clerodendron* and *Vitex*.

* Drawn in the Royal Exotic Nursery, Chelsea, in September.



AMASONIA PULCHRA.

Our plate represents a full-sized spike of this new plant, but the colour printer has failed to reproduce the glowing brilliancy of its scarlet-vermilion bracts, which are as bright as those of the Poinsettia. The flowers are a pale primrose-yellow, a colour in charming harmony with the bracts and the luxuriant green of the foliage. A great future may be safely predicted for this novelty, whose distribution cultivators await.

WORK DONE IN WEEK ENDING FEB. 10, 1885.

FEBRUARY 4.

FINE and spring-like, very good forcing weather; early Peaches have set well, and have been partially disbudded and the borders being inside, watering was needed and applied, the chill being taken off by adding half a dozen pots of hot water to each tub that holds about thirty pots. The borders are always kept covered with long stable litter, thus the moisture is retained for the longest period, and it is cleanly for standing bedding and other plants on. Potting succession Pines and plunged others, having renewed plunging material. The fruiterers are now given clear manure water at each watering, sheep droppings and soot are excellent ingredients, as also for Strawberries, the plants of which, swelling off fruit, are now given it on alternate days. Sowed more seeds for sub-tropical bedding, Ferulas, Eucalyptus, Cannas, &c., being amongst the number. Planting Laurels, laying turf and Box edgings, and finished nailing Peaches and Nectarines comprised the whole of our outside doings to-day.

FEBRUARY 5.

Slight showers occasionally, but happily our soil being gravely it works well in all weathers, except during hard frost. Finished shrub planting for the present; mulched all, and tied to supports such as required it, to prevent wind waving. Planted a few more early Potatoes, Myatt's Ashleaf and Mid-summer Kidneys; made another sowing of Broad Windsor Beans and Peas, Advancer and Veitch's Perfection being the varieties now sown. Planted Shallots and Garlic and a few of our finest-shaped Onions for seeding purposes. Potted off bedding Tropæolums, Heliotropes, and Ageratums. Put in cuttings of Lobelias and of Saxifraga Cooperi; the latter is one of the very best plants there is for dotting in dwarf green, grey or white groundwork plants, and being comparatively hardy will, when better known, be in great request by all who have to do summer bedding with the hardiest kinds of plants. Sowed Pyrethrum Golden Feather in boxes and placed in warmth, and also made a sowing on a sunny bank in the open air. We have frequently had our best supplies from the latter position; if hand-lights can be spared to cover over the bed, then to a certainty may good plants be relied on in time for planting out in May. Potted some stove plants and a few Pine suckers.

FEBRUARY 6.

Repotting stove plants, Ferns, &c., washed Gardenias. Fly and soft scale being the only parasites that afflict our plants, therefore they are not difficult to clean, but they soon make fresh attacks and require frequent attention in regard to washing—the stems and main branches with a brush, and the foliage with sponge, the solution being a strong lather of soft soap or Gishurst, the final being a thorough syringing with clear water. That worst of all plant pests—mealy bug—we got rid of by syringing at intervals of a week with a solution of paraffin oil, a half pint to from two to three gallons of water; at this strength the plants did not suffer in the least, and that it was effectual, freedom from it for years is the best of all proofs. Stopped a few of the stronger shoots on early Vines; generally we pinch at the second joint from the branch, but do not follow this rule too severely, especially if there is likely to be roof space for all the foliage to have a due share of light; in fact, we pinch close or distant, according to space, our one aim in the matter being to cover the roof—not crowd it—with foliage. Now that the weather is milder, and the sun occasionally puts in an appearance, forcing can be done without

injury to the prospects of the crop; 68° or 70° at night in such mild weather is not a bit too high, and by sun-heat we allow the temperature to run up to 80°, and close up the house with plenty of atmospheric moisture at about two o'clock to husband what sun-heat we get. Cleared off the old stems of early Broccoli, and the ground is now being prepared by deep digging and manuring for summer Spinach, French Beans, and Lettuce. Made a sowing of Lettuce and Radishes on a south border, and began to turn gravel walks in kitchen garden. The gravel is broken to a depth of about 5 inches, then raked smoothly over, and afterwards a light sprinkling of fresh gravel is applied, rolling being done at every opportunity till they are well consolidated.

FEBRUARY 7.

The sun to-day was too good to last; it was what we Hampshire folk call a "weather breeder," three hours being a most unusual length of time at this season for that orb to display its life-imparting influence to vegetation. However, we may gladly welcome a passing storm if the penalty be nothing worse than that of to-day. It has visibly pushed on our Peaches and Strawberries, and for the first time this year the latter needed the water-pot twice the same day. Watered Pines, Fig-house border, and early Muscat Vine border, warm water only being used; looked over Grapes in bottles to remove bad berries, and fill up the bottles where needed. They never kept better, I think, never so well—a fact that shows that full ripeness is indispensable to good keeping. Last year the season was such that they could not be hindered from getting well ripened, and thus the lesson was enforced that all should willingly learn, viz., that good keeping can only be assured by perfect ripeness of fruit. Being Saturday, all the houses had the usual weekly round of scrubbing, washing, and rearrangement of plants, &c. Thinned out and planted autumn-sown Onions digging in kitchen garden, and repairing walks in the same. Cleaned up woodland and pleasure ground walks and coach roads; rolled newly-laid Grass verges and loose parts of walks.

FEBRUARY 9.

The storm foreshadowed by Saturday's brilliancy came in full force yesterday, heavy rain and high wind continuing without cessation all day long, whilst to-day has been fine, though not sunny, but drying. Manured herbaceous plant borders that were made last year, and planted in the more open spots Ranunculus, Anemones, Canterbury Bells, Brompton Stocks, and Sweet Williams. The longer planted borders have got so overcrowded, that the whole of the plants are being entirely dug up, the ground well manured and trenched, at which work we set every available hand, that the plants may be got in before any injury accrues to them. As showing the immense popularity attained by these old-fashioned, but most beautiful, class of plants, we need only to instance our own case. A very few years since we might have had dozens, but have hundreds in lieu of dozens now, and still they come, but not space for all we would like, as they are not allowed to elbow out of the garden our best classes of summer bedding plants, as they fill a niche that herbaceous perennials are not equal to fill, at least not from my point of view. However, this is not the place for argument on the matter, and as I consider both classes indispensable, I cannot justly be accused of being prejudiced in favour of one over the other. Just now, however, I am enthusiastic over perennials, and mean to have them grand; hence the thorough doing up of the borders now in progress, but in May next I shall probably be just as enthusiastic over summer bedders, and which, in fact, we have been amongst to-day. Putting in more cuttings of various kinds, pricking out seedling Centaureas, and potting herbaceous Lobelias, and made up a manure frame for the first batch of Alternanthera cuttings, our stock of these being all raised in this way, being planted direct from the cutting bed to the flower bed. Got in soil for another Melon bed, shifted Strawberries that were set into a warmer house, having first thinned

out the fruit to about six in each pot. Those in flower are given abundance of air during this mild weather, cold draughts and wet on the blossoms being carefully guarded against.

FEBRUARY 10.

Another fine day has enabled us to make good progress in the renovation and rearrangement of herbaceous borders. In the disposition or placing of the plants we strive as much as possible to distribute the several varieties regularly throughout the borders, so that there may be an equal amount of flower at the same season throughout the whole. As to height of plants, some little attention is paid, and for the most part the tallest growers occupy the back and central part of borders, but true uniformity of height we endeavour to avoid, and only the very strongest, tall, and spreading growers are planted in single file, groups of from three to nine plants of one variety being placed together, a plan that shows off the varied characteristics of the plants with far greater effect than is seen when planted singly. Recommended shrub and hedge cutting, and continued repairing of walks. Indoor duties have been much of the same order as yesterday, propagating principally and putting in relays of hardy plants, Roses, &c., to force; also another batch of Seakale, and prepared soil for potting remainder of Pines.

HANTS.

FRUITS UNDER GLASS.

VINES.—The early forcer who started his Vines in November will now be tying down, stopping laterals, and regulating his bunches, as they will be sufficiently advanced to admit of a selection being made for the crop. Should the weather continue as dull and sunless as it has hitherto been, it will be advisable to run over them when in flower with a soft brush to insure a good set of even-sized berries. The Hamburg being a very free-setting variety, many people do not consider it necessary to take this precaution, but weak Vines do not always set so well as one could wish, as is often experienced by the number of stoneless berries which have to be removed at the final thinning. To obviate this an operation so simple should never be neglected on fine days when the temperature has reached the maximum. Foster's Seedling, Buckland Sweetwater, and the White Frontignan, which generally find a place in the early department, are not free setters, and as they invariably succeed best when fertilised with foreign pollen, the operation of collecting from the Hamburg for this purpose, all other conditions being satisfactory, will leave nothing to be desired in this important part of Grape culture.

Watering inside borders.—If the internal borders were properly moistened by the time the buds began to swell and fermenting leaves prevent the escape of moisture from the surface of the soil, it is hardly likely that a second supply will be needed before the Grapes are set, but this rule does not always hold good, as so much depends upon the depth and structure of the border, the quantity of drainage, and the mode of ventilation or aëration. With these points for his guidance, independently of the appearance of the foliage, the experienced maker and manager of his own border will be the best judge of the requirements of his Vines, and the tyro will do well to bear in mind that they should never be watered when in flower; therefore, if a second supply is thought requisite, it should be given before they reach the flowering stage. Once the Grapes are set and swelling, a copious supply will be imperative, as well-planted Vines in active growth cannot easily be over-watered, while the want of this element may ruin them for the season.

Succession houses.—When all the buds are fairly on the move the rods should be tied up to the wires before the young growths become elongated and take an unnatural direction, which will give trouble when the time arrives for tying out. If any of the strong canes throw double breaks, rub off the weakest, and defer the general disbudding until the bunches are perceptible. Let the night temperature range about 60° for Hamburgs, 65°

for Muscats, and run up 10° by day, at which point give a little air at the apex, but shut up in time for the temperature to touch 80° when favoured by gleams of sunshine.

Syringing.—Many leading Grape growers discontinue direct syringing as soon as the buds have started into growth, and maintain a moist growing atmosphere by a liberal application of tepid water to the walls and floors. Others syringe once or twice a day until the bunches are ready to burst into flower, asserting as their reason that it is wise to keep spider in check as long as it is safe to syringe without doing harm to the Grapes. The first, if he succeeds in keeping his Vines clean, secures the most compact bunches; the second, if he syringes through dark as well as bright days, runs the risk of forcing a weak, flabby growth, which generally goes hand in hand with elongated bunches, which do not always set well. In my own management I never wet the foliage when the day is dark and the temperature low, but syringe freely up to the flowering period after the house is closed at the maximum temperature on bright sunny days.

PEACHES.—*Early houses.*—If the early forcer is possessed of a good stock of patience and the roots of his trees are active and confined to inside borders, he will most likely have a good "set" of fruit fit for thinning, an operation which must be conducted with great caution. First, the trebles and doubles are reduced to one, then the worst placed singles are removed, until eventually the fruits intended for the crop remain at intervals of 6 inches or 9 inches apart, as much as possible with these points facing the sun. But it must not be assumed that all these Peaches will be allowed to swell to maturity, as a fruit to every square foot of foliage forms a heavy crop for a tree to carry year after year, despite the misleading assertions that are sometimes made to the contrary. Unless the trees are very weak, in which case they are unfit for early forcing, the prudent grower always leaves a fair percentage for the final thinning after the stoning is complete. The operation of disbudding being so well understood, it is only necessary to say it must be carried on conjointly with the thinning of the fruit, and when finished a space equal to 6 inches in width must not be occupied by more than one shoot if there is to be full development of the foliage and future flower-buds.

Succession houses.—A temperature ranging from 45° to 50° at night and 50° to 56° by day, with a chink of air and moderate syringing, will soon bring these into flower; but before the first flower opens the house should be moderately fumigated, not less than twice, to destroy every vestige of green fly. If this is neglected, and fly gets into the blossoms, the chance of securing a crop will be very remote, and the trees will most likely be crippled for the season.

Syringing.—Many young gardeners entertain an idea that incessant syringing through all weathers is essential to the swelling of the buds in early Peach houses, and great zeal in this matter sometimes frustrates the end they have in view. As days increase in length and full temperature can be secured, liberal syringing is advantageous; but so long as light is more than counterbalanced by darkness, moisture from fermenting material, combined with moderate syringing when the temperature of the house is rising, is the most rational mode of forcing the trees into flower. When early-forced trees cast buds more freely than we like, we say the borders have been kept too dry or too cold; the wood is too ripe or not ripe enough; but we do not often hear people blame themselves for having destroyed the vitality of the buds by keeping them half their time in a cold bath at a temperature of 40° to 50° , and yet this very early and late syringing carried to an extreme is the cause of much mischief.

FIGS.—The trees in the earliest house will now be pushing their terminal buds freely into growth, and the young fruit clustering near the points of last year's shoots will advance with great rapidity

under the conditions as to heat and moisture to which they may now be subjected. If in pots or confined beds surrounded by fermenting material, the roots should have the benefit of a bottom-heat of 70° to 75° , and the top-heat should range from 60° at night to 70° by day, with a rise to 75° after closing with solar heat when the sun, of which we have seen so little this winter, again gladdens the earth. Syringe the trees well on fine mornings when the temperature is rising freely, and again when the house is closed, provided there is a certainty of the fruit and foliage getting dry before daylight closes. See that the roots do not suffer from want of water, for the Fig is a gross feeder when in full growth, and although it can be kept quite dry throughout the resting period, one mistake after the leaves are fully developed may result in the casting of the best fruit. When the lateral growths have made five or six leaves they may be pinched for the double purpose of swelling up the first crop of Figs and inducing the embryo fruits formed in the axils of the leaves to develop into the successional or second crop. All weak and useless spray must be cut away, and leading shoots, where there is space to cover, must be laid in some 9 inches apart and allowed to extend without being pinched, provided they do not become gross and rob the early fruit on weaker parts of the trees.

Succession houses.—The trees in succession houses are, as a rule, planted out in borders of limited area, as it is essential to a fruitful condition that the roots be kept entirely under control, and then even they require an annual check to prevent the strongest from working their way out of bounds. This work is best done in the autumn, but the Fig is very accommodating and submits to almost any kind of treatment save that of complete disrooting; therefore, if any root or border work has been allowed to fall into arrear no time must be lost, as it cannot be undertaken after the trees are started. If a second or third house has been started, see that the borders are well supplied with tepid water, and keep the trees regularly syringed on fine days—once or twice, according to the state of the weather. Keep late houses as dry and cool as possible for the present, particularly where hot-water pipes have not been introduced. If the trees have been protected with dry Bracken as a means of preserving the embryo Figs from the effects of very severe frost, let the uncovering be commenced and carried on piecemeal, taking a little at a time, until by the end of the month they are quite clean and ready for tying in.

CUCUMBERS.—Winter plants, which have been kept clean and growing through the past two months, will now be pushing plenty of fresh laterals from which the most valuable fruit of the year will be obtained. In my last paper I directed attention to the importance of allowing all the leading Vines to make a continuous growth. These may now be pinched as they approach the limits of the trellis, and a few of the old leaves may be taken by degrees to make room for the young growths. Do not on any account allow the bottom-heat to fall much below 80° , and when turning and renovating the fermenting material examine the sods of turf placed under the pots, with the view to the application of a plentiful supply of water should they be found dry, as is not unlikely to be the case where the bottom-heat pipes are not laid in tanks of water. This hidden danger is a rock upon which many a winter grower's bark has been wrecked, when the application of warm diluted liquid to the drainage without having to pass it through the pots would have carried him through the most critical period in winter culture. If spider, thrips, or mildew have gained a footing, the gradual return to syringing, combined with the use of mild insecticides, must be looked to for their removal, while the maintenance of maximum heats from solar influence, the application of light fibry turf as a top-dressing, and more frequent supplies of stimulating liquid will force a quick, vigorous growth upon which insects cannot find a home. If the beds intended for spring-sown plants are not ready for their reception, they must

be shifted on before they become pot-bound, a condition from which they rarely recover, as they receive two checks—the first when they have exhausted their stock of food, and the second when the roots are disentangled prior to placing them in the bed. It is better to make frequent sowings than to trust to pot-bound plants.

Eastnor Castle,

W. COLEMAN.

KITCHEN GARDEN.

PARSLEY FAILURES.

THERE is no more important crop in the kitchen garden than Parsley, and people who can gather abundance of it daily from the beginning of January until the end of December are very fortunate. It will not, however, be produced for all that time, or, indeed, for half of it, unless a good deal of forethought and attention are devoted to its culture. It grows like a weed in some gardens, and in others the reverse is the case, and even in places in which it has been doing well it may take a turn any day the other way; so capricious is it, that it may go all off in a short time and cause much inconvenience, as Parsley is one of those things which are in daily use. Two years ago a borough town in Wales was without Parsley. It died out every garden in the district, and its want was greatly felt—so much so, indeed, that everyone who owns a garden in the district would now begrudge no expense in insuring a supply of it.

OF VARIETIES, many are recommended, but all kinds are valued about alike with the cook, the main object being to have the leaves large and well curled, and any good kind will supply leaves of this sort. Myatt's Green Curled, when selected with ordinary care, is a good variety. In most plantations of Parsley young plants will be observed with an appearance like that of hybrids between Celery and Parsley; these are not valuable, and should be drawn up and thrown away. In order to have plenty of good Parsley all the year round it is well to make three sowings. The first should be made now or as early in spring as the weather will allow, the second in April, and the third in July. Gatherings may be made from the first sowing in May, from the second in July, and from the third during the whole of the winter. Where the first sowing succeeds really well it may keep up the supply for a year or more, but with a crop which is so liable to go off and so indispensable it is always a satisfactory plan to sow, as I have said, three times.

IN SOWING, the best part of the garden is not too good for Parsley. In many instances it is sown in odd corners and treated as something of little importance, but those who wish to have it good and plentiful should not follow this practice. A little corner of it badly grown will never meet the demands of a large establishment, but a good piece in the main quarters will do so if properly managed. A light soil does not suit Parsley, as in dry weather it shrivels up and fails to produce large, healthy, green leaves, which alone are useful. A deep, cool, and good soil is best. Plenty of manure is required to produce luxuriant growth, and a good deal of salt, lime, or soot should be added everywhere to prevent insects from harming it. The ground for all the sowings should have a thick coating of manure placed on the surface with a good sprinkling of salt and soot thrown over it and then dug in. For the April sowing the manure may be dug in now, and before putting in the seed fork a quantity of lime into the surface. I do not mention any weight or quantity to be put on the square yard, because this should be in accordance with the character of the soil and the insect pests therein. The young plants are very hardy, although they do not come up very quickly at this season. Seed sown on a dry day now will produce plants in about four weeks. Sowing broadcast is not a good way. Rows are the best. They should not, however, be too close together. Some may think they are saving good ground and valuable space by sowing closely and in odd corners, but that is not my opinion. I have

tried both ways and found the close rows very unsatisfactory; 15 inches from row to row is none too close in good soil, and where the plants are expected to develop good leaves, the drills should be opened to the depth of 2 inches and the seed sown in them very thinly. By placing some sandy soil over the seed germination is much assisted. This is of more importance now than later in the season.

As soon as the young plants are about 1½ inches in height they should be thinned out to 8 inches apart; as growth proceeds they may be thinned again to 6 inches apart. This practice applies to all young Parsley plantations. To sow the seed in rows widely apart from each other and then neglect to thin out would destroy all the benefits derived therefrom. When the plants are fully established and producing more leaves than can be used some of them may become yellow in colour from old age; these are of no advantage to the plants, and may be removed before they become too numerous. As winter approaches each plant should be furnished with a quantity of robust healthy green leaves, which will be in great demand in December and January, and, indeed, throughout the winter, but as growth is not rapid now it is best to depend on that formed in autumn. In many instances, doubtless a good deal of the Parsley has been gathered, and all that remains is the root and some too old or very young growths. The old ones are of no use, and should be picked off; then sprinkle a little soot all over the surface, even between the plants, and fork it in slightly. This will induce the young growths to push out and become ready for gathering and useful before the spring seedlings will furnish any supply.

CAMBRIAN.

BEST SORTS OF VEGETABLES.

"J. S." clearly shows (p. 89) that it is both unnecessary and undesirable to grow a great variety of vegetables, and whether the demand be large or small, or the garden 1 acre or 6 acres in extent, the same rule, in my opinion, should apply. Grow only the best, and these in good quantities, and a break in the supply will rarely happen; whereas a great variety is oftentimes annoying to all concerned. Having grown all the varieties recommended by "J. S.," I can truly say the selection is on the whole an admirable one, but at the same time I wish to supplement the list with a few sorts that I deem worthy of trial by all who have not yet grown them. Taking them in their catalogued order, the first to be mentioned is the

EGYPTIAN OR TURNIP-ROOTED BEET.—We find that a few early roots of this sort are always appreciated, and are preferred to stored roots of the long-rooted varieties, which usually become rather dry and tough by June or July, or it may be the supply of the latter is exhausted, and this would be another reason for growing an early maturing sort. For special purposes we have sown a pinch of seed in a box of snail, placing this in a warm frame, and hardening off the plants resulting before they are unduly drawn. Some of the plants were dibbled out on a firm bed of soil and covered with a rough frame, and the remainder dibbled out on a warm border and slightly protected when frosts were anticipated. In this manner useful roots were obtained late in May and during June, these being followed by the same variety sown in the open ground about the second week in April. I do not advise anyone to grow a great breadth of this sort, but only one row, long or short according to the demand, or say not more than one ounce of seed, as the bulbs deteriorate by keeping. Sown with the main crop sorts, it is certain to be three weeks in advance of them, but it is better to sow it early in April, and the remainder and other sorts early in May on light snail, or late in the month on heavy soil, thereby avoiding objectionable coarseness.

BORECOLE READ'S NEW HEARTING.—We now grow this extensively in preference to the ordinary tall or dwarf green curled sorts. The plants are raised early in a warm border, and are planted out directly they are strong enough. A good open

breadth of ground cannot be afforded this crop, but between the rows of young fruit bushes and in other odd corners this Borecole thrives, and at the present time the hearts are of good service and decidedly superior in quality to the tops of the older sorts. Later on the side shoots will be available, and, on the whole, we consider it a hardy and useful vegetable.

BROCCOLI.—I was surprised that the Penzance should find a place in the list given by "J. S.," as, according to my experience, it is the least hardy of all the Broccoli. I am aware it succeeds remarkably well in Cornwall, but in other western counties it is liable to be destroyed by a moderately severe frost. I procured both plants and seeds from Penzance, and a friend also sent me some from a large Cornish farm, but the plants each time they were grown were much too coarse, and all were destroyed by frost. Veitch's Spring White is also rather tall-growing, but forms a good succession to Snow's Winter White, and the heads are very white and delicately flavoured. The early Veitch's Autumn Protecting would appear to be unusually good this winter. We commenced cutting before the Autumn Giant Cauliflowers were finished, using on an average three dozen hearts per week, and they are not yet exhausted. In point of quality it far surpasses Snow's, but is not nearly so hardy, and we are obliged to lift and store them. Leamington is another favourite sort here, and I am curious to know why "J. S." omits it. We find it fairly hardy, of good colour and quality, and plant it most extensively, as no other spring sort affords such a long succession. We have cut hearts of it in March, and by lifting and bedding in a portion of the plants on a cool north border the supply has been maintained till the middle of May. Ledsham's Latest of All is one of the latest sorts in cultivation, but on the whole I prefer Sutton's Late Queen, and would strongly advise that a trial be given this hardy and in all other respects excellent sort.

LONDON OR ROSETTE COLEWORT.—Although by no means a novelty, this valuable Cabbage is far from being so well known as it deserves to be. The market gardeners around London plant great quantities, and quite recently I walked through several acres of it, all in the best possible condition. Plenty of private gardeners at the present time would be glad of a breadth of Coleworts to cut from, and it is quite certain there is nothing to surpass them in the way of greens. The seed should be sown not later than the end of May, and the plants put out whenever there are any vacant plots ready for them. They may be disposed about 12 inches apart each way, and, provided the ground is good, all will form neat and serviceable heads. Hill's Dwarf Incomparable Cabbage requires but little more room than a Colewort, and this, too, may well be given a trial. It will be found a profitable sort and good in quality, but not of much service if left to yield a second crop or greens.

NANTES HORN CARROT.—I would on no account omit this variety, and in small gardens especially it may well be the only Carrot grown. Sown in frames it is only a few days behind the Early Horn, and soon surpasses it both in size and quality. A bed, if the seedlings are not too freely thinned out, may be pulled from for a long time, as a temporary check does not prevent the little ones from eventually attaining a useful size. The Nantes Horn is the best for warm borders, whether for market or private use; it is also suitable for the main crop, a great quantity being grown on a comparatively small piece of ground, and the roots, always good in colour and flavour, keep surprisingly well. For late sowings in May, June, or July (the last for covering with frames) this sort is most valuable, a supply of tender roots being thus easily secured all the year round. For the early shows it is invaluable.

CAULIFLOWERS.—Extra Early Dwarf Forcing or Dean's Snowball, for I believe they are synonymous, is a useful little sort, and is especially to be recommended when autumn-sown plants of the older sorts are scarce. By sowing seed at the pre-

sent time in a warm frame, and with the help of rough frames or handlights stood on a bed of manure and leaves, good little heads may be had by the time the late Broccoli are exhausted. They do not require much room and may be planted in the open ground 15 inches apart each way, with the result in most instances of a supply of really good heads. Veitch's Pearl sown at the same time, whether in the autumn or spring, as Dwarf Erfurt, Mammoth, or the Early London, will form a good succession, may be classed as a fairly good and useful sort. It also stands hot weather better than the Erfurt. Dickson's Eclipse is found to be very serviceable, autumn-raised plants producing fine heads about a fortnight or three weeks in advance of Autumn Giant. We winter the Dwarf Erfurt, Pearl, Eclipse, and Autumn Giant in rough frames, and find these afford a good succession, thereby obviating the necessity of raising many in the spring other than the too late sorts.

LETTUCE EARLY PARIS MARKET.—This may fairly be termed one of the best novelties introduced of late years. I grew it the first season it was sent out, and have continued to do so ever since. For framework it is unequalled, as no other Cabbage Lettuce that I am acquainted with is of such quick growth, and there is scarcely any waste with them. Sown at once and eventually planted in frames with or without a little bottom-heat, they will, as a rule, be fit for use before the most forward of the autumn-sown hardy Cos or Cabbage varieties are ready, whether these be grown in frames or on a warm border. It is also of quick growth when planted near a warm wall, and is especially useful should there be a scarcity of autumn-raised plants of other sorts. This winter a number of plants have stood out without being injured, and from these we are still cutting.

ONIONS.—If a pinch of seed of The Queen is sown with the Tripoli sorts in the autumn, the result will be an extra early supply of good serviceable bulbs. White Naples, the earliest of the large Tripoli section, may be planted thickly, grows to a fairly good size, and its very pretty bulbs are of mild flavour. For cooking whole it is unsurpassed, and I find it is much appreciated by those who are fond of Onions served up as a vegetable. For spring sowing I can strongly recommend Giant Zittau. It grows to a good size, is very heavy, and keeps well. It is one of the best for market purposes.

POTATOES.—The old Ashleaf is undoubtedly the best for frame work and warm borders, and Sutton's Early Border is a good round companion for it. I would advise that a trial be given to Reading Russet, as on our heavy land it crops heavily, is fairly disease-resisting, and the generally handsome and red-skinned round tubers are of excellent quality. Lady Truscott, another of Fenn's seedlings, also crops heavily, and is of good quality. Ross's M.P., in the way of Schoolmaster, should supersede the latter, as it is a great cropper, and the quality is good even when grown on heavy land.

CHIRK CASTLE TURNIP.—I consider this black-skinned variety the hardiest sort in cultivation, and as it forms but little top and the flesh is white and good, it should be generally grown. Unless I am much mistaken, this variety was the result of an accidental cross between Snowball or some other white Turnip and the dark-leaved Asparagus Kale. At any rate the produce of our home-saved Snowball seed included many roots resembling the Chirk Castle Black Stone, and nothing but the Asparagus Kale and white Turnip were in bloom together. Did Mr. Brown, the introducer of this Turnip, ever state the origin of it?

W. I. M.

PROFITABLE PEAS.

I DID not intend to take any further part in this discussion, but as Messrs. Carter have moderated their tone, and as a few of their remarks seem to call for a reply, I venture to occupy a little more space, in order to briefly answer them. I am quite aware that there is a great difference be-

tween Peas grown on rich and deeply dug garden land and in the open fields, but the former do not attain twice the height of the latter. Instead of Telegraph growing from 4 feet to 5 feet in private gardens it is oftener 6 feet and upwards, and in the open fields it grows from 3 feet to 4 feet, this being fully 12 inches more than any of the other sorts mentioned by Messrs. Carter. Telegraph, I repeat, is not a sort likely ever to be grown extensively in fields, and its principal recommendation for culture with the aid of stakes for the markets is its earliness. The first few pickings hereabouts realise 1s. 6d. per peck, but directly other Marrow Peas are available the price falls at once to 1s. per peck, and any market gardener will agree with me that such a price is by no means highly remunerative. I have observed that whenever anyone ventures to write disparagingly of any particular variety, he is either twitted with inability to grow it properly, or it is suggested that he has got hold of the wrong variety. The latter theory the Messrs. Carter seem especially fond of propounding. Occasionally we may be supplied with a wrong article, but on the whole our principal seedsmen can always be depended upon. In the first instance, I had Carter's Peas direct from themselves, and they are not easily confounded with other sorts, though if the pods of the four were well mixed they could not so easily be separated again. Messrs. Carter seem to think I am acting unfairly, but in this they are wrong. I stated plainly enough that their four large-podded Peas were all valuable as second early sorts, but were of little use for main and late crops without special culture, but this does not imply that they require special culture when rightly sown as second earlies. Other main and late crop varieties, fortunately, do not need special treatment, and we are, therefore, justified in preferring them.

In my opinion, Culverwell's Peas are singularly amenable to high culture, but when not unduly favoured they are in no respect so far ahead of other sorts either as regards the size of pods or their contents. Messrs. Carter are curious to know how market growers have been able to test the qualities of Pride of the Market, and I think I can enlighten them, at any rate as far as my friends are concerned. It was my practice to call their attention to anything new and good in the way of vegetables and hardy fruit, and they saw Pride of the Market growing with me under the name of Strength. They purchased several quarts when sent out from Messrs. Carter, the price of which was 3s. 6d. per quart. This was in 1881, and in 1882 they had sufficient seed to sow about three acres of land, and if this and subsequent experience have not enabled them to form a correct estimate of the value of the variety for marketing, I should like to know how long an experience is needed. "A Pea Grower" remarks that Dr. McLean, Marvel, and Gladiator require to be staked. Does he mean to imply that Culverwell's big Peas do not, or what does he mean?

The question now arises, are Culverwell's or anybody else's big-podded and big-seeded Peas the best? If we are to believe my opponents, they are; but if we consult gardeners generally we shall find that they are not. These big Peas are much too coarse for people possessing a discriminating taste. If small Peas, say somewhat near the size of buckshot, are available, our *chef* would not think of sending large ones to the dining table; their place would be the steward's room and servants' hall. To pick Telephone and Giant Marrow, for instance, before they are fully grown will not meet the case, as these when cooked have a sickly white appearance, and besides one cannot afford to pick such monstrous pods before they are well filled. What is wanted is a sturdy branching variety producing pods and Peas in every respect similar to those of the apparently extinct Carter's Challenger.

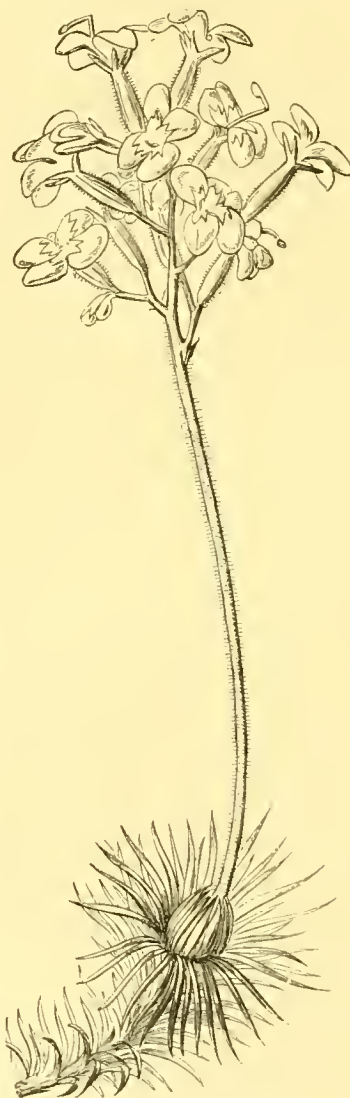
—W. I. M.

—Mr. Marriott (p. 91) asks me to name the Peas which I consider better in flavour than Telephone or Stratagem. I have no difficulty in doing so. The names are Veitch's Perfection and British Queen, which even when advanced in age retain their flavour, while Peas of the same age of Tele-

phone are hard and wanting in flavour. If interesting to Mr. Marriott, I may further say that very few of those Peas which he names are grown in the west of England except for exhibition purposes.—J. C. C.

TOMATOES WITHOUT MANURE.

MANY of us, I am inclined to think, use too much manure in the case of our Tomatoes, and even Vegetable Marrows. In years gone by almost everyone who had anything to say on the culture of these recommended at least one part of the compost to be manure from the stable or cowshed, and plenty of plants and fruit too were pro-



Stylidium mucronifolium.

duced under this treatment, but it must be owned that there was also a great deal of superfluous wood, and in the case of Tomatoes the fruits in many instances were neither so perfect in form, large in size, nor so numerous as they might have been. Three parts of the time spent in cultivating Tomatoes were devoted to cutting back and thinning out the shoots, work which surely could not be over and above good for the plants. The majority of Tomatoes make a great deal of unnecessary wood before any fruits are formed, and many of them grow so freely that they do not fruit until their feeding supplies have become somewhat exhausted. My idea of a good bearing Tomato plant is one which begins to fruit about 10 inches from the ground, and continues to bear closely as far up as the cultivator chooses to lead

the main stems. The fruits should be numerous and the superfluous growths in no way predominating. It is, however, a difficult matter to have Tomatoes in this condition where much manure is used, as the manure has a tendency to induce the plants to make wood rather than fruit. For some years we have been using less and less manure in Tomato growing, and last season in several instances we dispensed with it altogether, and found our crops to be altogether more satisfactory than hitherto. The growths were short and robust, and the fruit formed in large quantities and swelled off and coloured beautifully; indeed, we never had Tomatoes so fine when manure mixtures were employed, and this year again we do not intend using any manure for them. Our autumn cuttings, now being potted off into 6-inch pots, have nothing but pure loam on which to exist, and on this we know they will succeed admirably. Early in summer we are in the habit of planting a Tomato here and there along the walls wherever a small vacancy occurs, and before planting we used to fork in a quantity of manure to assist them, but last spring no manure was employed, and the crop was never more satisfactory. The very poorest of soil without any manure might not answer, but ordinary potting turf will be found to grow them to the highest state of perfection.

The same remarks apply to Vegetable Marrows. As a rule, they are planted on the tops of manure heaps or in very rich soil, and the growths soon become an intricate mass, with fruits at long intervals apart. Fruits at every joint are seldom the rule, but they would be if the plants were grown only in pure loam, in which they only produce a reasonable amount of growths. The latter, too, are very hardy, short-jointed, and fruitful. It is all a mistake to suppose that the stronger the plants are the finer will be the fruits, as ten out of every dozen blooms which open will fail to form a fruit, and those which do will not be extra good, as crowds of leaves and shade do not suit them. We all know how well Melons succeed in pure loam, and I would place Tomatoes and Vegetable Marrows under the same treatment. Not only is a saving effected by growing them without manure, but an advantage is gained in every way thereby.

J. MUIR.

DOWNTON CASTLE.

THIS, the seat of the late Thos. Andrew Knight, the father of British horticulture, was forcibly brought to my memory by Mr. Douglas' remarks in THE GARDEN (p. 60). I was one of those who were invited by Mr. Knight to see his crop of Potatoes dug, but as I was then about the youngest of the party, I doubt if any others of it are now living. The following is Mr. Knight's letter now before me that I received on that occasion: "Downton, Oct. 11, 1837. Lauder (the gardener) informs me that you wish to see my Potatoes dug up; I therefore beg to say they will be dug up on Saturday next about twelve o'clock. I believe that the produce per acre will be but little under a thousand bushels of sixty pounds—the London weight. You shall be welcome to a few Potatoes of any of my new varieties, some of which I think excellent.—Signed, T. A. Knight." It was a most interesting sight to see such a crop of seedling kidney Potatoes dug, and weighed as dug by the gardener and bailiff, and it fully realised all our expectations. The gathering at hospitable Downton that day was a large one, and a most enjoyable day it was—one to be remembered. I secured most of the sorts, and they were excellent. They were the Ashleaved Kidney type, but crossed by Mr. Knight, for he was a great and successful raiser of many valuable fruits and vegetables. That day after dinner I well recollect dessert was placed on the table, and among the fruits were some fine Elton Strawberries (late as it was). Lauder told the housekeeper (Mrs. Bray) that Mr. Knight had given orders to destroy the Elton. Then said she, "It must not be done; it is the best Strawberry he ever raised;" and thus the Elton was saved by Mrs. Bray, who was quite right in her estimate of this valu-

able late kind. After all these years' cultivation I know of no Strawberry to equal it for preserving; it keeps its fine scarlet colour, and also form, if wished to be preserved whole in syrup. As a late variety ripening under a sunless sky it may be a little acid and require sugar, but if well grown it is a noble Strawberry. I have cultivated it more than forty-five years, and may call it the house-keeper's favourite. I have degressed from Potatoes to Strawberries, but as I have shown the way in which the Elton was saved, I thought it might interest some of your readers.

Walcot.

G. BOND (Ex-gardener).

FLOWER GARDEN.

NAMES OF HELLEBORES.

MORE than three weeks ago Mr. Poë sent me some flowers of a very pretty variety of *Helleborus niger* so persistent in their texture, that they are still alive in water. He asked me what I thought they were, and I replied that they belonged to one of the many intermediate forms which make an unbroken series from typical *H. niger* to *H. niger* var. *maxima*; more than that I could not tell him. Since that time I have seen several opinions given in THE GARDEN about flowers from the same plant, some of which speak of it as a hybrid, as if there were more than one species of *H. niger*. Now, I do not profess to speak in these matters *ex cathedra* as though I were any authority on such subjects; all I try to do in this way is to get plants called by their right names, and in order to effect this to try and find out what the right names are. I have also joined in the protest made last year at the Daffodil conference against giving unauthorised quasi-scientific names to mere garden varieties of plants. Thus we have such names given to Hellebores as *major*, *intermedius*, *angustifolius*, which may or may not have received the stamp of authority, but which I cannot find in any botanical book I have. It is true that where the habit of giving florists' names to varieties of Hellebore has been adopted, gardeners cannot be congratulated about it on the score of convenience. Most appalling names come to us from Belgium or Germany. A variety often mentioned as a *prima donna* among Hellebores has two names (they begin respectively with Com- and Ben-), which I should be sorry to have to write at length, especially when either of these three-letter syllables would do quite as well to distinguish it.

But to return to the subject of distinct species, let us consult the highest authority. It is generally acknowledged that the "Genera Plantarum" of Bentham and Hooker is trustworthy in the information it gives. I there find that there are eleven known species of Hellebore, and that their geographical area is limited to Europe and Western Asia. I next turn to Nyman's "Conspectus Floræ Europæ," which, I am told, is the best catalogue in existence of European plants, with their synonyms and geographical distribution. In these I find that the European species of Hellebore are seven in number, and that their names are *lividus*, *fœtidus*, *orientalis*, *cyclophyllus*, *odorus*, *viridis*, *niger*. The synonyms need not be enumerated. For the Asiatic Hellebores I consult Boissier's "Flora Orientalis," a most elaborate and complete work in five thick octavo volumes on the botany of Western Asia. Of this district ten Hellebores are described as natives, namely, *niger*, *cyclophyllus*, *orientalis*, *caucasicus*, *colchicus*, *antiquorum*, *olympicus*, *guttatus*, *abchasicus*. Eliminating from these latter the three common to the two continents, we have fourteen remaining; but we are told that *antiquorum* is generally treated as an Asiatic variety of *orientalis*, and *guttatus* and *abchasicus* (so called from Abchasia, a province of the Caucasus) as varieties of *caucasicus*. I by no means assert either that the remaining eleven must be the eleven selected for specific honour by the authors of the "Genera Plantarum," or that the number of species of Hellebore is for ever to be limited to eleven; but is it not better, as far as

possible in our gardens, to keep to the names sanctioned by the best authority?

Edge Hall, Malpas.

C. WOLLEY DOD.

STYLIDIUMS, OR STYLEWORTS.

THESE possess a special interest both for the botanist and the cultivator, their flowers and foliage, though variable, being truly handsome.



Stylidium saxifragoides.

They are chiefly natives of Western Australia, and would seem to fill the same place in the vegetation of that country as do our Sundews, Sheep's Scabious, &c., in this, being invariably found on the margins of rivers and in semi-swampy places. All the species, as far as has been observed, are more or less irritable in character; the column when touched springs to the opposite side of the flower, a circumstance which greatly puzzles bees

or insects that happen to come in contact with it. Most of the species are fairly hardy, and therefore little difficulty is experienced in wintering them, provided the crown and leaves are kept dry. They thrive best in a mixture of peat and sand, to which should be added some fine loam; they are easily increased by means of offsets or seeds, which the earlier flowering kinds rarely fail to produce in this country.

S. ADNATUM is nearly allied to *S. fasciculatum*, with which it is often confounded. It varies from 4 inches to a foot in height, and the leaves, which are linear, are scattered along the stem and crowded at the summit whorl-fashion. The flowers are produced in clusters, and are nearly sessile. They are variable in colour, but generally pinkish. The chief difference that exists between this and *S. fasciculatum* consists in the narrower and much more beaked capsules, which curve distinctly upwards, and also in the upper cell being abortive. It flowers in June and July, and is a native of Goose Island, in Western Australia. It is figured as *fasciculatum* in the *Botanical Register*, t. 1459, and in the *Botanical Magazine*, t. 2598, a variety called *abbreviatum* is figured.

S. ASSIMILE.—This pretty little species flowers profusely in an ordinary cold frame, the only difficulty being the keeping the crown free from drip during the dull winter months. In summer it may be plunged outside in a bog with perfect safety. In appearance it is not unlike *ciliatum*, having the tufted rosette-like stock, but the leaves are different, being rather thick and fleshy and often glaucous beneath. The flower-stalks, which are produced several together, are nearly a foot high, and divided about half-way up into loose spikes. The flowers, which are small and rosy pink in colour, have distinct appendages belonging to the labellum. It flowers in July and August. The rosettes of leaves in the autumn and throughout the winter assume a dark blood-red colour and are very handsome. It is a native of King George's Sound.

S. CILIATUM.—This is one of the prettiest and perhaps also one of the most variable. Like the last, it may be grown in a cool frame with ease. It seems to be the most irritable amongst all the species. It resembles *S. piliferum*, but is easily distinguished by the numerous glandular hairs that exist on the flower-stalk, and also by the foliage, which is produced in pretty little rosettes, the leaves of which they are composed being about 2 inches long and terminating in a hair-like point. The flower-stalk is much branched, and the flowers, which are pink varying to yellow, have pretty appendages to both the throat and labellum. The annexed illustration, which represents a variety of this species with yellow flowers, is figured in the *Botanical Magazine*, t. 4529, under the name of *S. saxifragoides*, and also under the recognised name, t. 3883. It is a native of Swan River.

S. DICHOTOMUM, represented in the annexed woodcut and figured in the *Botanical Magazine* as *S. mucronifolium*, t. 4538, resembles *S. leptophyllum*, a species not in cultivation, but differs from it in having a branching habit and larger flowers. The leaves, which are narrow and pointed, are collected at the base and ends of the branches in dense tufts, between which they are scattered sparsely. The flower-stalks are about 6 inches high, hardly divided, and thickly covered with sticky or glandular hairs. The flowers, which are borne profusely, are of a rosy pink colour. It is figured as *S. Hookeri* in "Flora des Serres," vi., t. 229. This, like the above, is at home in a cool frame. It comes from Swan River.

S. GLANDULOSUM.—This spreading shrubby species is, we believe, in cultivation under the name of *S. fruticosum* or *S. snfruticosum*. It grows from 6 inches to 18 inches high, and has linear leaves scattered along the branches and not crowded in tufts at the base or summit. The flowers are inconspicuous. It comes from Lucky Bay, W. Australia.

S. GRAMINIFOLIUM (Grass-leaved Stylewort).—This is one of the few kinds that deserve to be generally cultivated for its beauty, apart from its

singularity. It is comparatively hardy, and may be grown out of doors with success in a dry position. The leaves are collected into a tuft at the base. They are about a span long, recurved, and narrow. Their upper surface is dark purple and always very attractive. The flower-stalk rises unbranched to a foot or 18 inches in height. The flowers, which are pale pink, are very pretty, and have long appendages to the labellum. It is figured in the *Botanical Magazine*, 41, t. 1918, and in the *Botanical Register*, 1, t. 90. It flowers during the summer months. It is a native of Victoria, Tasmania, and New South Wales.

S. HIRSUTUM.—A handsome species, having long narrow pointed pubescent leaves collected in tufts at the base. The flower-stalk, which is leafless, is thickly covered with clammy hairs, and about a foot in height. The large flowers are collected in a dense spike and produced in July and August, are pinky red and beautifully crisped at the margins. It is a native of W. Australia, and is figured in the *Botanical Magazine*, t. 3194.

S. LARICIFOLIUM.—This is a shrubby species with long leafy branches, which are quite hairless. The leaves, which are linear, are scattered, and not collected into tufts on the stems. The flowers are always produced in loose panicles, are about a span high, and have small appendages attached to the labellum; they are pink, varying to white in the form named *tenuifolium*, and are produced in July and August. It is a native of the Blue Mountains, New South Wales, and requires a greenhouse.

S. SCANDENS.—This very interesting species is climbing in habit. The stems, which are wiry and weakly, are about 2 feet or 3 feet in height, and the linear leaves, which are channelled and curved or rolled back at the points, are collected in whorls, from which spring the clasping tendrillike roots. The flowers are about an inch broad, lilac or rose-coloured, and collected in loose panicles. They are produced in September and October. It needs the protection of a greenhouse or dry cool frame. It is a native of Western Australia. D. K.

"THE LOST HELLEBORE."

LAST year Mr. Brockbank recovered for us the knowledge that *Helleborus maximus* was to be found in a wild state and where it was to be found. He also ferreted out *Leucojum carpathicum*, which had almost, if not quite, disappeared from our gardens. Now he has taken *Helleborus lividus* in hand, and I heartily wish him success. By *H. lividus*, of course, I mean the old *lividus* of Curtis, *Botanical Magazine*, vol. i., pl. 72; not the Corsican *argutifolius*, *Botanical Register*, vol. xxiv., pl. 54, which, I am glad to find, the majority of cultivators have ceased to identify with it. Having taken a great interest in this question, and given my ideas both in Vol. XVII., p. 281, of THE GARDEN under the title of "Hellebore Nomenclature," and again in GARDEN, Vol. XXV., in "Hellebores: which do we mean?" I had satisfied myself that *trifoliatus* and *trifolius* had been rightly excluded from the Hellebore family, and that they were in fact neither more nor less than the little yellow Aconite, and probably a Canadian *Coptis*.

This being the case, after reading Mr. Brockbank's paper in GARDEN, Jan. 31, p. 82, I thought he was mistaken, and wrote to him on the subject. In his reply he not only emphasised what he had already written, but referred me to Linnæus Sp. Pl. for the winter Aconite, p. 783, and for *Coptis trifolius*, p. 784, and he made a quotation from p. 784 referring to another *trifoliatus*, and also from Miller's "Gardener's Dictionary" in the following words from p. 784 of Linnæus' "Species Plantarum":

"Fœtidus 4. *b. H. niger trifoliatus* Moris hist. 3, p. 460, f. 12, t. 4, f. 7. Habitat in Germania, Helvetia, Gallia. Caulis infra folia nudus."

So far as the testimony of Linnæus goes, we have here a trifoliolate Hellebore that might apply equally to *lividus* or to *argutifolius*, but he gives

the habitat in Germany, Switzerland, and France; whereas I believe *argutifolius* is found only in Corsica and Majorca; he adds the signs biennial, perennial, and describes the stalk as naked below the leaves, which is not applicable to *argutifolius*, this having leaves from the ground upwards. If anyone can refer to Morison's "History of Plants," published by him at Oxford about 1680, and continued by Robert, the further description and plate might assist us. Next comes the extract from Miller:—

"4. *Helleborus caule multifloro, foliis ternatis integerrimis*.—Hellebore with many flowers on a stalk, and leaves composed of three entire lobes; this is the *H. niger trifoliatus* ("Hortus Farnesianus"), trifoliolate black Hellebore."

Now this description perfectly agrees with Curtis's plant, but is inapplicable to *argutifolius*. If anyone can refer to the "Hortus Farnesianus," published by Fabio Aldina, the plate might assist us; but, following Miller's description, "many flowers" is applicable to both—"leaves of three entire lobes;" both plants have three lobes, but *lividus* only is entire. In *argutifolius* the lobes are deeply cut and notched. I have certainly read that there is an entire-lobed variety of *argutifolius*, but I have never met with anyone who has seen such. I have myself gathered from *argutifolius* leaves solid, bifid, and even quadrifid, but the normal form is trifid, and the invariable colour is yellow-green. Nothing short of colour-blindness could call *H. argutifolius* "the livid or purple Hellebore," nor paint it as represented by Curtis in the *Botanical Magazine*. If this plant is really to be found in Germany, Switzerland, or France, may we not hope that some botanist will respond to Mr. Brockbank's appeal? I have, I find, omitted one important observation of Miller's. He says this flowers early in the winter; now, *argutifolius* is amongst the latest—sometimes as late as April.—T. H. ARCHER-HIND, *South Devon*.

There seems hardly sufficient reason for supposing, as Mr. Brockbank does (p. 82), that the *H. lividus* of Curtis, figured in the *Botanical Magazine* (tab. 72), has been lost, or that it is any other than the *H. lividus*—syn., *H. argutifolius* (syn., *H. corsicus* of our catalogues). *H. lividus* is a plant which requires a warm climate and rich soil for its proper development. In my garden it rapidly pines away and disappears. In the dry gravelly soil of the Thames valley near London it might easily be stunted, and the flowers deficient in that rich green which they have in more congenial soils. This may account for the colour and want of luxuriance, both in flowers and leaves, conspicuous in Curtis's figure. As regards his description, it does not show much knowledge of the plant, and we may here mention that the *Helleborus trifoliatus* of Linnæus is known to be *Coptis trifoliata* of more recent authors, and that no Hellebore is native in North America.

The next figure, as regards date, which I can find of this Hellebore is in Sweet's "British Flower Garden," 2nd series, tab. 190. This, too, seems to be from a poor and starved specimen which flowered in Chelsea Botanic Garden in 1833. The description, however, is far better than the figure, and refers undoubtedly to the plant we now know by the name. Amongst the synonyms, Sweet tells us that it was described by Linnæus (Sp., pl., p. 784) as *H. fœtidus* var. *b*. But five years later than this we have a far more accurate and indeed an excellent figure of the plant, with a description by Prof. Lindley in Edwards' "Botanical Register" for 1838, tab. 54. He calls it the "Corsican Hellebore," and I extract part of his description of it:—

"Professor Viviani, supposing the *H. lividus* of the 'Hortus Kewensis' to be a North American plant, distinguished this under the name of *H. argutifolius*; but M. Cambessèdes, in his enumeration of Balearic plants, rightly corrected this error, and showed that the Corsican Hellebore is the same as *H. lividus*. 'I have in vain,' he says, 'endeavoured to discover what could have induced M. Viviani to suppose the contrary. Upon consulting the figure in the Bot. Mag., tab. 72, all my doubts were

dispelled; it represents the plant of Corsica and the Balearic Islands as well as the size of the work would permit.' "In these remarks," continues Prof. Lindley, "I entirely agree." I hope the above notes will prove enough continuity in the name and description to show that the *H. lividus* of Curtis has not been lost.—C. WOLLEY DOD, *Edge Hall*.

NOTES FROM BROCKHURST.

Leucojum carpathicum.—The twin-flowered variety of *L. vernum* is in bloom in two places on our rockeries much earlier than any other of the spring Snowflakes. Its buds show quite white as they emerge from the ground, and by the time the stalk is 2 inches high one of the bells is fully expanded and the twin bud well forward. It is a very beautiful flower, coming thus quaintly with the Snowdrops the first week in February. In addition to the Newton Nursery, of Chester, where this bulb was reformed last year, it was sent to me from the gardens of an old castle in Northumberland, where it was discovered to be growing in great vigour and plenty, and from which source I have obtained an abundant supply. So completely had this bulb become lost in Holland also, that the dealers had to draw their fresh stocks of it from England in more than one instance. We have had much rain lately, and the Snowdrops are crowding out everywhere. The winter Aconites also abound, and are charming flowers in the wild garden, where we have planted them along the stone pathways in all irregular interspaces. The Hepaticas are also well out, the double blue being the first to flower. There are odd blooms of *Scilla sibirica* and lots of early Primroses, both singles and doubles. *Anemone blanda* will be plentifully in bloom next week, and the lovely *Saxifraga Barseriana* and *Sanctæ*. There is an odd bloom on *Gentiana verna* and crowds of buds ready to burst with a few days' sunshine. The Anemones are also full of bud and *Cyclamen ibericum* already in flower.

Helleborus torquatus.—This quaint Hellebore much resembles the winter Aconite (*H. hyemalis*) in its habit of flowering. You first see its deep plum-coloured buds peeping above the ground, and by the time they are lifted 2 inches high they become deep cups, and show the clear circle of light green around the stalk at the base of the sepals. It is this torque or ring which gives the Hellebore its name. It is a very different plant from *H. purpurascens*, with which it is frequently confounded, and well deserves the separate name which was given to it by Mr. Archer-Hind, and which Mr. Baker has, I believe, confirmed, as he considers it to be a well-marked species. *H. intermedius* resembles it, but has not the pale ring. This also is a beautiful variety, having the backs of the sepals of deepest plum colour and the insides a lively green. The varieties of *H. abchasicus* are all beautiful, ranging as they do from pale to deep red. A great charm is given to the flowers by the crowd of stamens which fill the centre with a double circle of bright pale yellow. All the Lenten Roses, as they are fitly called, are worthy of careful culture. They come when flowers are scarce, and have a quaint beauty of their own. Seedlings are easily raised from them, and the hybrids are even more beautiful than the species from which they have emanated.

H. lividescens is very much like the lost *H. lividus* (p. 82). Its two upper tiers of leaves are three-lobed, and its flower is exceedingly like plate 72 of the *Botanical Magazine*. I should not be surprised if the lost *H. lividus* were found again in company of this plant. Can anyone tell us of its natural habitat?

It is curious to note how much more rosy are the later blooms of *H. altifolius* than those which come upon the same plants in the early autumn and winter. There is less variety in plants of *altifolius* than any other of the niger class, and this roseate blush which is now so noticeable is to be accounted for entirely by outward circumstances. Our local variety of *H. angustifolius* (which I see

is used by Messrs. Backhouse as the frontispiece to their new alpine plant catalogue) has less of this pink staining than any others, but I have noted several slightly rosy-tinted flowers to-day in this purely white variety also. There is an extraordinary wealth of bloom this year in the Christmas Roses, and they have furnished a grand treat wherever they are well cultivated for some time past.

WM. BROCKBANK.

Brockhurst, Didsbury.

Wulfenia Amherstiana.—This plant has been pretty generally distributed in gardens under the name of *W. Wallichii*. It is a hardy perennial alpine—one of the very best for rockwork. Its long, one-sided, gracefully drooping spikes of lilac-purple flowers are always welcome and attractive in early summer. It thrives best in shady spots in peaty soil, and makes a good companion to the pretty Pyrenean *Ramondia*. *W. carinthiaca*, which is much more robust than *Amherstiana*, makes a first-rate border plant. In rich ground it grows luxuriantly and sends up long spikes of pretty blue flowers in the greatest profusion. The soil in which it should be planted should be stiff and well mixed with leaf mould to the depth of 12 inches. Both species may be readily increased by division.—K.

Iberis saxatilis.—If not the prettiest, this is the neatest and most useful of all our dwarf winter and early spring Iberises. All through the winter it has been laden with flower-buds, which are ever ready to burst open in mild weather, and thus it continues in flower more or less all through the dull months. On overhanging little ledges in half-shady places on the rockery, for which its trailing or prostrate habit of growth exactly fits it, it appears to be quite at home, forming a dense carpet of dark green leaves. It may also be grown near the front of a border, and, when luxuriant, looks pretty tumbling over stones. As to soil, it seems to thrive best in a gritty mixture of peat and loam well drained, as it is liable to damp off at the neck. It may be propagated by means of cuttings taken off in spring and consisting of the lateral stems that occur behind the clusters of pure white flowers. If given a little heat they will strike all the sooner.—K.

Eucharis disease.—This, according to a letter in the *Gardeners' Chronicle* from Mr. A. D. Michael, an authority in such matters, is caused by a mite named *Rhizoglyphus Robini*. "This mite gets in between the scales of the bulb and eats the tissue. The red spots seem to be caused by a gummy secretion, which may be practically an effort of Nature to repair the wound. The creature does not confine its attacks to *Eucharis* bulbs; it consumes others as well, indeed with much greater avidity; but I presume it is more noticed in the case of the *Eucharis* from its greater value. Hyacinth bulbs and even *Dahlia* roots are quite acceptable to it; the former it eats up in an astonishing manner. I think it is coming over in great quantities this year with the Dutch bulbs, and I would desire to call attention to the importance of examining imported bulbs before mixing them with others of value. It is not easy to suggest a remedy that will kill the mite without injuring the bulb. Desiccation is the best thing if the bulb will bear it. Sulphur and carbolic acid are useful where they can be used. Infected bulbs which are too much injured to be used should be burnt, and every care taken to prevent the dispersion of the insect."

Freesias.—Your correspondents in Jersey and Guernsey ascribe as a cause of failure to grow these lovely fragrant flowers the fact that, as a rule, they do not succeed if placed at a distance from the glass. Tall-growing plants very seldom produce blossoms. But there can be little doubt that many failures arise from poor bulbs. When the *Freesias* were uncommon flowers we tried a number of pots in the winter Cucumber house, placing them on the brickwork that lined the path up the centre of a span-roofed house. They came into flower soon after Christmas Day and kept in flower more or less to the

middle of April. After they had finished flowering, the bulbs were taken out of the pots and the offsets removed for stock. At the proper season they were replaced in the same position, and the result was as good as that of the previous year. We did not put any peat in the soil. The plants were watered sparingly, but had abundance of moisture from the syringing of the Cucumbers.—M. C.

GLADIOLI DEAR AND CHEAP.

LIKE most flowers which one succeeds in growing to their satisfaction, Gladioli are special favourites of mine, and this being so, I am constantly recommending them to my gardening friends, especially victims of the too common craze, "Oh, we cannot have gorgeous flowers without glass!" Those who have grown, *e.g.*, *Duchess of Edinburgh*, *James McIntosh*, *Herald*, &c., with two, three, and the last-named with four spikes of blooms, as I did last year in an open border, and who know what magnificent flowers they produce, need not envy any Orchid grower. The two first named are recent introductions and still rather expensive; but the third, which gave me for the first time four spikes from a single corm, is scarcely inferior and can be had cheap. This induces me to speak of dear and cheap Gladioli—a subject that very often crops up when you recommend gardeners or amateurs to grow Gladioli more extensively than they do or for the first time. Why are some dear and some cheap? and are dear ones best? Gladioli are dear for at least two reasons. First, a new variety that is a distinct improvement on others already introduced must be scarce for a few years, and scarcity is a prime element in determining value. Again, a variety may be introduced fifty years and still be expensive, owing probably to some difficulty in getting up a stock of it. Gladioli are increased by seed, by spawn, or by multiplication of the corms in a natural way. In rare instances they may also be increased by division, *i.e.*, when two shoots are seen developing from a single corm. Two corms from one is not very common. Some give no spawn, or hardly any; and lastly as to seed, if the propagator gets a few pods of self-fertilised seeds, and carefully grows them on from year to year, at the end of the fourth year he may have a number fit to put into commerce, or they may have failed with him altogether or partially. Now these are some of the considerations that keep Gladioli in some instances expensive. I rarely have any spawn or bulblets from *Mdme. Desportes*, *Shakespeare*, *Reynolds Hole*, &c. Well, these, if large growers find the same thing happen, will always be comparatively scarce and dear, while others, like *Herald* already mentioned, *Hogarth*, *James Veitch*, *Larissa*, *Meyerbeer*, *Chameleon*, &c., and that fine kind sent out by Mr. Campbell, of Gonrock, Marquis of Lothian, being easy to propagate from spawn, will always be cheap and vigorous growers. From this day forward is the time to think of purchasing and planting.

Clonmel.

W. J. MURPHY.

SHORT NOTES.—FLOWER.

Vinca acutiloba.—In last week's *GARDEN "Veronica"* asks for some account of this plant. I understand that it is to be found not unfrequently in the olive gardens of the south of Europe. I had a plant of it from the late Mr. Harpur Crewe, and if "*Veronica*" will tell me how to address the parcel, I shall be happy to send him a piece of it.—T. H. ARCHER-HIND, South Devon.

Gentiana alpina.—The interesting articles on *Gentians* (p. 86) contain no allusion to this plant. It was sent to me from Switzerland with *G. verna*, and is certainly quite different from that plant both in foliage and flower. A note regarding its cultivation would be very acceptable, as, while *G. verna* has increased under garden treatment, *G. alpina* gets small and beautifully less from year to year.—A. D. W.

Periploca græca.—The hardiness of this plant cannot be doubted, so far as the south of England is concerned. A plant of it covering a large space of wall has been growing here (neighbourhood of Dorking) in the open air for years without the slightest protection. The aspect is south and very much exposed to south-west wind. Although it grows freely it has been a shy flowerer, last year being its best year in that respect for ten years. Our subsoil is, however, a cold stiff clay.—C. D.

Brown Ivy leaves.—The variously tinted Ivy leaves offered for sale in Covent Garden Market are not necessarily from a distinct variety of Ivy. The excessively dry spring and summer which we had here in South Wilts prevented the wild Ivy from growing much, and when rain came a rapid growth took place; this was soft and immature when frost came, and all these young shoots have richly tinted leaves now of all shades from yellow, rose, and russet to nearly black. The young shoots of Irish Ivy have coloured in the same way. The great variety of form in the leaves of *Hedera Helix* makes it very useful for bouquets and button-holes. One spray which I picked last autumn had one set of leaves almost as deeply lobed as those of *Passiflora cœrulea*, while other leaves springing from the same nodes were almost pentagonal.—J. D.

The Tree Flax (*Linum arboreum*) is a yellow-flowered species invaluable for either borders or rockeries, and equally useful in pots. Plants of it potted in the autumn and placed in the greenhouse commence to flower about the beginning of April and continue to do so throughout the summer, standing well where it would be almost impossible to have *L. trigynum* in flower, as the latter requires a higher temperature than *L. arboreum*. On the rockery when left alone it attains a height of some 2 feet or 3 feet. Its flowers are borne in loose clusters, and the leaves, which are oval, are of a light glaucous green. Another species, *L. flavum*, also known as *L. latum*, with which *arboreum* is often confounded, is also an extremely useful border plant and a continuous flowerer during June, July, and August. It rarely grows more than a foot high. It has much narrower leaves and larger flowers than *L. arboreum*. It is a plant of easy culture, and succeeds well in ordinary garden soil, especially if moderately moist and stiff. It ripens seed freely, and it may be increased by means of cuttings put in in early spring, but it must be remembered that every cutting taken off is probably a flower-stem lost, for that season at least. *L. arboreum* is also increased readily from cuttings taken off in autumn; they strike freely in a cool frame.—K.

Early Daffodils.—When three independent contributors to your columns all virtually agree in thinking that the season of the flowering of Daffodils could be made much earlier by growing Italian or Sicily ripened bulbs, it is high time that nurserymen bestirred themselves. It is no new discovery, and the wonder is that the Scillonians did not begin bulb growing earlier. Even now the bulbs seem secondary in their sight to the sale of the flowers. If some of the lovers of Narcissi had been in the market place of St. Mary's one Saturday in the beginning of last August they would have seen a curious bulb sale. The small throng around, all sailor-looking and good humoured, were buying 500 bulbs of the Sicily white and *Soleil d'Or* varieties for prices that seldom exceeded 21s. They were not plump, round bulbs such as the Hollanders send us; but the purchasers—and they ought to know—seemed confident that each contained a flower. And not only for outdoor beds, hedged round from the winds, but for early forcing will these bulbs from fresh fields be valuable. Early in autumn I endeavoured to call your readers' attention to this in a short paper descriptive of Mr. Dorrien-Smith's well managed bulb fields. It is to be hoped that his people will take to growing the bulbs for market as well as the flowers. Planting in raised beds, as "*Veronica*" recommends, ought to be more extensively followed than it is.—M. C.

5305.—**Alstromerias from seed.**—Seeds of the finest variety of *A. arantiacæ*, which, I presume, to have been fresh gathered, were kindly sent to me from Riverston, Nenagh, and were sown early last August—I believe on the 8th—in pans placed under glass, but without heat of any kind. Another packet of fresh seeds of the same fine variety came to me from Munstead, and was sown in precisely the same way on October 4 last. In both these pans, which have remained ever since in a greenhouse from which frost is only just excluded, I see the seeds are to-day (February 3)

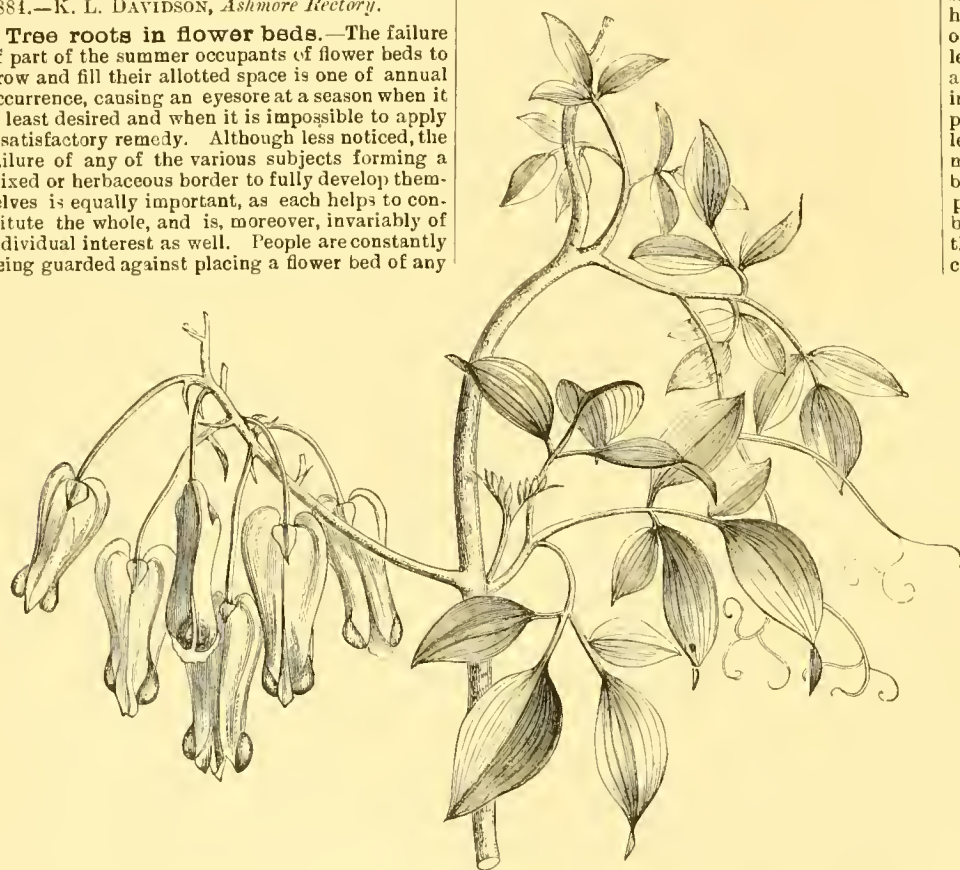
beginning to vegetate. The Irish seeds, sown two months earlier, show only a very slight advance upon those from Surrey, and their starting was probably overlooked for a day or two, but not longer, as the pans have been frequently examined. Fresh seeds of *A. hemantha* were also kindly sent to me from Munstead, and were sown in September. I regret that no note was made of the actual date of germination in this case, but every seed must have germinated, and the seedlings have grown remarkably quickly, having now five or six leaves apiece, and being strong enough to pot off singly. This may be done with care in the very early stages, but *Alstroemerias* do not appear to like much root disturbance. Seedlings of this fine species raised here in 1882 and planted out in 1883 flowered well in the open border in July, 1884.—K. L. DAVIDSON, *Ashmore Rectory*.

Tree roots in flower beds.—The failure of part of the summer occupants of flower beds to grow and fill their allotted space is one of annual occurrence, causing an eyesore at a season when it is least desired and when it is impossible to apply a satisfactory remedy. Although less noticed, the failure of any of the various subjects forming a mixed or herbaceous border to fully develop themselves is equally important, as each helps to constitute the whole, and is, moreover, invariably of individual interest as well. People are constantly being guarded against placing a flower bed of any

watering it for the good of the plants placed therein may result in the food supplied being conducted into channels for which it was not intended.—BETA.

DICENTRA THALICTRIFOLIA.

THIS is a smooth glaucous herbaceous climber with compound leaves, the principal nerve ending in branched tendrils, by means of which the plant is enabled to climb. The flowers, which are borne in racemes from the axils of the leaves or at the same node with them, sometimes amount to twenty on each raceme, and being rather large, yellow, sweet-scented, and lasting, have an attractive appearance when seen on a well-grown, pro-



Dicentra thalictrifolia.

description under trees, but the caution is seldom heeded. It is a doubtful matter how far the roots of large trees, particularly Elms, extend beyond what would be considered a likely limit. Their extension seems to depend a great deal on the inducement offered by way of good soil and a supply of water. Last summer we planted beds some 9 yards long on either side of a wide walk; those on one side succeeded admirably, while nearly half of the others were a failure, the plants dying away from exhaustion of the soil and from drought. As all were kept watered and had been similarly prepared in every way, we were at a loss to know the cause. Some Elms stand about 20 yards or more away in the case of a number of the beds, but we had not suspected their roots being injurious at that distance; yet when giving the annual digging some time ago we found the whole soil permeated by them. It has since been replaced by new material and a trench cut through some distance nearer the trees, so as to stop their roots for some time in that direction. It would be advisable for everybody to examine at this season the soil of their flower beds, or any that is under cultivation in the neighbourhood of trees, as otherwise the attention bestowed in enriching and

fusely flowered plant. The accompanying illustration shows how closely the flowers resemble in structure those of *D. (Dielytra) spectabilis*. Planted on a sheltered border with a few stakes upon which to climb, *D. thalictrifolia* soon forms an interesting specimen, and being hardy enough to bear an ordinary English winter without any protection, it gives little trouble after it has once become established. It may be increased by means of seeds, which should be sown in a pot and placed in a frame till the seedlings are large enough to be planted out, or by means of cuttings or division of the root. It is sometimes known under the name of *Dactylicapnos thalictrifolia*, but those who dislike long Latin names will prefer the shorter and more euphonious one, viz., *Dicentra*, which is now the one adopted in botanical works. Besides the two species just mentioned there are several other useful *Dicentras*, one of which, *D. scandens*, is a climbing plant much like the one here figured, but supposed to be annual. *D. Roylei* and *D. torulosa* are yellow-flowered kinds which grow to a height of several feet. All the *Dicentras* are pretty garden plants, but, except the popular early-flowering *D. spectabilis*, none of them are cultivated outside botanical gardens.

One of the American kinds, viz., *D. cucullata*, which has white flowers with yellow tips, is known in America as "Dutchman's Breeches," in allusion to the curiously shaped dilated bases of the flowers. The genus is distributed over the high regions of the Himalaya, Northern Asia, and North America. B.

HELLEBORUS LIVIDUS.

THIS, according to the authorities at Kew, is certainly in cultivation; I myself saw it in flower last spring in the herbaceous grounds there. The figure referred to by Mr. Brockbank (t. 72, *Botanical Magazine*) does not give one a good idea of the plant, the veining of the leaves being altogether different; they are netted and deeply and sharply serrated. The figure referred to may, however, be the Italian plant, found in the vicinity of Nice, and which has little or no teething to the leaves. The flowers correspond fairly well in size and colour with those of the Kew plant, but not in quantity, unless in the case of small weakly plants. The plant found by Mr. Backhouse's collector, and sold under the name of *H. corsicus*, may be "the true plant," as stated by Mr. Potter, but the name is not a published one, and in all probability has been given it because of Corsica being one of its principal habitats, especially of that variety of *lividus* called *integrilobus*; in the case of large specimens which I have seen the first leaves are, however, quite entire or only once divided, while those higher up the stem and larger are three-parted, as in the typical plant. The synonymy, as far as I can make it out, runs thus: *H. lividus*, the true name, fits the typical plant admirably: *H. argutifolius* (Viv.), *H. trilobus* (Lam.) and *H. trifolius* (L.), both of which is *Coptis trifoliatus*, *H. triphyllus* (Lam.), *H. trifolius* (Mill.), *H. corsicus* (Hort. Backh.), *H. filicifolius* (Hort.). The true *H. lividus* has livid or purplish flowers, but its varieties vary, perhaps, as much as those of *H. niger*, and, just as we have no scruple about using the name *tricolor* var. *alba*, or *alba* var. *rosea*, or *vice versa*, I would advise Mr. Barr to stick to the name *lividus* (Ait.), and give any varietal name he chooses. One specimen from Corsica I saw had from ten to twelve flowers as large as those of *H. niger*. The stems were branched, and the bracts sharply serrated like the leaves; also one [with as many as from thirty to forty flowers on a stem—a truly striking variety. *H. lividus* is also figured in the *Botanical Register*, t. 24, 51. The flowers, which are large, correspond entirely with those of the Kew plant, as do also the leaves. It is said that Prof. Viviani, supposing the "Hortus Kewensis" plant to be a native of America, named it *H. argutifolius*, until M. Cammessédes in his enumeration of Balearic plants rightly corrected it, and showed that the Corsican plant was the same thing. The flowers are greenish, but only on first opening; afterwards they attain a purplish colour. In Sweet's "Flower Garden," 2, 190, a variety is figured with small dull purple flowers with serrated sepals, described as green and afterwards purple; it is also stated that Linnæus regarded *H. lividus* as a variety of *H. fetidus*. K.

Hardiness of Pentstemons.—There is not much that is new to be said about these well-known biennials, but still a note now and then may help to remind some who do not grow Pentstemons that they are neglecting some charming hardy border flowers. Really the term hardy, as applied to Pentstemons, however, is a relative one, for whilst through some winters the plants come full of life and vigour, through others they come only dead and worthless. It is true that we have many very fine and distinctive named kinds, but it is not necessary that they should be particularised. If plants of good kinds in pots are obtained at once, it will be well to shift them into 4½-inch pots, using good loamy soil well mixed with sharp sand, and to place them in a cool frame for

a few weeks before planting them out. If put out at once the young plants may suffer from late frosts or keen sweeping winds. If, on the other hand, it is purposed to obtain a stock of plants cheaply, the simplest way to that end is to purchase a packet of seed of a good strain and to sow at once in a shallow box and place it in a frame or greenhouse. Such a sowing will give strong young plants to dibble out in the open ground early in May, and these will bloom freely in the autumn. Practically, it is wisest to sow seed under glass in the autumn, allow the plants to remain in the seed bed all the winter, to dibble out thinly in a frame during the present month, and a very early and fine lot of plants will be ready to plant out in April for summer and autumn blooming.—A. D.

SOCIETIES.

ROYAL HORTICULTURAL.

FEBRUARY 10.

THE appearance of the conservatory at South Kensington on this occasion indicated the return of activity in the garden, as the place was filled with flowers—a welcome change from the dreariness of the meetings for the last few months. A brilliant display was made by various Cyclamen and Primula growers, while not a few new and rare plants were exhibited, Orchids being the most plentiful.

First-class certificates were awarded to the following:—

DENDROBIUM HETEROCARPUM ALBUM.—A variety with not absolutely white flowers, but sufficiently white to justify its name. It is quite devoid of the buff tint of the original, but retains its delightful fragrance. A superbly flowered plant was shown by Sir Trevor Lawrence, Burford Lodge, Dorking.

LÆLIA ANCEPS HILLI.—Of this lovely variety, one of the most delicately tinted of all, Sir Trevor Lawrence showed an enormous specimen growing on a flat trellis about a yard square. The plant bore no fewer than two dozen spikes, and these not tied up stiffly, but allowed to assume their natural habit; consequently the effect was charming and the plant was the centre of attraction. The flowers of this variety have white, rather narrow sepals, and a lip tipped with a pale rose.

CATTLEYA MASSANGIANA.—A curious variety of the Triane section, remarkable for the sepals and lip being heavily mottled with carmine-purple on a light ground. Many might not consider it beautiful, but it is distinct from any other Cattleya. From Sir Trevor Lawrence.

ODONTOGLOSSUM HRUBANUM.—A lovely new Orchid, which may be best described as a white variety of *O. cirrhosum*, the two species being similar in habit and growth, and the flowers resemble each other in size and form, but while *cirrhosum* has copiously spotted blossoms, those of *Hrubanum* are spotless white, with the exception of the yellow crest on the labellum. A plant of it with a finely flowered spike was shown by Mr. Lee, Downside, Leatherhead.

SACCOLABIUM BELLINUM.—A sweetly pretty Orchid, and interesting on account of its being absolutely different in general appearance from most other Saccolabiums in cultivation. It is of dwarf growth, has its leaves arranged in the usual two-rowed manner, and produces short rigid spikes. The flowers are large for a Saccolabium, the lips being broad and pure white, profusely speckled with carmine. Shown by Mr. Lee.

NEPENTHES CINCTA.—A new Pitcher plant from Borneo, which may prove a rival to such handsome species as *N. Northiana*, *Mastersiana*, *Rajah*, and others. The pitchers are extremely handsome, being some 9 inches in length, of proportionate breadth, and finely coloured with a vinous tint, on which are copious irregular blotches of claret-red. It is supposed to be a natural hybrid between *N. Northiana* and *albo-marginata*, as it partakes of the intermediate characters of these two species.

Messrs. Veitch, the introducers of it, exhibited a finely-grown plant carrying nine large pitchers.

VRIESIA JANEIRIENSIS VARIEGATA.—A noble Bromeliaceous plant, and one of the handsomest fine-foliaged plants we have seen for a long time. The leaves, which are some 2 feet long, are broad and channelled, and form a huge symmetrical vase-form tuft very elegant in appearance, as every leaf is slightly recurved. In colour the foliage is light green variegated with numerous broad stripes of creamy white; altogether a fine acquisition to the ranks of noble decorative plants. Exhibited by Mr. W. Bull, Chelsea.

ACINETA CHRYSANTHA.—A beautiful and uncommon Orchid of Stanhopea-like growth having its flowers produced in long drooping clusters a dozen or more in a bunch. They are large, of wax-like texture, and possess a delightful spicy fragrance. Their colour is a warm orange-yellow, spotted and freckled with black or very deep brown. Shown by Sir Trevor Lawrence.

ODONTOGLOSSUM HYSTRIX MAGNIFICUM.—An exceptionally fine variety, the flowers being fully a third larger than those of ordinary *hystrix*, while the colour is of a brighter chestnut-brown, variegated with citron-yellow. Of this Mr. B. S. Williams showed a finely-flowered specimen.

RHODODENDRON MILITARE.—This is another of Messrs. Veitch's fine hybrids of the Javanese race. Each variety certificated seems to be an advance upon those previously so rewarded. The present kind has a large full truss of well-formed flowers of a brilliant orange-red, and therefore highly attractive.

CYCLAMEN GIGANTEUM ALBUM.—A superb new white sort with flowers as large as those of the finest of the giganteum race and of the purest white. In these respects it eclipses all other whites. Shown by the raiser, Mr. H. B. Smith, Ealing Dean.

PRIMULA WHITE PERFECTION.—This, Messrs. Cannell's latest novelty in the way of Chinese Primulas, seems to be the very embodiment of perfection in a white Primula. The flowers are exceptionally large, pure white, of great substance, and produced in dense trusses well above the luxuriant foliage.

PRIMULA KING OF PRIMROSES.—Another new variety, as remarkable among crimson varieties as the preceding is among whites. The flowers have the good form and substance of such brilliant sorts as Chiswick Red, combined with very large size of flowers. It is a decided advance in its class. Shown by the raiser, Mr. King, florist, Rowsham.

ORCHIDS, as we before remarked, were numerous, and most of them were of more than usual interest. The president, Sir Trevor Lawrence, exhibited other Orchids besides those certificated, one of the most interesting being a fine plant of the singular *Ponthieva maculata*, a terrestrial species having small curiously-shaped flowers, yellow and white, with the sepals spotted with green. Among the others were *Lælia anceps Williamsi*, a white form with larger flowers than those of the type; *Masdevallia leontoglossa*, more interesting on account of its rarity than its beauty; *Odontoglossum Oerstedii*, *O. Wilckeanum*, a finely flowered specimen of *Cologyne flaccida*, and some remarkable varieties of *Lycaste Skinneri*. Baron Schroeder sent a plant of what is called the true *Odontoglossum Chestertonii*, a very different plant from that which usually goes under that name, the flowers being more like a very fine *Wilckeanum*. It was a finely grown and flowered plant, and Mr. Ballantine, the gardener, was accorded a cultural commendation. Mr. Lee showed the finest form of *O. Sanderianum* we had hitherto seen, the lips of the flowers being pure white spotted with purple; such a fine form as this is very handsome. Mr. Bull exhibited five strikingly beautiful varieties of *Cattleya Triane*, named respectively *Empress*, *picta*, *tyrianthina*, *imperator*, and *princeps*. These cannot be intelligibly described, their distinctions being so subtle; suffice it to say that we thought the last named the finest. Mr. Bull also showed *Cologyne cristata Lemoniana*, *Odontoglossum Halli leuco-*

glossum, *O. gloriosum pictum*, *Dendrobium Wardianum album*, a lovely albino of this popular species, and two distinct forms of *Odontoglossum Pescatorei*, one named *melanoleuca* having a deep brown column and centre; the other, *aurantiaca*, with the same parts of a deeper orange-yellow; both quite distinct from the ordinary. Among a few Orchids from Mr. B. S. Williams was the scarce *O. maculatum Donianum*, much finer in every respect than the original; also *O. facetum*, one of the debatable hybrid race. Mr. Philbrick sent from his garden at Bickley a plant of that gem among *Odontoglossums*, *O. blandum*, like a miniature *O. gloriosum*, with white lips to the flowers; and *O. Oerstedii majus*, with flowers much larger than those of the ordinary form, and several on each spike. Mr. Smee, of Wallington, sent a plant of *Odontoglossum membranaceum* having a spike of nine flowers. This plant was stated to have been placed in the open air for three months during last summer and autumn. Such being the case, it seems as if the plant likes such treatment, for it was a very fine specimen. A cultural commendation was accorded to the gardener, Mr. Cummins. Mr. Wyatt, Lake House, Cheltenham, sent a plant of *Cattleya chocoensis* having a highly coloured lipped flower, also a fine specimen of *Odontoglossum ramosissimum* with two tall branched spikes, and *O. Halli leucoglossum*, a fine form.

Among other exhibits of interest were some wonderfully fine examples of Swanley Blue Primula from Messrs. Cannell. The plants were all large and bore huge trusses of bloom, the colour of which is a kind of slaty purple, produced a charming effect alongside a similarly large group of the old double white Primula, which, too, were uncommonly fine pyramids of foliage and flowers in tiers quite 18 inches through at the base. Primula culture is, indeed, carried out to perfection at Swanley. Some new seedling Primulas of exceptional merit were shown by Mr. King, of Rowsham; one named *Mary Anderson*, with fan-like foliage and flowers of a bluish rose-pink, we thought very beautiful and distinct from ordinary sorts. Another named *King's Pink* was also remarkable for its delicate colour. Others named *General Gordon* and *Lord Wolseley* were also noteworthy. It seems as if Mr. King is making as rapid strides in the production of new Primulas as he has with Coleuses. An uncommonly fine double Primula with large rosetted white flowers came from Mr. J. H. Potts, Wilcomb Gardens, Stratford. Mr. Crowe, Upton, Essex, sent a new Begonia called *B. semperflorens gigantea rosea*, which promises to be a useful addition. We were doubtful, however, whether we had not seen it before under another name. Mr. James, of Woodside, Farnham Royal, sent flowers of his high-class race of *Cinerarias*—a sort of foretaste of what might be expected later on in the season. Mr. Todman, of Upper Tooting, sent flowers of his new hybrid *Azaleas*, among which the white *Mrs. T. Todman* we thought the best and most likely to be appreciated.

Awards.—Various medals were awarded. Mr. H. B. Smith, of Ealing, took a silver-gilt Banksian medal for a magnificent group of Cyclamens, which, as may be imagined, were the perfection of what February Cyclamens should be, and, moreover, included some of the new varieties. A silver Banksian medal was awarded to Mr. R. Clarke, of Twickenham, for Cyclamens, and bronze Banksian medals were taken by Messrs. Veitch and Mr. Clay, Twickenham, both for large groups of Cyclamens. Mr. Cannell took a bronze Banksian medal for his Primulas, and Mr. W. Bull was awarded a silver Banksian medal for a group of plants, including the Orchids mentioned, besides several fine-foliaged plants, such as *Thrinax barbadensis*, *Geonoma princeps*, *Phoenix rupicola*, and others.

Fruit and vegetables.—Two large collections of well-preserved Apples were exhibited, one consisting of some fifty dishes, shown by Messrs. G. Bunyard & Co., Maidstone; the other, consisting of a smaller number, from Messrs. Lane & Son, Berkhamstead. These two collections were composed of the leading late-keeping varieties, and some, such as *Annie Elizabeth*, *Beauty of*

Kent, Mère de Ménage, Alfriston, Sturmer Pippin, in Messrs. Bunyard's collection, were just in their prime; among Messrs. Lane's dishes none perhaps were more remarkable than their new Prince Albert variety, whose merits can scarcely be over-estimated. To each of these exhibitors a bronze Banksian medal was awarded. A silver Banksian medal was awarded to Messrs. Rivers, of Sawbridgeworth, for a very fine collection of various sorts of Oranges, numbering some two dozen dishes. The majority of the sorts shown were very fine, and comprised, we imagine, all the best in cultivation. Mr. Day, of Galloway House, Garliestone, showed a fine dish of the Galloway Pippin; Mr. Gilbert sent from Burghley some heads of his new selected Imperial Cabbages, which the committee recommended for a trial at Chiswick, also heads of Ellam's dwarf Cabbage. Mr. Inglis sent samples of Cabbages, including Cook's Early, Reading All Heart, and Heartwell Marrow. Messrs. Hurst sent samples of a fine new Parsley, large leaved and very curled and crisped.

First-class certificates were awarded to Messrs. Rivers for Orange Sustain, a medium-sized round fruit of excellent quality; and to Messrs. Bunyard & Co. for Pear Duchesse de Bordeaux, a medium-sized egg-shaped fruit now in season. Its skin is pale yellow and russety. It is of first-rate quality, and considered an excellent addition to dessert Pears.

Annual general meeting.—This was held in the conservatory at South Kensington on Tuesday last. Sir Trevor Lawrence, Bart., M.P., who presided, alluded to the present condition of the society, which he said was satisfactory and flourishing. He felt it his duty to express the regret of the society in losing the valuable aid of Lord Aberdare, who had been their president for the past ten years, and a resolution to that effect was submitted to the meeting and unanimously carried. The society had also, the chairman remarked, sustained a great loss through the death of one of its council, the late Mr. J. H. Mangles. He then alluded to the various successes which the society had in the way of exhibitions, the Daffodil congress being noteworthy in this respect. He also spoke approvingly of the proposal to hold an Orchid conference in May, which he hoped would be a red-letter day in the annals of the society and horticulture. The report for 1884 was then submitted and carried unanimously. The election of the new officers for the coming year was then proceeded with, the changes being Sir Trevor Lawrence, president; the Hon. and Rev. J. T. Boscawen, Col. E. Trevor Clarke, and W. T. Threlton Dyer, F.R.S., were elected to fill the vacancies occurring on the council.

National Auricula and National Carnation and Picotee Societies (Southern Section).—The schedules of these societies have been issued to all subscribers, as far as their addresses could be ascertained. The treasurer, Mr. Rolt, of 170, Hartfield Road, New Wimbledon, would be glad to receive promises of support. These can be given in various ways. The first and best is for each subscriber to obtain a new one. The second would be for those interested in the success of these societies to double their subscriptions; or, thirdly, to give a donation for this year, and so place the societies on a sound financial basis. Members who have not yet received copies of schedules and a subscription form can have them by applying to Mr. Rolt.

The "Benevolent" balance sheet.—The stumbling-block in relation to this subject is not my interference with the matter, but the compound addition sum I submitted a couple of weeks back. No amount of wrangling or reasoning can get over it. Here it is in a nutshell: "By pensions" in 1884, £1372; by expenses, £672 13s. 4d. The half of 1372 is 686, which gives us just a fraction under 10s. expense for every pound disbursed in pensions. If this be a satisfactory result to benevolent subscribers and collectors, no one else need care much, but I happen to know they are

not all either able or willing to pay such a high premium as Mr. Clayton for benevolent purposes. Deduct the "honorarium," as Mr. Clayton wishes, and the premium is still enormous. And look at the cost of "printing, postage, circulars, and stationary"—£232! Mr. Clayton talks of the work done by the officers; will he tell us what it is, and how many days a week they are occupied in it, and where their office is? I do not know much about the officials. I met one of them not long since when I happened to be looking for a gentleman in the dining saloon of the most aristocratic hotel in town; business was his object there, no doubt. If any of your readers can produce such another example of business or benevolence, I shall apologise for what I have said. The best commentary on the subject is that an interested contemporary suppresses the balance sheet and describes it in words that are misleading.—J. S. W.

"J. S. W." is evidently not over-burdened with charity towards the Gardeners' Benevolent Institution either in kind or mind; the beginning of his letter proves the former, the remainder the latter. He evidently wishes it to appear that the expenses of the institution are incurred by the secretary without any supervision; allow me to assure him that such is not the case. Nothing is undertaken without the sanction of the committee; the payment of all moneys is brought before them and the various accounts strictly scrutinised, the committee, of which Mr. John Lee is chairman, feeling that they are only the trustees of the money of the subscribers confided to their care, and the treasurer will not sign any cheques without an order in writing being produced signed by the chairman of the meeting when payment was ordered. "J. S. W." alleges that the expenses are incurred in disbursing the pensions; this is wrong. Disbursing the pensions costs very little; the expenses are incurred in the general management and in raising the funded property, which has now reached the magnificent sum which appears in the balance sheet. During the time I was on the committee I never knew a single journey undertaken by the secretary to be barren; invariably the result was two and even three times the cost in new subscriptions, besides donations and advertising the benefits of the institution. As to the actions of the secretary, who to my knowledge has devoted the whole of his time for the last few years to the institution, the committee hold themselves personally responsible. He is entirely in their confidence, and to prove that to be the case, I may state that he was elected not a month ago for the forty-fourth time, and as long as the institution goes on increasing in prosperity and he enjoys health he will, I have not the slightest fear, continue to enjoy that confidence. "A. D.'s" comparison between the working expenses of a mutual benefit society and an institution mainly supported by those who cannot possibly benefit by its funds needs no answer.—J. WEBBER, *Covent Garden.*

NOTES OF THE WEEK.

English Roses for America.—We learn that an American nurseryman, Mr. Evans, of Rowlandville, Philadelphia, has just secured from Mr. Bennett, of Shepperton, the whole of his interest in the beautiful new hybrid Tea Rose William Francis Bennett, which has finely-shaped blooms of a pleasing crimson; and also of the grand new Rose Her Majesty, which has been so much talked about since it was exhibited two years ago. The Americans will certainly be in possession of the largest Rose ever raised, and one that will be sure to be sought for by growers on this side of the Atlantic. These two Roses have brought Mr. Bennett £1600. We understand that Messrs. W. Paul & Son, Waltham Cross, will distribute the first-named in this country.

Orchid conference.—The council of the Royal Horticultural Society invite the attention of Orchid growers to the conference which it is proposed to hold in the conservatory at South Kensington on May 12 and 13, and at which the pre-

sident, Sir Trevor Lawrence, Bart., will preside. The council hope to assemble on that occasion a thoroughly representative exhibition of Orchids, embracing plants in flower and in seed and cut flowers, and illustrating the results obtained by hybridisation, the modes of growth, the methods of cultivation, and the appliances and soil used. Several of the chief growers have already promised their support. In all cases where practicable the following information should be given, viz.: (1) name; (2) native country, if imported; (3) parentage if a hybrid. Tuesday, the 12th, the ordinary meeting day of the committee, will be devoted to a general examination of the various subjects presented. The doors will be opened at twelve noon. On Wednesday, the 13th, the conference will meet in the conservatory for the reading of papers and discussion, the chair being taken by the president at 10.30 a.m. precisely. Notice of intention to exhibit, with amount of space required, must be sent to Mr. Barron, Royal Horticultural Society, South Kensington, on or before Friday, the 8th instant.

OBITUARY.

Charles Downing.—American papers announce the death of this eminent pomologist, which took place at his residence in Newburgh on the 18th ult. after a lingering illness. Although in his eighty-third year, the hope had been cherished that he might still have years of useful labour and quiet enjoyment before him, but he never recovered from a severe injury which he sustained two years ago in New York city, being knocked down and run over by a horse-car. He was widely known in connection with fruit and fruit trees, and his death leaves a vacancy which cannot be filled as an authority on pomology. To Charles Downing, Warder, Harry, Wilder, and Hovey America may be said to owe in a great degree that pre-eminence in fruit culture which it now enjoys. A portrait and full account of the work achieved by this distinguished pomologist will be found in *THE GARDEN*, Vol. XVII., p. 188.

LATE NOTES.

Gloriosa superba (A. M. A.).—See *THE GARDEN*, Vol. XXIII., p. 373.

5316—**Gladioli.**—If the Gladioli about which "B." enquires under the name of angustius is really *G. angustius*, figured on plate 602 of the *Botanical Magazine*, he can get bulbs of that variety, and also of *G. alatus* (*Botanical Magazine*, 16, 586), *G. gracilis* or *hirsutus* (*B. M.*, 747, v. 19), *G. grandis* or *grandiflorus* (Andrews' "Repository," vol. ii., 118), *G. praecox* (A. R., i. 38), and *G. Watsonius* (*B. M.*, 13, 450), from Mr. Macowan, Botanic Gardens, Cape Town, at 1s. 6d. the dozen bulbs, which is certainly not an extravagant price.

Allium Holtzeri.—This is a native of Turkestan, and was sent by M. Regel, jun., to the Botanic Garden of St. Petersburg in 1880, where in 1884 it flowered for the first time. It does not grow more than 7 inches high, and its flowers, which are borne in a close umbel, are white with red anthers.—(J. C. B.)

Primula (*V. H. L.*).—Please send other leaves and flowers, as you suggest.

Names of fruits.—*Lorley*.—1, Court Pendu Plat; 2, Court of Wick.—*R. S.*—1, Beauty of Kent; 2, Golden Harvey.—Others next week.

Naming plants.—Four kinds of plants or flowers only can be named at one time, and this only when good specimens are sent.

Names of plants.—*F. J. C.*—1, *Hypolepis amaro-rachys*; 2, *Nephrodium effusum*; 3, *Aspidium macrophyllum*; 4, *Phlebodium aureum*.—*J. T.*—1, apparently a small form of *Odontoglossum Coradinei*; 2, *O. gloriosum*; 3, *O. Lindleyanum*; 4, *O. carinif-rum*.—*Field*.—*Garrya elliptica*.—*F. L.*—1, *Acacia pulchella*; 2, *A. dealbata*. Your *Dendrobe* did not reach us.—*J. W. G.*—Apparently *Cattleya Aclandiae*, but it is impossible to tell with such scanty material.—*J. Holt*.—*Angreum sesquipedale*.—*J. H. Sutton*.—*Lastrea dilatata*.—*B. R.* (*Quedgeley*).—*Celsia Arcturus*.—*W. R. H.*—*Echites melaleuca*.—*E. F. T.*—*Alonsoa incisa*.

BOOKS RECEIVED.

"Cactaceous Plants: their history and culture," by Lewis Castle. 171, Fleet Street, E.C.
"Report of the Commissioner of Agriculture." Washington.

No. 692. SATURDAY, Feb. 21, 1885. Vol. XXVII.

"This is an Art
Which does mend Nature: change it rather: but
THE ART ITSELF IS NATURE."—Shakespeare.

SPRING IN WINTER.

SOMETIMES in the middle of the present month comes a day so warm and bright, that it seems as if it had been borrowed from May. Such was February 12, a day that could be called really warm, with unclouded sunshine, and the thermometer at 55° in the shade. Not that these unseasonably warm spells are to be desired; still, a foretaste of summer in winter is so enjoyable, that at the moment one is thankful. Returning home after a week's absence, the change wrought by a few mild days looked like the growth of a month. Bees were busy at the waning Christmas Roses, and the early flowers, as wide open as possible, were greedily taking in the bright light and sun. How the Crocus does like light and warmth! It opens out to it with a visible enjoyment that is almost human in its way of expression. Numbers of flowers seemed to have sprung suddenly out of the ground. The common Snow-drop, with *Galanthus Imperati*, *Elwesi*, and *Redoutei*, *Bulbocodium vernum*, *Merendera sobolifera*, and strong tufts of *Leucojum vernum*, *Illepticas*, single and double of many varieties; charming as are all the garden kinds, none is so fine and free as the common wild one of the Alps. They seem to rejoice in our sandy peat, nestling in among Christmas Roses under some strong tufts of Alexandrian Laurel, and straggling beyond in half shade into a pool of blue; they keep their last year's foliage, and it is as tall as that of the Hellebores. A delightful surprise was waiting for that morning—some little pyramids of a wonderful blue, between sky-blue and turquoise colour, the most beautiful *Muscari* I have seen, *M. linguatum*, one of *M. Max Leichtlin's* precious gifts, a most lovely flower. The foliage of nearly all Daffodils, except varieties of poeticus, seems to be out of the ground; Tenbies are in big bud, *Pseudo-N. pallidus præcox* in visible bud, *Corbularia citrina* in bud under a west wall. Nothing can surpass the value of *Iris stylosa* where it does well, but the districts that it favours seem few. From many gardening friends I hear either that it will not exist, or will just exist, or that it grows well, but never flowers. On one tuft, well established and 2 feet across, I counted this week sixty flowers. It comes into bloom early in November and continues till April. Last year I noted eighteen successive winter weeks of flowering. Throughout this winter we have always had a large bowl of the flowers, and though a hard frost destroys the actual blooms then out, by picking a quantity when severe weather comes on they will all open indoors and carry on the supply till mild weather gives a fresh crop on the plants. *Anemone blanda* is beautiful on a western bank, sheltered, but not shaded, by shrubs. The foliage of *A. ranunculoides* and of *A. palmata* is coming up strongly. *A. stellata*, collected at different times in Italy, is well in flower. Grouped with the fine foliage of *Arum italicum* and a stray clump of *Narcissus Tazetta* in flower, and backed by a wall clothed with *Smilax aspera*, it makes a little bit of Italy in an English garden.

How valuable the broad-leaved Saxifrages are now! *S. cordifolia* rather better than *S. crassifolia*; the latter seems to feel the cold more; in severe weather the leaves lie down limp, while *cordifolia* holds them stiff and strong through any winter. It is also beautiful in its variety of red tinging and splashing of the leaves, the red colour being more evenly and flatly distributed in *crassifolia*. It is curious, in approaching a group from the sunny side, to see how the leaves are all red, while from the opposite side they are all green.

In the alpine garden *Scilla sibirica* is peeping up through a carpet of *Sedum Lydium*. Another corner of the same carpet is jewelled with the brilliant orange *Crocus Aucheri*, while other winter Crocuses, mostly varieties of *Sieberi* and *Imperati*, show well on a groundwork of the neat trailing St. John's-wort (*Hypericum reptans*), whose winter foliage is of a rusty bronze colour. *Sieberi* is one of my favourites among the Crocus species, it is so prettily cupped. Some strong tufts of *Draba cuspidata* are tipped with bright yellow flowers. Groups of *Edelweiss* that looked as dead as possible in the early winter are now showing growth in the shape of little points of white velvet. Some of the silvery Saxifrages are at their silveryest; some are tinged with rosy bronzing. *Saxifraga Burseriana* is well in bloom in cheering patches, and some of the larger forms of *S. oppositifolia* (Messrs. Backhouse's fine varieties) are well out.

A little colony of Cyclamens of the Coum and Atkinsi varieties is pretty among mossy stones; the very large foliage of *C. africanum* is fine among larger rocks. *Rhododendron ferrugineum* is set much more freely with bud than usual. The winter's silence of my gardening friends begins to be broken by interesting letters from various parts. I think one's horticultural correspondents are herbaceous and die down in winter! Happily, I believe them to be true perennials, and that the approach of spring will start them into renewed life and vigour.

G. J.

West Surrey.

NOTES ON RECENT NUMBERS.

Plagiolirion Horsmani (p. 122) I had from the introducer, but I have not succeeded in making it flower. Will Mr. Horsman or someone who knows its treatment give us a hint as to how to manage it, i.e., when to start, at what period of growth the flower-spike comes, how long to rest, and if it may be had in bloom (like the *Eucharis*) more than once in the year? Another relation of the *Eucharis*, *Calostemma luteum*, figured in Edwards and Curtis, seems by the plates to be worth growing, but I have not noticed it in any list or catalogue. Is it in cultivation now in England?

The promise of fruit on *Cerasus ilicifolia* (p. 124), which Mr. Ellacombe says dropped off before it was ripe, called to my mind the behaviour of the red-berried Elder, which with us always does the same thing. The berries seem to set all right, and one thinks one is going to have a good show, but just before ripening they all disappear, assisted no doubt by the birds. One cannot expect the fresh beauty of its great bunches of coral beads as seen on the Swiss mountains, but may not one in the south of England expect it to succeed, say in a favourable season and position?

Primula seed.—"A few seeds only, two of which germinated (p. 127)." For the benefit of those who have not seen the catalogue of Mr. W.B. Hartland, of Cork, let me quote Mr. Hayes' remarks therein contained as to *Primula sinensis*. "Sow in boxes instead of seed-pans, as we find from experience that the seed hardly ever comes up round the edge of the latter. The reason is

simply this: the pan absorbs the moisture from the soil, and consequently the seed gets dry, and if once it gets thoroughly dry after it has been soaked through it will never vegetate afterwards. If sown in a box you run no risk of the sort, as the timber will not absorb the moisture so readily." Many of your readers no doubt are fully aware of this, but a rule of this sort is worth repeating in order to impress it on the minds of others, who, for want of thought or for want of wooden boxes, make use of the ordinary seed-pans. I should think it would be a good custom to employ wood in the case of a great many seeds which take long in vegetating.

Jasminum nudiflorum (p. 129).—I went last week to gather some flowers of this off a plant growing on a south wall in the shade of trees, and was astonished to find the buds scarcely showing any colour; whereas elsewhere on all aspects it was in full bloom. Since reading "Veronica's" note I have been to look at the plant, and find it, as he describes, "dense and bushy, covering the wall like a sheep's fleece with its short pendent flower shoots." It has certainly a more drooping habit, and it is later in coming into bloom than the common one, but otherwise the distinction between the two which I have is a very fine one.

Vinca acutiloba (p. 130).—I have always wondered not to see this oftener than we do. It was offered in Mr. Ware's list two years ago as a new species from South Italy, resembling in some respects the common Periwinkle (*V. major*), but with white flowers rendering it very attractive. I do not know if he has it still; the plant apparently being but little known, there may have been no demand for it. Like "Veronica's" friend, I have gathered and admired it on the Riviera, in North Italy, where it is usually pure white.

Cultural progress.—We often require negative as well as positive information. A plant may be grown with success in a way in which it would be impossible for some to imitate. Because it flourished thus it needs all this is the natural conclusion; whereas, perhaps, it would succeed equally well under very different circumstances, provided the absence was guaranteed of what it did not like. For instance, one often hears people say, "I cannot grow *Rhododendrons* or *Azaleas*, because I have no peat that I can get." They both grow and seed all over the place here in stiff clay or almost pure sand. The real secret is that they may be said to do almost anywhere but where there is lime in the soil, and that is almost always fatal.

The best Peas (p. 134).—What are the judges about, or what is the present aim and object of horticultural shows, that certain vegetables may be gravely stated to have no merits other than for exhibition purposes? The custom of nurserymen giving prizes for plants raised from seed of their introduction or distribution sometimes, perhaps, may have misled the authorities from the uses required of the things to be judged, and of course each judge has his own particular notions as to the best batch among each sort of vegetable. Might not the schedules sometimes be a little more explicit, setting forth whether the prize is to be given to the largest, earliest, best flavoured, &c., or in the case of flowers, rarest and freest blooming specimen? It strikes one as ridiculous on the face of it that a vegetable should be of no use for any other table than that of an exhibition.

Names of plants.—It is not hard to discover which Mr. Wolley Dod's Hellebore Com. Ben. (p. 135) is, and I think if he had to write much of the *Dicentra* figured on p. 138, under what is there given as its other name, *Dactylicapnos thalictrifolia*, he would be inclined to shorten that too. Now that there is so much horticultural intercourse growing up between different countries, we shall suffer many inconveniences by the giving of national or personal names to all new varieties of flowers. We cannot, of course, give a new scientific name to each variety, and we could not

make the Roman and Greek ladies and gentlemen stand sponsors for all the florists' seedlings now raised. Since the Poles and Russians are taking so much to botany, we must expect (begging their pardon) some downright crackjaw names—to anyone who does not know their language—of which one or two bulbous plants lately introduced are by no means extravagant specimens. What will the Italian growers make of some of our English names for Narcissus—*e.g.*, Harpur Crewe or J. T. Llewelyn? It would seem natural that N. elatus might be called after Mr. Wolley Dod himself, instead of the Duke of Buccleuch; his friends at all events would trace a connection. Some of the new French Roses have proved hard mouthfuls for the British gardener, though, as in the case of the "Glory of John," with a bold rush the difficulty may sometimes be surmounted.

The earlier ripening of bulbs in Italy (p. 137).—The greater expense of carriage would always be a drawback to getting our bulbs from Italy instead of, or as well as, Holland. Moreover, I doubt whether it would pay the Italians to grow them for us, unless they could do away with the competition of the Dutch. Labour there is, I believe, much dearer than in Holland, and the soil for all bulbs has to be heavily manured to make it retain the requisite amount of moisture. They can grow for cut flowers, but would not lavish the amount of attention usually bestowed on an ordinary Hyacinth before it appears in a London tradesman's window. Then, again, do we want such bulbs as Paper-white Narcissus much earlier in the autumn than we have them already? Other plants may be made to last on till Chrysanthemums monopolise all attention, and surely there must be some autumn and winter-flowering bulbs which might be used for forcing. By the time the last Paper-white Narcissus is over in the spring and the out-of-door Hyacinths have "seen a better day," have we not (I feel I am speaking treason) for the time at least, seen enough of them? By forcing Tulips and Narcissi year after year in pots their season may be decidedly hastened. Were there not more beautiful varieties of the latter in Covent Garden this year at an earlier date than usual? In Italy they do not start into growth much before ours on account of the dryness, but when once started their growth is more continuous and unchecked.

Plants for this month.—To this list (p. 127) may we not add as "a good thing" *Boronia megastigma*, now in bloom without any forcing, which I suppose it would in all probability violently resent? For delicacy of fragrance it would run a close race even with a potful of *Freesia*.

Zephyranthes.—The reason I should say why *Z. Atamasco* is not more used for forcing (p. 128) is that the usual price for it is from 1s. 6d. to 2s. 6d. a bulb (if true). The different varieties seem to be easily managed in pots, but increase very slowly compared with many of the other *Amaryllids*. I had candida in several places out-of-doors, but it never flowered, and has now entirely disappeared. C. R. S. D.

PARKS & PUBLIC GARDENS.

THE Metropolitan Public Garden Association propose to assist the residents of Lady Margaret's Road, Kentish Town, in planting fifty Plane trees in that thoroughfare, they having at their last monthly meeting, held at 83, Lancaster Gate, agreed to find the amount required to meet the estimated expense over and above the local subscriptions.

It has been decided to lay out the plot of ground on the western side of the New Law Courts with turf and shrubs, and at length the chaos of rubbish that has so long disfigured the spot is being removed. Already a large space has been cleared and levelled, and before the spring fairly sets in this desolate waste will have become a trim garden, much to the improvement in the appearance of that portion of the Strand.

At a meeting of the Court of Common Council held the other day the town clerk read a letter from Earl Stanhope, chairman of the Ecclesiastical Commissioners, offering to appropriate for the perpetual use and enjoyment of the inhabitants

of the metropolis Gravel Pit Wood, at Highgate, comprising sixty-nine acres, and thirty acres of land at Kilburn, forming a portion of the site occupied in 1879 by the Royal Agricultural Show. The offer is made by the commissioners on condition that the corporation shall obtain parliamentary sanction for the Ecclesiastical Commissioners to make the proposed appropriation, and shall undertake to lay out and maintain these two spaces as parks in perpetuity. The letter was referred to the coal, corn, and finance committee to consider and report.

WORK DONE IN WEEK ENDING FEB. 17, 1885.

FEBRUARY 11.

VERY fine. Removed mulching from Globe Artichokes and filled up gaps in the plantation by taking offsets from the largest stools; manured and deeply dug between the rows. Finished planting Horse Radish and Jerusalem Artichokes; the ground for both has been trenched and manured. Sowed Cabbage, Coleworts, and Cauliflower on a south border. These seeds, and also Broccoli and Turnips, we are obliged to net over soon as sown, or the birds would clear the lot the moment they showed through the soil. Clipping Privet and Holly hedges and planted a few perennials. Completed disbudding of early Vines; stopped back the longest shoots and pinched off small and spindly bunches and all duplicates, one only being retained to a shoot. Tying to trellis will not be done till the shoots are less brittle and can be handled without risk of breaking off. Syringing of Vines is now discontinued, but abundance of atmospheric moisture is ensured by frequent syringing of walls and floors. Lowest night temperature is now 65°, and we allow a rise from 10° to 15° in the daytime, according to the outside temperature. Potting of stove and bedding plants and putting in more cuttings, including Dahlias, were other of our doings to-day.

FEBRUARY 12.

Disbudded early Peaches, or rather partly so, as we like to go over them about three times, removing about a third of the shoots that are to come away at each time, the reason for this piecemeal disbudding being that the trees shall have time to recover the check necessarily produced by the taking away of such a number of shoots before others are removed. The rule we adopt as to disbudding is simple in the extreme, and consists in rubbing off the weak and badly placed shoots, retaining only vigorous ones, and specially so as to the lower shoots, as it is from these that the trees are constantly as it were being renewed, old branches being cut away as these younger shoots grow up. The fruit being all set, syringing is now regularly done twice a day, and being done with force, we are rarely troubled with fly or red spider. Began to force another vinery—Hamburghs; they will be well syringed twice a day and be closed up very early in the afternoon whenever there is sunshine, and be forced in this way in preference to an undue amount of fire-heat. With plenty of moisture we shall not mind the temperature running up to 90°, but rather welcome it as a fuel economiser. Clearing Strawberry plants in frames of decayed foliage; weeded and rubbed Moss from the surface of the soil; filled up house with plants from frames and those that had set moved into Pine stoves to swell off. Being fine and dry, sowed Sweet Peas, Salsafy, Leeks, and Spinach; clipping hedges, top-dressing trees, and turning gravel in kitchen garden.

FEBRUARY 13.

Being very fine, potted remainder of Pines and renewed plunging material in all compartments of Pine pits; care was taken that the soil was moistened throughout before being shifted, and no more water will be given till fresh roots begin to work in the new soil. Fruiters require water about once a week, and clear manure water is always applied at a temperature of about 90°. First Strawberries began to colour—Viscomtesse Héricart de Thury. This is the best forcer we have ever tried, being of good quality at

this early season, which is a rare occurrence with Strawberries generally. Planted on a west border *Anemones* and *Lianunculus*; the soil has been specially prepared, being deep sandy loam, with a free admixture of well decayed leaf-soil. They are planted in drills a foot apart and 9 inches apart in the row, and are covered to a depth of 2 inches. Planted spare bulbs of *Hyacinthus candicans*, *Jonquils*, miniature *Hyacinths*, and *Tulips* in clumps of from six to nine each in mixed flower borders; turning gravel walks, trenching Celery ground, raked and otherwise prepared ground for sowing of Onions and Parsnips.

FEBRUARY 14.

Another fine spring-like day. Pruned a few Roses, sowed Parsley. Like many others, we have been much troubled the last seasons to keep up a supply, for as fast as it came up it dwindled away again in a most mysterious manner, and yet no insect was visible. The best border and position in the garden has this season been given up to it, but with what result it remains to be seen; soot, lime, and guano all seemed of no avail, and only ordinary manure has this season been used. Trenched up Seakale, selected the largest crowns for forcing, and the smaller for planting again soon as the ground is ready. Cuttings are being made of the straightest pieces broken off the forcing plants; they are from 4 inches to 6 inches long, and are dibbled in a foot apart. The houses have all been well cleaned up, and other indoor work has been potting off *Sempervivum tabolæforme*, *Abutilons*, and *Marguerites*, and putting in more cuttings of variegated *Mesembryanthemums* and of *Mesembryanthemum conspicuum*, a grand flowering plant that seems quite at home as an undergrowth to foliage sub-tropicals or large growing succulents. Looked over Grapes in bottles. Began to disbud early Muscat Vines. Thinned the fruit of Strawberries that were set to six on each plant.

FEBRUARY 16.

Very wet; outside hands cleaned out sheds, washed pots, made Seakale cuttings, made labels, examined root stores, lime-washed pits, made pegs, and pointed Pea sticks and rods for Runner Beans, Dahlias, subtropicals, and Roses. Work in the houses has been putting in cuttings of *Pelargoniums*, Dahlias, Agatheas, *Tropæolums*, and *Petunias*. Potted off Tomatoes and Cucumbers, and made other sowings also of Celery and Capsicums. Emptied rain-water tanks on inside Vine borders. Well watered second Peach house border, and the house is now closed for forcing. Little or no fire-heat will be needed so long as the present mild weather continues. Fumigation with Tobacco paper was done this evening, as a preventive against the attacks of black or green fly.

FEBRUARY 17.

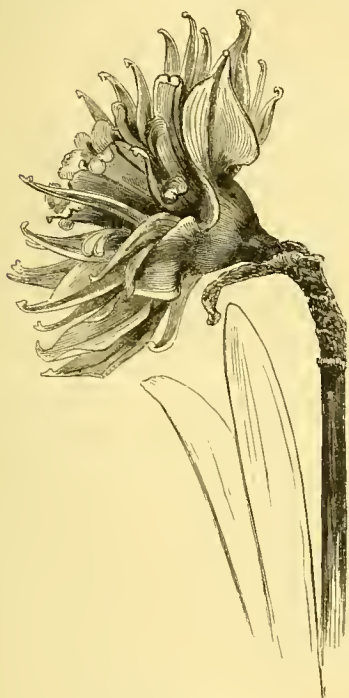
Finer. Having two plots of Brussels Sprouts, and wishing to preserve all for seeding, and being desirous that as little ground as possible shall be occupied with them, the one plot has been lifted with good balls of earth adhering to the plants which have been planted between the rows of the other plot, thus affording ample space for seeding. The ground thus cleared will be marked out for Celery and will be dug out and manured as opportunity offers; one reason for making trenches so early in the season is that the ridges may be utilised for Lettuce, early Potatoes, Cauliflowers, Coleworts, and, in fact, for any kind of vegetable that will mature before the soil is required for earthing up Celery. Cleared dead and decaying leaves from Corled and Cottager's Kale; they hinder and smother the growth of the young sprouts, not to mention their untidy appearance. We have begun using spring Cabbages, and as they are cut the lower leaves that are not taken away with the Cabbage are cut from the stems, so as to make room for the growth of Sprouts, that are oftentimes as valuable as the main crop of Cabbages. Trenching early Broccoli ground, turning gravel on kitchen garden walks, and repairing Box edgings. Transplanted from seed boxes into a cold frame Brussels Sprouts and Cauliflowers; potted seed-

ling Marvel of Peru into 3-inch pots, and pricked out into boxes seedling plants of *Salvia argentea*, *Centaurea candidissima*, and *Wigandia caracasana*. Potted more Seakale for forcing, and placed pots over Rhubarb in the open air—no other covering, this being sufficient to give a supply at least a month before it is ready without such protection, and for our earliest supply we lift the roots and place in Mushroom house or any warm shed. Sowings of Mustard and Cress we make weekly. Parsley, Chervil, Mint, and Tarragon are the herbs most required of us. The first named we manage fairly well the year through from the open ground; seeds of Chervil are sown in boxes for the winter and kept in a frame, and roots of the two last are lifted and potted according to demand.

HANTS.

DAFFODIL RIP VAN WINKLE.

THERE seems some doubt concerning the origin of this pretty little double variety. It may, perhaps, be a double of *N. Pseudo-Narcissus*, just as we sur-



Narcissus Rip Van Winkle

mise *N. eystettensis* (*N. capax*) to be a double form of *N. nanus*. Whatever be its single form, however, the flower alluded to is peculiarly interesting. Each blossom is about 2 inches across, but the flowers now before me are forced ones, and when strongly established outside they may be larger—perhaps, after all, a questionable gain. In colour the flowers are pale greenish yellow—the yellow of the little winter Aconite, and the peculiarity which at once distinguishes this from other double varieties is the intervention of a number of very narrow sharp-pointed segments between the outer guard sepals and the coronal divisions in the centre. Our illustration, which will give an idea of the flower, is exactly natural size. Mr. Hartland, of Temple Hill, Cork, is its discoverer, and I hope he may consent to tell us somewhat of its history. I believe it is one of the survivals of an old Irish garden in the south.

F. W. B.

Large Dog Rose.—I have just measured a common Brier or Dog Rose, and find the stem to be 13 inches in circumference at 6 inches from the ground; it has all the appearance of great age, and grows near and under a Thorn, which in summer it covers with a profusion of whitish Roses. The Brier stands upon very poor soil—in fact, a bed of

sand—but appears to be in vigorous health. Does this suggest that our garden Roses are sometimes overdosed with manure?—A SUBSCRIBER, *Kennett Hall, Newmarket.*

ORCHIDS.

ORCHIDS AT LAKE HOUSE, CHELTENHAM.

AMONG the many choice Orchids now in bloom in the collection of Mr. G. Neville-Wyatt, Lake House, Cheltenham, is a grand plant of *Dendrobium Wardianum*, with one growth bearing thirty-six excellent blooms, and a second growth with several green leaves and fourteen blooms, both growths being made last summer; suspended near this is a grand plant of *D. Findleyanum* (in a small pan) bearing four dozen beautiful flowers; in the next house is a very fine specimen of *Cymbidium Lowianum* bearing five spikes, the strongest having twenty-three blooms on it; associated with it are also some very strong growths of *Dendrobium crassinode* (in very small pans), showing bloom from thirteen nodes. In another house, in a cool shady corner, is a grand batch of *Lælia harpophylla* in pots, and also on blocks; all are flowering freely, some spikes bearing eight large brightly coloured blooms; *Cymbidium eburneum* seems quite at home in this house; many plants of it are showing several spikes of bloom, and the majority have two flowers on a spike. In the next house may be seen a grand batch of the major form of *Odontoglossum pulchellum* forming a charming mass of pure white, sweet-scented flowers that will remain in perfection several weeks; also some very good spikes of *O. Halli*, both the yellow and white-lipped varieties, several fine forms of *Sophranitis grandiflora*, a handsome plant of *Odontoglossum ramosissimum* bearing two beautiful spikes, and several good plants of *O. Edwardsi* just opening their flowers. In the Cattleya house I noticed a lovely plant of *Cattleya chocoensis* bearing several showy blooms—the finest form I have ever seen. Strikingly beautiful, too, were some plants of *Cœlogyne cristata*, especially the Chatsworth variety, some examples of which had as many as eight very large blooms on a spike.

J. C.

WHITE LÆLIA ANCEPS.

WHAT are we coming to? many will say. A year ago a four or five-bulbed plant of this in bloom meant £8 or £10; now, who can say that it would even fetch 8s. or 10s.? You can buy an imported plant much larger for the same price, especially if you like a mass and break it up, as many nurserymen are doubtless doing. Orchids are rather overdone by importers at the present time; too many are coming over; we cannot make room for the new plants, and unfortunately Orchids will not grow if piled up one on the other. As it is, a house judiciously used will only hold on the wires one-third of the number on the stages, and till new growers turn up, importers must imperatively stop for a time, unless they like to keep them all at home. For instance, a grand batch of *Odontoglossum Alexandræ* was "passed" on February 13 in Sander's sale. Prices are down, and even rare things suddenly become a veritable glut in the market. This makes the unthinking afraid to buy; he fancies all are to become as cheap as the commonest. This is an error; he would do better to buy a rare plant when it has come over like *L. anceps* (white) has now, for as sure as he buys, it will rise; it cannot be much lower. Take previous examples. *Cypripedium Spicerianum* from £100 fell headlong to "buyers refusing" (as now in the case of *L. anceps*). It has since steadily risen till a poor weak bit and a bad variety in bloom fetches 15s. or so. Take *Cattleya Gaskelliana*; there was so much as to frighten one of this in 1883; the imports of 1884 were almost *nil*, and fetched much higher figures. A good form of it in bloom in 1884 fetched a long price—£5 5s. for a four-bulbed plant. *Cattleya Trianae* was overdone. Now, when a good variety comes up it is required by all at once. Let those who have room (lucky people) try this white *L. anceps* while it is cheap and any other grand Orchid too. A time will

come (and probably as soon as trade revives) when saved income will come out for pleasure, and the savers will gladly then give much more for what they now can have for almost nothing. All Orchids will share in the advance on their merits; good ones and good varieties of them will soon skip up to higher prices.

D. B. CRAWSHAY.

Cypripedium Spicerianum.—This is one of the most beautiful of all winter-flowering *Cypripediums*, and, what is of equal importance, it is very easily cultivated. About two years ago we bought a very small plant of it. Twelve months ago it produced a few flowers; a little after this time last year it was repotted from a 3-inch to a 6-inch pot. The compost used was loam and charcoal, and after potting it was placed in a warm, moist pit, where it pushed many growths from the sides, and became a very good plant in a few months' time. Lately it bloomed very freely, and now promises to increase its size considerably. It delights in plenty of moisture when making its growth and a temperature of from 70° to 80°. It cannot be classed amongst cool Orchids, but it well repays being kept in warm quarters.—CAMBRIAN.

Varieties of Cattleya Trianae.—Mr. Hardy's gardener (Mr. Hill) has again sent us a varied selection of *Cattleya Trianae* from the richly stocked Orchid houses at Pickering Lodge, Timperley. The colours of these range from rose-pink, as in the *Russeliana* variety, to pure white, save a delicate suggestion of mauve on the lobe of the labellum. The size of all the flowers is remarkable; they average 7 inches across the outspread sepals, which are also very broad. We imagine that Mr. Hardy is particular in weeding out inferior varieties from his collection, judging by the present series. Only one of the varieties is named. This is called *amabilis*, and a really lovely flower it is, having delicately tinted sepals, a rich rose-purple lip, pencilled and striped with white and orange-yellow; it is appropriately named, and is distinct from all the rest. A similarly fine series of varieties of this *Cattleya* has also been sent by Mr. Fowler's gardener (Mr. Elliott), Ashgrove, Pontypool. Some of these are extremely beautiful and remarkable for their large flowers and rich colouring. Two varieties measure over 7 inches across and are admirable in form. *C. Warscewiczii delicata*, one of the loveliest, is soft and very pleasing in colour.

PLANTS IN FLOWER:

Narcissus monophyllus.—Flowers of this Hoop-petticoat *Narcissus* have been sent to us by Mr. Kingsmill, of Eastcott, plucked from bulbs imported from Algiers in 1881. The stems are 5 inches high and the flowers are as fine as any we have seen, and this after exposure to twenty-four hours of heavy rainfall.

Lily of the Valley.—A charming bunch of Lily of the Valley has reached us from Mr. Healey's nursery, North Walsham. Many of the spikes sent carry from sixteen to eighteen flowers, and we are assured that twenty-flowered spikes have been produced this winter on forced plants in this nursery.

Saxifraga Burseriana.—This, the earliest and one of the most beautiful of Saxifrages, is now finely in flower in one of the cold frames at Chiswick; its large pure white flowers, borne on ruddy tinged stalks from 2 inches to 3 inches in height, rendering it an attractive feature at this flowerless season of the year. The rockery, ever interesting, is now rendered more so by the various and beautiful forms of *Snowdrop* now flowering thereon.

Leucopogon Cunninghamii.—This pretty New Holland shrub, sometimes known as *Styphelia parviflora*, is now in flower. It is a very desirable plant in a cool greenhouse, in which it does well in sandy peat. Its neat little Heath-like white flowers are well adapted for use in button-hole bouquets, its own leaves furnishing a fitting green for them, and the stems, though slender, need no wiring. Like all the *Epacridæ*, to which it belongs, the flowers of this useful little *White Beard* are very lasting when cut and placed in water. Being a slow grower, it is best to be somewhat sparing of the knife until it has attained a good size.—A. M., *Cranmore.*

Cyclamen Atkinsi.—Various forms of Atkins's hybrid *Cyclamen* have been sent to us during the week by Mr. Ware. They are all charming little flowers, varying in colour from pure white with a carmine eye to a deep carmine-red. A crowd of such pretty flowers springing from a carpet of deep green foliage is the most beautiful sight one can have in the rock garden at this season. Mr. Ware also sends flowers of the early *Rhododendron præcox*, an indispensable shrub in the open-air garden in spring.

Violets.—Russian and Marie Louise Violets in great perfection are sent by Mr. Chisholm, Oxon Heath Park, Tonbridge, who states that he has quantities equally fine, his custom being to make new plantations every year. Mr. McClure, Hartley Grange, Winchfield, has also sent us lovely flowers of Victoria, Marie Louise, and Neapolitan from plants that have been in bloom in cold pits since September last. They were lifted from the open border and placed in the pits early in that month.

Welsh spring flowers.—Mrs. A. D. Webster sends (February 16) from Llandegai, Bangor, a gathering of early blooms from her garden to show how advanced hardy flowers are in that district. Amongst them are the finest Snowdrops we have ever seen, real Welsh giants with stems from 8 inches to 10 inches high, and carrying unusually large flowers. The variety is the Italian *Galanthus Imperati*. The other flowers include *Erica carnea*, coloured Primroses and Polyanthus, *Aubrietias*, Arabises, winter Aconites, Stocks, *Hellebores*, *Scillas* (*S. sibirica*), *Crocuses*, and *Polyanthus Narcissus*, the variety *italicus*, which is not only very early, but remarkably floriferous.

Early Daffodils.—The earliest form of the bright yellow *Narcissus Pseudo-Narcissus* appears to be one of which Mr. Ware sends us flowers. At first sight one would think it was the Tenby Daffodil (*N. obvallaris*), the flowers being smallish, well formed, and of a uniform yellow. It is, however, sufficiently distinct and handsome; it is quite different in tone from Barr's *pallidus præcox*, which is also in flower. Other bulbous flowers from Tottenham include *Chionodoxa* and *Iris persica*, a lovely flower, one of the oldest exotic bulbs we have in gardens. It is particularly interesting on account of its being the first flower figured in the *Botanical Magazine* in 1789.

Centradenia rosea.—The flowers of this pretty Mexican plant are now opening, and though singly of no great beauty or duration, the profusion with which they are borne over the upper surface of the flat-growing half-pendulous branchlets, and the purplish tinge of the long narrow leaves, especially on the under sides, render it very attractive. It is also particularly useful for table and room decoration, having the merit of growing quickly and healthily in small-sized pots, in which it forms bushy, well-furnished little specimens in one season from early-spring cuttings. Ordinary stove treatment suits it perfectly.—A. M., *Cranmore*.

Lenten Roses (*Hellebores*).—A series of varieties of the Lent flowering *Hellebores* has been sent to us by Mr. Ware, of Tottenham. They possess much quiet beauty, and the form of the flowers of most of them is admirable. Quite a new race is being raised by hybridisers, who work with such kinds as *H. guttatus*, *olympicus*, *colchicus*, and *atrorubens*. The present gathering contains among new hybrids such handsome sorts as Commissioner Benary, white, heavily spotted with purple; and *orientalis punctatus*, rosy purple sepals, spotted at the base. A distinct form of *colchicus*, the finest of all the coloured kinds, is also sent. It is to be hoped that hybridists will continue to improve this class of early spring flowers.

The winter Jasmine.—If anyone wishes to have this Jasmine (*Jasminum nudiflorum*) in perfection for floral decoration, cut the sprays about a foot long before the flower-buds come out. Put them into a deep vase with plenty of water, and every bud will come out much larger and finer than those out of doors. When the flower-buds

are half out, a piece of the stem may be cut off to give them a fresh start. Thus treated they last a fortnight. This Jasmine looks well mixed with sprays of *Cryptomeria elegans*, the most useful and lasting of winter greens, and red *Mahonia* leaves. *Saxifraga Burseriana* has been lovely for a fortnight. Snowdrops are late, but very fine and extra white this season. Christmas Roses are also very large and fine, and have long stalks.—M. E. C., *Auchendrane, Ayr*.

Spring flowers at York.—The following species and varieties of *Crocus* are flowering in the alpine garden in the York Nurseries: *C. Aucheri*, Sieberi, *S. var. pallida*, *Imperati*, *minimus*, Boryi *var. alba*, *alatavicus*, and *longiflorus*. *Hellebores* in flower: *H. niger*, *n. altifolius*, *n. angustifolius* (two forms), *atrorubens*, *colchicus*, *atrovirens*, *corsicus* (*lividus*), *orientalis*, *olympicus*, *caucasicus punctatus*, and *foetidus*. Among other spring flowers are *Colchicum crociflorum*, *Leucojum carpathicum*, *Leontice altaica*, *Anemone blanda*, *Saxifraga Burseriana*, *B. major*, *B. grandiflora*, *Rochelliana*, and *Iberis semperflorans*.

Myrsiphyllum asparagoides.—In addition to the usefulness of the graceful branches of this climber for decorative purposes, for which it is largely grown in some places, particularly in the United States, it bears numerous axillary racemes of Heath-like flowers, green and white, and very fragrant when the sun shines upon them. A large plant of it trained along the rafters in the succulent house at Kew has been in flower for several weeks, and is still thickly clothed with bloom. Grace and elegance more than size or colour constitute the charm of these flowers, or rather of the whole plant when covered with them. As a free-growing climber this plant is deserving of a little space in every conservatory, apart from its serviceable character for greenery to associate with cut flowers. The leaves are not unlike those of *Ruscus androgynus*, but thinner in texture, much darker green, and wavy at the margin. It is a native of South Africa, and properly speaking an *Asparagus*.—B.

The Winter Iris, or Algerian Iris (*I. stylosa*).—The most interesting flowers we have seen during the winter are these, which have flowered freely for a good many weeks past at Munstead. It is delightful to know that this beautiful Algerian plant flowers so well and so long in our mild winters. For several winters past it has flowered abundantly, stopping for a few days, perhaps, in hard weather; but the moment the bad days go the bloom reappears. It grows on a warm border, the soil being light and warm. The habit is very good; tufts of narrow graceful leaves. The flowers being cut in the bud or in the young state open prettily in the house, and last a long time. This is a most important advantage, for by cutting the flowers and putting them in a well-lighted room in dishes of Moss, the flowers are free from danger of the hard weather for the time being. The effect of dishes of Iris treated in this way is quite beautiful—such, indeed, as we have not before seen equalled by any open-air flowers of the midwinter season.

Tagasaste (*Cytisus proliferus*).—A handsome greenhouse shrub with the habit and appearance of the common Genista, a rapid grower and very easy to manage. The whole plant is covered with a soft silky pubescence, and the branches, which are somewhat drooping, bear numerous axillary whorls of cream-coloured, almost white flowers, with a few purplish streaks upon the lip. Although introduced many years ago, this plant does not appear to have been a favourite, and it was lost to cultivation in England till 1879, when large quantities of its seeds were imported by Kew from the Canary Islands, where it is a native, for distribution as a fodder plant in India, Australia, &c. According to the Kew report for 1881, plants of this *Cytisus* grew in Ootacamund to a height of 15 feet in a single year, were well furnished with branches and covered with succulent healthy foliage. Sheep and goats eat it greedily; cattle also eat it, but do not care for it much. It is recommended for cultivation in South Australia,

where drought does not affect it, and where it is already becoming popular as a fodder plant with the squatters; it is also much sought after by squatters in other parts of Australia. The plants are placed about 10 feet apart, are cut down twice or thrice a year, and they last from ten to twenty years. A plant of it is now in flower at Kew.—B.

Spring flowers at Limehouse.—I have, in a window-box, *Iris reticulata* and single and double Snowdrops out now (Feb. 14), and *Leucojum vernum*, *Muscari botryoides*, and *Narcissus minor* in full bud. I have also coming on well in the same box *Scilla sibirica*, *Crocuses* (Sir Walter Scott and Mont Blanc), *Narcissus incomparabilis*, *Hriteleia uniflora*, *Hyacinthus amethystinus*, and *Ixias*. It is an ordinary deal box faced with virgin cork, and has no protection whatever. To keep the plants clean—an important point, I take it, in this smoky atmosphere—I use one of Hughes' aphicides every morning. It takes but a few moments, and gives all the moisture necessary. I intend to obtain the typical form of *I. reticulata*, described in the "English Flower Garden," as being larger, of brighter colour, and possessing a delightful Violet fragrance which the variety *Krelagei* is absolutely without; also *Narcissus minimus*, which would be a welcome addition. I have not one foot of garden, so make the most of my box.—W. J. CHAPMAN.

Coffee shrubs.—The beauty of the shrub that yields the coffee of commerce is well shown by several plants of it now heavily laden with their bright Cherry-like berries in the Palm house at Kew. The new kind of Coffee, viz., *C. liberica*, is also represented in the same house by several strong healthy specimens, which, however, have not yet borne any berries in this country. A third species, named *C. bengalensis*, is deserving of attention on account of its large pure white flowers. It forms a dwarf compact shrub 2 feet or 3 feet in height, with large papery crumpled leaves, which generally fall off in autumn, when the plant should be allowed to rest. Early in spring the flowers appear at the extremity of the twiggy branches, and remain fresh upon the plant for several days. It is now flowering in the Begonia house at Kew. A fourth species, *C. travancorensis*, has smaller flowers and leaves, and is Jasmine-scented; it also is cultivated at Kew. When planted out in a warm house and allowed to retain its full dimensions (the largest of the Kew specimens is 10 feet high), *C. arabica*, the Arabian Coffee, forms a handsome shrub, which, in addition to the beauty of its berries, has much interest, because of its value as an important economical plant.—B.

Flowers in bloom in Messrs. Barr's bulb grounds at Tooting.—*Crocus sulphureus*, *s. striatus*, Sieberi, *Imperati*, *susianus*, *vitellinus*, *Orphanides*, several varieties of *biflorus*, *alatavicus*, *biflorus striatus*, *Weldeni*, *Weldeni violaceus*, *gargaricus*, *chrysanthus*, *c. fuscus-tinctus*, *c. albus*, *suaveolens*, and *levigatus*; this last has been flowering since October. Besides the foregoing there are several other species not yet named. Of *Helleborus* there are several varieties of the Christmas Rose, and of *orientalis*, the type, and its many shades from almost white to deep rose and rose-purple; also *atrorubens* of the *Botanical Magazine*, *guttatus*, *g. sub-punctatus*, *olympicus*, *o. major*, F. C. Heinemann, *pallidus*, *caucasicus*, *punctatus*, *p. roseus*, *lividescens*, *antiquorum*, *Olban Otto*, *colchicus*, *c. coccineus*, and *sulphureus*, &c. I think at last I have found *atrorubens* of Waldstein and Kitaibel. Besides the foregoing there are also some beautiful varieties the names of which are not yet fixed, also many beautiful seedlings. Of *viridis* there are the following: The type, *Bocconi*, *purpureascens*, *dumetorum*, *intermedius*, *laxus*, *cyclophyllus*, *Columbine*, *torquatus*, *graveolens*, *lividus*, and *cupreus*; many others, too, of *orientalis* and *viridis* will soon be in flower. Of *Irises stylosa*, *Histrio*, and *reticulata Regeli* are in bloom; and of *Cyclamen ibericum* and *Atkinsi*; also *Scilla bifolia*, *Leucojum vernum*, *Narcissus pallidus præcox*, *Galanthus nivalis*, *latifolius*, *Elwesi*, *Imperati* (true), and *plicatus*, and blue and red *Hepaticas*.—B.

TREES AND SHRUBS.

TREES FOR VILLA GARDENS.

IN grounds of limited extent trees are often planted which when fully developed are too large for the places assigned to them. The skilful planter should therefore use such kinds as will be in keeping with the size and extent of the grounds and also with the style of the mansion. For such places the following, under ordinary circumstances, will be found suitable, viz., *Torreya myristica* from California, where it is said to attain a height of from 20 feet to 40 feet. In this country it assumes a broad, spreading habit of growth; therefore I have found it beneficial to nip out the buds at the points of the terminal side branches, in order to encourage a more upright growth. It is a distinct and pretty tree, and one which thrives in good soil of ordinary texture, provided it is thoroughly drained and the situation not too much exposed. The leaves are rather long and flat, without any midrib; their upper surface is light green. *Taxus baccata variegata* (the Gold-striped Yew) is well worth a place in small collections. It thrives best in rich loamy soil resting upon clay well broken up and not too much exposed to the heat of the sun, as in that case the leaves are apt to be burnt, more especially where the subsoil is of a warm, gravelly, or sandy character. *Fitzroya patagonica* is rather a tender tree, but where it does stand our winters it is one of the most graceful with which I am acquainted. I have found it to thrive best on a good, deep, loamy soil resting upon a clayey subsoil well broken up on a north exposure and shaded from the morning and noon-day sun. When the side branches are pointed or slightly cut back they produce a number of lateral twigs, which hang down in a drooping direction and enhance very much the beauty of the tree. It is easily propagated by means of cuttings, and I have also found well-established trees to produce cones quite freely.

Cephalotaxus fortunei is said to form in China a fine ornamental tree from 40 feet to 60 feet in height. In this country it prefers a rather sheltered situation, but if confined it is apt to get drawn up. Its branches are rather slender and pendulous. It thrives on soil of ordinary texture, including well decomposed peat bog. *Arthrotaxus selaginoides* is a native of Van Diemen's Land, and in this country thrives in rich, friable, well-drained soil. It should be moderately sheltered, but not confined, otherwise it gets drawn. Its leaves, which are fleshy and imbricated, lie close to the branches. It is well worthy of a place in all grounds of limited extent where contrast and variety are desirable. *Biota aurea* is a pretty little globular plant, unrivalled where a small bush is required in order to give contrast and variety. In spring and early summer it assumes a pretty golden colour. It thrives best on good rich soil overlying a clayey subsoil. It is easily propagated by means of cuttings. *Juniperus chinensis* is a pretty little tree, and the hardiest of the tribe to which it belongs. It thrives on all soils of ordinary texture, and even in exposed situations. Its shape is strictly conical, and in spring when loaded with its golden male flowers the effect produced by it is grand. For a Grass lawn of small extent it cannot

be surpassed. The *Retinosporas* afford a great variety, both of shape and colour, and as they are all hardy, they are admirably adapted for villa gardens.

AMONG DECIDUOUS TREES suitable for villa planting the red-flowering Horse Chestnut should always have a place. It forms a close, compact head, makes a fine standard, and produces its charming flowers about the middle of June. The red-flowered *Pavia* (*P. rubra*) is another fine small tree for such situations; it produces its blossoms from the middle of July till the beginning of August. Both these trees thrive best in a moderately sheltered situation and on good rich, deep soil. The small-leaved Lime (*Tilia europæa microphylla*) is another beautiful tree, which grows from about 20 feet to 30 feet in height; it produces abundance of pretty cream-coloured flowers, grows in a great variety of soils, including peat bog, and deserves to be cultivated to a greater extent than it has hitherto been. The weeping Birch and Trembling Poplar (*P. tremula*) are both hardy native trees that will grow in any situation, and both are highly ornamental. These, with some of the finer varieties of Thorn, Holly, Laburnum, double-flowering Cher-

created in the first season after this experiment. I should decidedly recommend that half a dozen good compact old nests be secured after flight time. These, tied by a knowing hand in the top-most crutches of the trees, about the 20th of February, will add tenfold to the attraction. Of course the said nests must be carefully taken down and preserved and tied in their places in spring. A couple of circular bands of soft string interwoven judiciously through the texture of the nest will effect this object. The birds must never have their liberty. In summer a little fruit and Potatoes, and in autumn Walnuts and Acorns (cut up) will form an agreeable change in their diet." Other correspondents have recommended the transference of rooks' eggs to the nests of magpies or jackdaws. If anyone has experience of a better method than these, we shall be glad to insert a description of it.—ED.]

LEPTOSPERMUM LANIGERUM IN WALES.

ONE of the keenest pleasures we have known in gardens was seeing this Australian bush flowering in the open air at Penrhos three years ago. It was on the lawn long established, old, and in form of white-cupped blossom, more resembling such northern types as the Plum than the distinct shrubs which Australia usually contributes to our gardens. We regard it as one of the most valuable shrubs from that region that we have seen tried in the open air. The position of Penrhos, near Holyhead, is windswept indeed, but it enjoys the usual advantages in other respects of sea-shore places. We believe that this shrub will be found to thrive over a very large area of the coast country in the United Kingdom. Our illustration is from a photograph sent us by the late Colonel Stanley, of Penrhos, and it shows fairly well the general effect of the plant when in bloom. It will be seen that this shrub has a good pictu-



Bush of *Leptospermum lanigerum* on the lawn at Penrhos.

ries, Mountain Ash, dwarf golden Oak, Service tree, &c., are all well worthy of the attention of planters who may have in hand the embellishment of new grounds of small extent.

J. B. WEBSTER.

How to form a rookery.—What is the best way to form a rookery? We are on high ground, and have plenty of trees, but they are not very high ones.—A. B. [The following particulars were given by a correspondent in the *Field* some years ago, and others who have tried the plan have said that it proved successful: "Let seven or eight young ones be taken from the nest and brought up by hand, their food being soaked dog biscuit, rough meat (but not stale or salted), worms, grubs, and a little bruised hempseed. When they can feed themselves they must ultimately be put in a wire aviary with perches kept clean, but not handled by any means from first to last. Supply them with soft water. About a fortnight before the nesting time commences (in the following spring) these birds must be kept rather short of food during the day, and placed under the trees or under baskets, so inclosed that the wild birds cannot possibly see them, as this event would mar the project *in toto*. The continual cawing of the tame birds is all that is aimed at. I have seen a rookery of sixty nests

resque habit, and plenty of light and shade in it. Those who wish to see what the flower is closely examined will find it figured in *THE GARDEN* of January 8, 1881. Can any reader say where good seeds of this may be had?—ED.]

Chimonanthus fragrans.—Too much cannot be said in favour of this really useful wall shrub. Some days ago when passing through Lord Arthur Russell's garden at Shiere I came upon a very fine specimen of it covering some 60 superficial feet of wall; it was literally a mass of flowers, and the fragrance emitted by them was distinctly perceptible for several yards around. I was informed that it flowered freely every year. When cut the flowers last many days in perfection, two or three small twigs being sufficient to diffuse a pleasant odour in a large room, and the least bit is necessary for the same purpose in a bouquet.—C. D.

Welcombe Woods.—From Clopton a few green fields take us up to Welcombe. This little hill of Welcombe, and the dingles with their scattered Thorns, some of which are so old that it is asserted Shakespeare must actually have seen them as young bushes, are classic. For that Shakespeare loved the spot is one of the few facts that are known certainly about him. Very lovely

do the Welcombe Woods look in spring, clouds of wild Cherry blossom making a rampart of white against the trees all flushing with tender green. The far-stretching view from the hill-top is a typical one of this placid Old World bit of England. The Avon's course is marked by the soft Willows in the flat meadows. Stratford nestles below the hill, its church-spire rising clear and sharp above the trees. Beyond it the eye wanders over the valley, the "Folden" of Warwickshire, with its long lines of Elms, intersecting hedgerows, gentle undulations, distant villages, flowery orchards, and purple-brown woods, up to the blue wall of the Cotswold Hills which shut in the horizon. Even in Shakespeare's time (1615) there was danger of Welcombe being inclosed, and it is pleasant to know that the immortal bard assisted the corporation of Stratford in resisting the inclosure, and that they were successful.—F. W. B.

GARDEN TOPICS.

Scientific Committee.—What are the qualifications necessary to become a member of the Royal Horticultural Society's "scientific committee," and what are the duties of the members? It is rather a remarkable fact that up till the present time no what may be called practical gardeners have entered the circle except Mr. F. W. Burbidge, whose name, I see, has been added to the list. The other names are those of good men in their way, but their "horticultural" qualifications are best known to themselves. Astronomy, geography, the army and navy, theology, medicine, and moral philosophy are abundantly represented, but there are no gardeners, save the one mentioned and one or two botanical men. Can this be because there never have been any gardeners fit to sit at the scientific board, and that there are none sufficiently qualified to sit there even now? Where has the science of gardening come from in times past, and where is it likely to come from in the future? What is the record of the scientific committee? The last question is answered by a cipher. It seems to be this way, as a member of the subordinate floral and fruit committees put it on a certain occasion when the peculiar constitution of the committee was broached, "Well, you see, we do not want them and they do not want us. We do all the business; they do not do anybody any harm, and nobody minds them!" There never was a more striking example of "natural selection" than is afforded by the list of the Royal Horticultural Society's committees.

The Orchid mania.—There are some signs that this is subsiding; the dispersion of many notable collections of late has been a common thing; trade is bad, and domestic expenses are being curtailed in almost all establishments. Another reason is that people are getting accustomed to Orchids and do not value them so highly as they did a few years ago; and last, but not least, the cost of their culture is being looked into more accurately, while it is found that quite as much, if not more, satisfaction and pleasure may be got from the careful culture of our numerous hardy flowers, which anybody can grow and enjoy without the aid of a hothouse or much attention. There can be no question about the fact of hardy flower culture becoming the most popular in this country, because it is a phase of gardening adapted to the climate and everybody's tastes and circumstances. One would hardly feel justified in recommending anyone to grow Orchids on an extensive scale, but there need not be the same hesitation in advising them to grow hardy flowers, if only a few varieties. It is one of the healthiest signs of the times that so much judicious appreciation of these is now shown by cultivators of all degrees.

Nurserymen's prices.—In reply to "Nurseryman," I have only to say that in one of the largest nurseries in the midlands P. austriaca is quoted at 30s. per 100, 18 inches to 24 inches high, and in another nursery equally well known at 27s. per 100, 9 inches to 12 inches high; in both cases the trees are guaranteed to have been trans-

planted at least twice. I have seen both, and they are both good.

Botanical Gardens, Manchester.—Mr. Bruce Findlay is one of the most energetic of curators and successful of gardeners, and he has done more than almost any other man to develop flower shows and showing, but when he asks for aid to protect the old specimens that inhabit his exhibition house, when they have to be removed "for the great annual display at Whitsuntide," on the plea that giving grand prizes for Orchids and other exotics is done with the object of determining "the value of the principles on which an extended cultivation of the soil depends," and is associated with our food and wealth supplies, he tries our patience just a trifle too much. We do not suppose agriculture in Lancashire ever entered into the heads of the directors of the Manchester Botanical Gardens till last week, and it is unfortunate that they should now make an appeal on that ground. What visitor who sauntered through the mazes of the tent or the grand conservatory at Manchester on a show day ever guessed that all the grand display was promoted to encourage the culture of corn, Potatoes, Turnips, or Mangolds? Many flattering reports of the Manchester shows have been written for the gardening and other papers, but none of us have ever yet thought of crediting them before to the farming interest. If Mr. Findlay's preposition is granted, we shall have the directors of the Manchester Pomona Gardens, where the monkeys, parrots, &c., are shown, appealing for aid on the plea that they have been determining the value of the principles on which the breeding of cattle depends. I hope Mr. Findlay's appeal will be responded to in the right quarter, but let the saddle be put on the right horse. Horticulture was the parent of agriculture, but it discharged its obligations to its offspring long ago.

Kew gardeners.—We have known some of the best men who have served at Kew, and have been struck with the fact that they have, as a rule, been above the average in horticultural knowledge and intelligence, and some of them have made good practical gardeners, but the latter were men who were something more than young men just out of their time or improvers when they entered Kew. The kind of duties that fit a man to conduct a private garden are not to be learned there. It is a good place for such a man to spend a couple of years in, but that is sufficient. For situations in the colonies and the like Kew men may answer well enough, but for the Tea plantations in India and charges of that kind, now so much sought after, practical young Scotch gardeners are preferred before all others—we might say exclusively. A member of a great firm, which engages most of the men for such situations, told the writer this not long ago, when he happened to point out, in connection with an appointment of that kind, that the difference between English and Scotch gardeners was now more imaginary than real. Seven young Scotchmen from private gardens were then on the point of departure, the second or third batch within a short period. There are no duties connected with the culture of fruits and vegetables at Kew to fit a man for the management of these in a private garden, and much of the flower culture there is useless to him. The two spheres are entirely different, and a Kew-bred gardener is like a fish out of the water when he enters a private garden for the first time. His knowledge of botany and physiology comes in useful to him anywhere, but he has to learn practical gardening over again.

Chiswick.—Is Chiswick an experimental garden, or a market garden, or both? I notice from the report that the last year's income of the garden has been "much less," because the Apple and Pear crops had been a failure, and the Grapes had not sold so well as usual. It is a pity such a garden should have to depend on such chances, and it might be asked why Chiswick grows such crops for market purposes. What it has wanted with such a huge vinery so long is a question many people have asked. It is certainly not needed for experimental purposes, and it has not been a suc-

cess in a commercial sense. It is there, however, and having served its turn for Grapes, it might now be employed for experimental purposes for other fruits. What a grand house to test standard trees of Figs, Peaches, and Oranges, and other fruits in still finding room for as many Vines as need to be there. An experimental garden that is expected to be self-supporting or partly so should not be too extensive.

Asphalte walks.—"T. B.'s" hostility to these, and his suggestion of personal infirmities on the part of those who can put up with them, suggests the suspicion that in his experiences of them, he has been "tarred," if not "feathered," at some time or other, and never forgotten the event. His diatribes will prevent no one from making them who have ever seen them properly made. There are those who even put up with them in flower gardens. If I mistake not, in the costly Italian garden laid out in front of Sir John Browne's fine mansion the whole of the walks are asphalte, and present no great incongruity, and are not in the least offensive. They are all that has been said about them for kitchen gardens, and "T. B.'s" description is entirely misleading.
J. S. W.

INDOOR GARDEN.

THE CAPE HOUSE AT KEW.

FREQUENT reference to this house and its contents has led some of our readers to ask for information as to the character of such a house and of the plants for which it is designed. It is only in such establishments as Kew that a house for plants that are natives of the Cape of Good Hope exclusively would be considered desirable, a geographical arrangement of the collections, as complete as the requirements of the plants will admit of, being there looked upon as interesting to the botanical student. In the Cape house at Kew the collections of South African Heaths, Mesembryanthemums, Pelargoniums, bulbous plants, &c., are either permanently grown, or are brought into it from private frames or houses when in flower. But in addition to the strictly African plants, others not African are not unfrequently placed in this house when in flower, whilst a few, such as Correas, several interesting species of Epacris, and various other botanical plants, are grown along with the Cape plants. These exceptions are made owing to the favourable conditions which this house possesses for them. It is also not unusual to see tender or rare herbaceous plants in the Cape house at Kew, where they are placed in the interest of the public during their flowering period. There is no fear of mistakes being made in regard to the native countries of such plants, as their labels almost invariably have the precise country of each marked upon them. Notwithstanding this, a note in the papers on such plants when seen in the Cape house is sometimes apt to mislead. For instance, Narcissus monophyllus, noted in THE GARDEN as being in flower in this house at Kew, led a correspondent to infer that this Narcissus was a Cape plant, and therefore required the same kind of treatment as is recommended for Cape bulbs proper. At Kew the Cape house is a general exhibition house for all kinds of cool bulbous plants which are grown in private houses and brought into this house when in bloom.

The late Mr. Joad had, however, a Cape house for bulbs. Instead of stages the interior of his bulb house was filled with beds, a central one and one all round the sides. These beds were as high as and occupied positions similar to those of ordinary stages, and were supported by brick walls. The central bed was filled with strong loamy soil in which all the more robust and safest bulbs were planted, generally in groups. The side beds were divided into compartments by means of slate or bricks, not built in, but merely placed so that they could be removed as the requirements of the plants might demand. In each compartment, usually about a foot wide, one kind of bulb was planted in the soil most suitable for it. For the smaller and most delicate bulbs Mr. Joad used

a very sandy compost. Being well drained, the beds could be kept perfectly dry by withholding water, whilst during their most active period of growth water was supplied in more or less abundance according to the wants of the plants. The house was of the usual span-roofed form, with the side lights fixed as ventilators, and a lantern ventilator on the angle of the roof. Mr. Joad also grew many bulbous plants in frames, all of them planted out, and although, as he himself admitted, he was baffled now and then by some few of his bulbs, his success in the cultivation of the majority

as that provided for his bulbs by Mr. Joad is not very great; one might almost say it would be covered in a few years by the sums expended yearly in filling up large gaps made in bulb collections under the prevailing method of treatment. In such a house as Mr. Joad's we might have Freesias, Ixias, Tritonias, Sparaxis, Babianas, Gladioli, Watsonias, and a host of other beautiful bulbous plants which flower early in the year, but which are seldom seen in satisfactory condition when kept in pots or when grown out of doors. There can be no question that the

a change to cold frosty weather, as is by no means unlikely, that it will be difficult to protect these forward growths from injury.

There is a general opinion amongst those most conversant with bulbous plants and their cultivation that the bulbs should be allowed to remain in the ground the whole year, and that if once we can get over the difficulty presented by our wet autumns and winters and late spring frosts, we may cultivate successfully in our climate any bulbous plant found at the Cape. If, however, the only way over this difficulty should be by the adoption of a plan similar to that of Mr. Joad, the cost of building such houses as above described would be as nothing compared with what would be gained.

B.

POSOQUERIA FORMOSA.

IN the Tropics this plant is much more attractive in appearance than it ever assumes in our stoves, resembling in this respect a considerable number of its relations, all included in the large order Rubiaceæ. The genus *Posoqueria* itself is represented by a dozen species, all of them natives of the South American forest lands, where, clothed in their terminal bunches of large trumpet-shaped white, rose, or yellow sweet-scented flowers, they assume the proportions of large shrubs, and are very ornamental. It would not be difficult to mention here a whole host of plants of this family which have been introduced into English gardens as beautiful flowering plants, but which have failed to justify under artificial treatment the high opinions formed of them when growing wild. To this category belongs the plant, flowers of which are here represented. It was introduced by M. Van Houtte, and distributed as "a very fine stove plant from the Caraccas with long white flowers." It grows at a high elevation, and when fully developed is 20 feet in height. Its leaves are Laurel-like, dark green, wavy, and its flowers are 4 inches long, pure white, of firm substance, and very fragrant. Possibly failure in the management of this plant has been the result of subjecting it to a higher temperature than it enjoys when wild. If we could succeed with it in our warm greenhouses, its useful qualities would render it a most desirable garden plant, but it must be confessed that hitherto neither it nor other introduced *Posoquerias* have proved satisfactory when grown as stove plants.

B.



Posoqueria formosa (natural size).

of bulbous plants was most marked. I never met with anything like it elsewhere. Little or no fire-heat is needed for bulbs treated in the above manner.

The great difficulty with which we have to contend in the cultivation of Cape bulbs out of doors is the excessive moisture of our autumns and winters and the changeable character of our springs. Herr Max Leichtlin grows bulbous plants much better than we can in England, owing to the more favourable conditions in regard to water and cold springs that prevail in Baden-Baden, and notwithstanding the severity of the winters there as compared with ours. The cost of such a structure

exposure to the air of many bulbs is often highly injurious to them, whilst when kept in pots the cost of management is quite as great, perhaps greater than the cost of such a system as that adopted by Mr. Joad. When left in the ground out-of-doors great danger of losses through wet or late spring frosts cannot well be avoided. At Kew an attempt at out-door management for bulbous plants, chiefly those from the Cape, is now being made. It is too soon to pass judgment upon it, as the bulbs were only planted last spring, but owing to the warmth of the last few weeks, such plants as *Gladiolus*, *Watsonias*, *Ixias*, &c., are already well above ground, so that should we have

Centropogon Lucyanus.—I seek to know, and I cannot find or learn the information: (1) the native country, (2) the year of introduction, and (3) the treatment which this plant requires. It naturally belongs to the *Lobeliaceæ*, as its characters indicate. The acrid milk, moreover, is a further evidence of the Natural Order.—P. I.

** According to the *Revue Horticole* (1868, p. 291), this plant was the result of fertilising *C. fastuosus* with pollen from *Siphocampylus betulifolius*, and was named in honour of M. Lucy, at that time president of the Horticultural Society of Marseilles. I am unable to find any information as to what plant the name *C. fastuosus* refers. There are no specimens in the Kew herbarium under that name, no figure of it is recorded, nor does the name occur in any botanical work to which I have referred except in "Steudel's Nomenclator," where the name occurs without any mention of the country of which the plant is a native. *Siphocampylus betulifolius* is very distinct from the supposed hybrid *C. Lucyanus*, of which it is said to be the male parent. Some time ago it was suggested by "F. W. B." that the hybrid origin of this plant was open to grave doubt, and that from its close resemblance to the figure in the *Botanical Magazine*, t. 225, it was not unlikely that *C. Lucyanus* was an old friend with a new name. On turning over the specimens of *C. surinamensis* (to which the figure in question refers) in the Kew herbarium, I found no difficulty in agreeing with "F. W. B." as to the identity of some of the forms of this somewhat variable plant with the popular winter-

flowering plant known as *C. Lucyanus*. Probably the raiser of the latter has made some mistake as to the source from whence his seeds of it were obtained. Such mistakes are made even now-a-days, and several of them have been corrected in the pages of *THE GARDEN*. At all events, the resemblance between *C. surinamensis* and *C. Lucyanus* is so very close, that there seems no good reason for considering them distinct kinds. Has any one of your readers the true *C. surinamensis*, as distinguished from *C. Lucyanus*, in cultivation? It is a native of Trinidad, Venezuela, New Grenada, Guiana, Brazil, &c., from whence some of our Orchid collectors might easily forward seeds, as the plant is most likely cultivated in gardens in various parts of South America. The figure in the *Botanical Magazine* does only scant justice to *C. surinamensis*, as, according to descriptions, the flowers are bright crimson, with a yellowish mouth. For the cultivation of *C. Lucyanus*, see *GARDEN*, Vol. XVIII, p. 483—B.

Chinese Primulas—Mr. Hendrick's interesting paper in *THE GARDEN* last week (p. 126) called to my remembrance the grand display of these flowers there is at present in the Priory Gardens at Warwick. They are one of Mr. Greenfield's specialties, and he has been steadily improving his strain for the last ten years by the selection of the best flowers from which to save seed and by hybridising. In circumference of flower and thickness of petal some of his varieties are as good as anything that has yet been shown. But size and substance are not the only things aimed at; conjoined with these are the prettiest rippling, crimpling edges imaginable. Some are not quite white, but are suffused with a pinky blush, which somehow has a trace of a livid hue; but this is to be hypercritical. Gardeners should, as a rule, I think, save their own *Primula* seed. It would be an interesting occupation for what is frequently called the "dead season."—M. C.

GARDEN DESTROYERS.

PLANT PESTS AND INSECTICIDES.

AT the fortnightly meeting of the Manchester Horticultural Improvement Society held the other evening, Mr. E. Griffiths Hughes read a paper on insecticides. All genuine insecticides, he said, ought to be so effective as to dispel any idea of failure when such preparations are applied in a proper manner. When carrying out his experiments in the production of Fir tree oil he made the Manchester water the standard of the quality of water suitable for the preparation of washes to be used for cleansing plants, and, therefore, prepared the insecticide accordingly, and it is pretty well known that all preparations which are suitable for cleansing the foliage of plants should have an alkaline reaction in quantity sufficient not to injure the foliage or the colour of the petals of flowers. He succeeded admirably so far, and completed his preparation in every particular, so as to produce an insecticide which should answer every purpose required, and be a boon to the horticulturist. But when he sent it out as a perfect article he soon found that the water used in different parts of the country varied so considerably that when mixed with the insecticide it quite altered its character and usefulness, and thereby brought about differences of opinion as to its real value. It was important that this should be well understood, for so long as water which is hard and contains lime and other salts is used in the preparation of washes having an alkaline reaction, so long will the operator be subject to failure in the cleansing of his plants, and also run a great risk of having the foliage spotted or otherwise damaged. It is not generally known that spring water is not quite so good for general horticultural purposes before it is boiled as it is afterwards, but such is the case, as for purposes of cleansing and mixing with insecticides there exists a very wide and important difference between the two, and he would recommend that all the water used for such purposes be taken from the boiler or hot-water pipes, or otherwise boiled, and be used when cool.

Uniform results might then be expected. Turning now to the means of destroying insects which infest both hard and soft-wooded plants, he said that a Vine house cannot be cleared of the mealy bug unless persistent attention be given to it, and the Vine itself while dormant subjected to an application of insecticide made nearly double the strength of that used when it is in full leaf. In houses other than those for Vines the same persistent treatment should be followed, and the greasy exudations of the bug which are deposited upon the foliage and stems of the growing plants should be removed by insecticides applied with a small brush. For soft-wooded and quick-growing plants a comparatively weak solution only is required, provided the application be made in the evening after sunset, or in the very early morning. The shading of plants under glass from the direct action of the sun's rays will assist very materially in keeping down insects. After observing that petroleum oil when made soluble in water does not in his opinion possess any property which can make it valuable as an insecticide, he said that in Tobacco and many of its preparations will be found a very useful and efficient insect destroyer when applied in the form of smoke. For destroying caterpillars on Gooseberry and Currant bushes there is no better or cheaper remedy than the powder of white Hellebore. In conclusion he said that as to vermin in glass houses, the frequent disturbance of the nests and breeding haunts is the most effectual method of dealing with them, for however many of the stray ones may be killed, by the aid of the most approved appliances, their total extinction will only be attained by doing away with that for which they live, viz., the facility for propagating their species.

BOOKS.

YE NARCISSUS OR DAFFODYL.*

It is to be regretted that Messrs. Barr & Son, whose enterprise in issuing a useful handbook on the Narcissus is to be commended, should have thought well to deface their title-page and cover by the affectation of a sham "old English" treatment, a frivolity debasing to a useful book, and irritating to those who look to Mr. Barr and his Narcissus-learned colleague, whose hand we trace in many of the pages, for sound and serious information. And further, that the blank spaces occurring before and after the chapters, where the eye of the student would willingly have paused for a moment's rest, should have been filled with so lavish and heterogeneous a collection of head and tail-pieces. Especially disastrous is the effect of an ornament (?) looking something like a cast-iron drawing-room fender newly blacked, that recurs with painful regularity at the head of every left-hand page, standing out, as it does, with a startling blackness that makes the otherwise well-printed page of type and woodcuts look dim and pale.

A portrait of John Parkinson, a reproduction of a coarse, but vigorous woodcut of his time (the early part of the 17th century), is interesting and appropriate, it being from his folio work "*Paradisus Terrestris*," that we know how old a favourite the Daffodil is in English gardens. Written more than 250 years ago, it contains a description and figures of nearly 100 varieties. The instructive part of Mr. Barr's manual begins with the lecture delivered by Mr. Burbidge in April, 1884, at the Daffodil conference convened by the Royal Horticultural Society, which lecture the many lovers of Daffodils then assembled will well remember, and will be glad to possess in its present convenient form. It gives within a few pages a complete account of their history, classification, and culture, with a clear table of the known species, followed by a list of the type hybrids and their parentage. Then we have a general survey of the many newer garden varieties, mainly the result of the labours of Backhouse and Leeds, and still more recently of the Rev. J. G. Nelson, with the regret that in

* "*Ye Narcissus or Daffodyl*," Barr & Son, King Street, Covent Garden.

all these cases there are no written records left for the guidance of future hybridisers. On this subject Mr. Barr gives us a valuable chapter from the experience of the Rev. A. Rawson, the result of whose observations would save an intending hybridiser many years of experimental groping.

The latter part of the book contains a carefully arranged list of Narcissi, including the types and best garden kinds, under the amended nomenclature decided on by the conference committee. This may be considered as a complete list of Narcissi as now grown, and forms a useful and compendious reference. A woodcut at the head of each main group gives additional clearness. In his share of compiling and issuing the present handbook Mr. Barr may be congratulated on a practically useful addition to the results of those years of labour that have already won him the gratitude of all lovers of Daffodils.

ORCHIDS OF NEW ENGLAND.*

THIS delightfully written handbook will be valued by all who are interested either in the structure or cultivation of the New England terrestrial Orchids. It is illustrated by forty-nine carefully got up engravings in which nearly all the Orchids treated of are portrayed. The frontispiece is a life-like illustration of the showy Lady's Slipper (*Cypripedium spectabile*), this being followed up throughout the work by others of *C. Calceolus*, *C. acule*, *C. arietinum*, and *C. parviflorum*. Considerable attention is given in the work to popular names; thus we are told that *C. acule* is perhaps better known as "Moccasin Flower." Regarding the cultivation of this plant, we in England have been labouring under a false impression, for we are here told that it is most often met with where Pines have fallen. "It seems to have a great fondness for decaying wood, and I have often seen a whole row perched like birds along a crumbling log." The downy or yellow Lady's Slipper (*C. pubescens*) rejoices in the pretty local name of "Whip-poor-Will Shoe," and we are also told that the far-fetched popular name of Ram's-head Lady's Slipper given to *C. arietinum* is derived from the protuberant lip, which has a slight resemblance to a nose, and that the curving petals may be fancied to represent the animal's horns. A very accurate figure of our rare British *Spiranthes* (*S. Romanzoviana*) is given along with that of *S. graminea*, and the differences existing between it and *S. cernua* (with which it is frequently confounded by British botanists) are also well defined. Others treated of are fifteen species of *Habenaria*, few of which are, however, suited for the climate of this country; five species of *Spiranthes*, including our two native plants, *S. autumnalis* and *S. Romanzoviana*; *Goodyera repens* and *G. pubescens*, *Calypso borealis*, &c. Many other rare and beautiful species are described in this work to which we must refer our readers for much interesting information relative to the indigenous Orchids of New England, many of which have been cultivated in and found to be quite suited for our climate. A very full and complete index, a comparative list showing the range of each species, and a bibliography add to the usefulness of the work as a book of reference.

A. D. WEBSTER.

Young gardeners—I feel sure that many head gardeners will confirm the remarks in *THE GARDEN* (p. 99) as to the difficulty of getting young men with a good general knowledge of kitchen gardening, forest, and ornamental trees, or hardy fruits; in fact it is rare that an opportunity is afforded of acquiring such knowledge. Young men, thoroughly in earnest in trying to get experience to fit them to take charge of a garden, should spend at least a year in the market fruit gardens in Kent, or in the vegetable gardens that supply Covent Garden. The knowledge gained at Kew is, doubtless, in its way valuable, but that gained in the way I have just indicated is still more so. Garden management to be successful

* "*The Orchids of New England*," A popular monograph by Henry Baldwin. John Wiley & Sons, New York.

now-a-days must show good results, and where one gardener is required for such duties as are learned at Kew a hundred are needed to carry on the homelier and certainly more useful branches of ordinary gardening.—J. GROOM, *Gosport*.

FERNS.

BEST CULTIVATED FERNS.

(Continued from Vol. LXIV., p. 353.)

PHLEBODIUM.—This is one of the several groups into which the extensive genus *Polypodium* has been sub-divided. Although in general aspect

thumb, though seen on the surface, are also of subterranean habit and have the property of extending underground to very long distances, with articulated fronds disposed upon them at short intervals. *Phlebodiums* may also be used with advantage in hanging baskets of large dimensions, either by themselves or intermixed with other Ferns with finer foliage, and also for covering dead Tree Fern stems. Thus grown, their thick, chaffy rhizomes, equal in size to those of the Hare's-foot Fern (*Davallia canariensis*), show themselves off to perfection, the whiteness of the chaffy scales with which their extremities are densely clothed being apparent. The value of this

compact plants. Being evergreen and strong growers, all the *Phlebodiums* require substantial food; a mixture consisting of about equal proportions of fibrous peat, loam, and silver sand suits them best. They must also receive a liberal supply of water at the roots while growing, and during that time they will also derive great benefit from occasional waterings with weak liquid manure.

P. AUREUM.—This may be fairly regarded as the typical species of the group, and the one to which the others appear to be more or less closely related. It possesses a very wide range of habitat, being common in the West Indies and in South America as far as Brazil, where it is found epiphytic on trees, especially on the Palmetto in the peninsula of Florida. It is a strong grower, strikingly bold in habit, and, owing to its glaucous foliage, conspicuous. In very young plants the fronds are simple or three-lobed, but in larger ones they are ovate and consist of a variable number—from five to fifteen—of ample oblong-lanceolate segments which are separated by more or less rounded and open sinuses, leaving a border of a third of an inch wide along each side of the general midrib. The two lowest segments are sometimes distinctly separated from the rest and are usually slightly decurved. The central wing widens gradually upwards, and at the apex of the frond is continued into an undivided terminal segment, which is nearly or quite as large as any of the others. The popular appellation of "Golden *Polypodium*" under which this handsome plant is commonly known may have been derived from the glossy bright brown colour of the scales that cover the older portions of its rhizomes, but it may also be due to the intense golden colour of the underside of its fertile fronds produced by the enormous quantity of spore cases by which it is covered, and from which when ripe a most profuse bright yellow fine powder escapes and covers the upper surface of the barren fronds beneath.

Rootstock stout, creeping, very chaffy with narrow bright brown scales; stalks scattered, rather strong, 5 inches to 8 inches high, brownish, smooth and somewhat shining; fronds 1 foot to 3 feet long, subcoriaceous, smooth, glaucous green, especially beneath, ovate in outline, deeply pinnatifid; lobes 4 inches to 6 inches long, oblong-lanceolate from a broad base, undulate on the margins, but otherwise entire, the terminal one as large as the others; veins reticulated, forming narrow areoles along the midrib. Sori in a single row on each side of the midrib of the segments, or in large fronds in two or three rows, the outer one irregular and commonly seated on the connivent tips of two included veinlets.

P. PULVINATUM.—This, which is probably only a variety of *P. aureum*, is a native of Brazil. Its fronds, which are deeply pinnatifid, are of a stouter texture than those of *P. aureum*, and attain also a much larger size. The segments are less wavy and the plant lacks the beautiful colour of the species just named. It is, however, a distinct and very pretty plant, the most attractive part of it being undoubtedly the under surface, copiously furnished as it is with bright yellow sori.

P. SPOROCARPUM.—This, also a native of South America, is found most plentifully in Mexico. If the lovely colour of its foliage only be taken into consideration, it is certainly the handsomest of the group to which it belongs, being of a bluish tint, not even approached by any of the others. Its habit is not, however, very elegant, the fronds being borne on longer stalks and more upright in growth; the segments, too, of these deeply pinnatifid fronds are narrower and bordered all round on the upper surface with small white dots, closely set, and forming a singular and pretty contrast with the bluish ground colour. The fronds are also produced in greater abundance from rhizomes branching more freely than in any other kind. Of the different *Phlebodiums* it is the one that stands the coolest treatment, succeeding well in an intermediate house.

Rhizomes woody, creeping, of a peculiar whitish colour and provided with a few brownish scales; fronds numerous, erect in habit, of very thick, leathery texture, deeply pinnatifid, borne on long wiry, light green stalks, and attaining 2 feet to 3 feet in height. Sori abundant, and generally situated on each side of the midrib of the segments only, though occasionally three and even four rows are found on each segment when these have attained a very large size.

PELLÆA.



Phlebodium aureum.

the *Phlebodiums* certainly resemble the *Polypodiums* proper, yet the few species in cultivation belonging to this section are abundantly distinct and readily distinguished by their veins, which, instead of being free, are reticulated, and also by their sori, which, instead of being in single rows upon the end of the short veins, are disposed in several rows on the pinnae. From a decorative point of view *Phlebodiums* are also extremely useful, their noble fronds, which in most of the species are glaucous, producing a striking contrast with those of other Ferns with which they are associated in the warm fernery. When planted out their naturally wild-growing rhizomes grow apace and produce fronds in abundance. These rhizomes, which are fully as thick as a man's

small group of Ferns for decorative purposes is sufficiently attested by the fact that thousands upon thousands of them find their way to Covent Garden Market every year; some growers, indeed, make quite a speciality of them—as much on account of their rapid growth as because of their distinct habit. As may be seen by the accompanying illustration of *P. aureum*, though their fronds are of variable dimensions they have a natural tendency to grow on a single rhizome, and would in that way be of little use as pot plants. To obviate this mode of growth the extremity of the rhizome is cut off entirely when only a couple of inches long, the result being the production of several lateral rhizomes growing out of the mutilated one in all directions, thus making bushy and

Variegated Violet.—M. Millet, the well-known nurseryman, of Bourg-la-Reine (Seine), recently exhibited at a meeting of the French National Horticultural Society several plants of a Violet named Armandine Millet, having distinctly variegated foliage. M. Millet states that the variegation is constant, and, what is much to the purpose, the constitution is vigorous. In other respects this Violet is all that can be desired, blooming as it does freely and forcing well. Although Violets are principally valued in a cut state, they are also valuable when well grown in pots, and treated in that way this variegated kind will probably find many admirers.—BYFLEET.

FLOWER GARDEN.

DOUBLE TRUMPET DAFFODILS.

IN these days when Daffodils are brought so much to the front we see frequent discussions on minute differences in the form of their doubling, and the question is often raised, what is the single form from which this or that double comes? On the other hand, it may fairly be asked whether those who look for a corresponding single of every double form are not, as the schoolboy's riddle says, "very like Neptune." Thanks to the investigations and teachings of Mr. J. Baker, we all know now that there is only one species of Trumpet Daffodil, and that its typical form is the Lent Lily or wild Daffodil of our fields and copses. Of this species there are several, but probably not many, distinct natural varieties. The most marked of them is a delicate and slight form called *N. moschatatus* by Linnaeus, found wild at high elevations on the Spanish side of the Pyrenees near the line of perpetual snow, and simulating the snow in colour. This, when cultivated in gardens, seems to have a tendency in its seedlings to revert to the colour of the type. I have known at least one instance in which a white flower and a flower coloured like the typical species were produced from the same seed-pod of *N. moschatatus*. This proves at any rate that these varieties are more nearly related than has generally been thought. As regards doubling, why should we expect that a flower, when various influences which are little understood make it double, should always double in precisely the same form? It certainly is not so in the many grotesque double forms of *Chrysanthemum indicum*, or in *Pyrethrum roseum*, or the China Aster. *N. pseudo-Narcissus* is a plant, it is true, which in some soils doubles readily by high cultivation, without having been produced double from seed, and in such a case we might, perhaps, with more reason look for consistency in the double produced from the same type of single flower. But, as a matter of fact, it is by no means consistent, and an examination of a great number of specimens from different parts of the kingdom, of all of which I have investigated the history, has led to the conclusion that all the double Trumpet Daffodils in cultivation, with the exception of the double *N. moschatatus* and, perhaps, *N. eystettensis*, may be referred directly, and without any intermediate single form, to typical *N. pseudo-Narcissus*. By far the commonest way in which this doubles is by turning into what has generally been thought another variety, that known in catalogues as *N. Telamonius* fl.-pl. The evidence I have received of this change from many parts of the country is quite irresistible. In some gardens it changes in one, in others in two seasons; in some it takes three or four years, the change being more or less gradual, but in many soils it will not change at all. I cannot guess what causes it to remain constant in some conditions of soil, and change in others; it sometimes assumes a double form intermediate in size, like that sold as *lobularis plenus*. I have seen others more or less like the *grandiplenus* or *Tradescanti*, which looks as if made up of several flowers tightly bunched together; some doubled in this way came to me last spring from a garden in Hampshire. The doublings above mentioned seem to require cultivation and suitable soil to produce them, and a strange part of the change is that when once

doubled they seem incapable of reverting to their typical form. I have never yet found an authentic case where *N. Telamonius* fl.-pl. has degenerated into wild single *N. pseudo-Narcissus*.

The typical flower of the species, not only in Devonshire and the Isle of Wight, but also in Hampshire, Sussex, Pembrokehire, and other counties, occasionally becomes double in a wild state. I have been told of instances in which a heavy manuring given to part of a field in which wild Daffodils were growing has caused some of the flowers in that part to turn double. In these cases, however, the wild flower retains its size and colour, and the doubling is generally confined to the inside of the trumpet, which remains unbroken. This form when planted in my garden, either in grass or border, very often reverts to a purely single flower. This doubling, too, is sometimes due to cultivation. A trustworthy observer living in the north of Lancashire, who has collected plants in many parts of the world, told me that a few years ago he dug up some wild Daffodils, part of which he planted in the grass of his garden and part in the flower-beds; the latter in a few years doubled into the small form just described, whilst those in the grass remain single to this day. Sometimes, also, typical wild Daffodils produce in the fields rose double flowers, the shape of the segments, both of the trumpet and perianth, being normal, though they are multiplied and mixed together. There is another variety, of which I saw two instances last spring; one was sent to me from Gloucestershire, the other I picked from a bed of wild Daffodils in Anglesea, amongst which it seemed to be the only double flower. Unfortunately, I failed to secure the bulb in either instance. These had the segments very narrow and pointed, and might at first sight have been taken for double *N. odoratus* but for the leaves. A flower of Mr. Hartland's Rip Van Winkle sent to me a few days ago from Ireland comes very near them. The last variety I shall mention is one in which the segments of the perianth are laid over one another in several sets, just as in *N. eystettensis*, whilst the divided and multiplied trumpet segments interleave them, though inconspicuous and almost rudimentary. This variety, which I possess through the kindness of Mr. James Dickson, of Chester, in whose nursery I first saw it, is also remarkable for the great breadth of the green leaves, which rival those of the bicolor forms.

Perhaps the variety *eystettensis* or *capax* may be produced by sending some of the pale wild Daffodils common in the south of France to one or two of the most effective of these doubling soils, and I am trying the plan. I intend to make the same experiment with some of the wild *N. moschatatus* from the Pyrenees as soon as my stock of them is large enough. Of this variety of Daffodil there are said to be already three double forms. I have some in which the outline of the trumpet is kept unbroken, as in the Devonshire double Lent Lily, and others which double like a Rose, but the third, said to have two distinct rings of perianth segments round the unbroken, but double trumpet, I have never seen.

Edge Hall, Malpas.

C. WOLLEY DOD.

THE LOST HELLEBORE AGAIN.

SINCE writing on this subject last week I have been fortunate enough to secure Morison's "Plantarum Historia," grand folios in the original vellum. I am also, through the kindness of a lady in Ireland, in possession of the Canadian Coptis. Of this and of the *Eranthis hyemalis* it is sufficient to remark that they have long been acknowledged to represent *H. trifolius* and *trifoliatus* of Linnaeus, and that they are not Hellebores at all. What we have to do in the first instance is to dispose of another plant, *H. foetidus* ± *trifoliatus* of Linnaeus = Morison's *niger trifoliatus* of Aldina and of Munting (whose flowers Morison describes as *dilute virides et subalbidi*) = Gerard's "Newton's niger prickly-leaved, &c. We know how quaintly the old flowers are engraved, and of all which I have seen none are correct, but Morison's are by far the best, and, taking

letterpress and plates together, I should say that all these authorities intend to represent Viviani's plant. It is altogether a mistake, however, to suppose that this is the real plant; none of these authors so much as allude to *lividus*. The name *lividus* occurs in Aiton's "Hortus Kewensis," in Curtis's, and in Sweet's, and the only question at issue is whether Viviani's *argutifolius* and Curtis's *lividus* represent the same plant. Under greater difficulties for lack of books of reference I contested this point, as I before stated in THE GARDEN, Vols. XVII. and XXV., and everything I have since seen or read has confirmed me in the conviction that *lividus* is a lost Hellebore. I observe a notice by "K." in your last number, page 138; but he will excuse me in saying that he bestows most of his labour in controverting what is not in dispute. Everyone knows that the Corsican plant (Viviani's) is called *lividus* at Kew, and with regard to Backhouse's *corsicus*, I have seen that in the York Nurseries; it also is Viviani's, but I think "K." is in error when he says *corsicus* is not a published name (see Willd. Enum. Suppl., p. 40). No one says this plant is lost; you may have any quantity of it. I have raised scores of it from seed; the first true leaves are solid, afterwards on the same plant, as I have said before, they "are solid, bifid, even quadrid, but as a rule trifid." "K." describes the plant as having sometimes thirty or forty flowers on a stem; quite true. I have grown many such, but I never saw among them any single plant of which it could be said, as he states, that "the flowers are greenish, except on first opening; afterwards they attain a purplish colour." Has "K." ever seen such a transformation? not that it would prove anything. What we should require is a show of probability even that Curtis, no inaccurate botanist, would be likely to call his plant (for remember it was his own name for it) the *livid* or purple Hellebore, because it turned *livid* in its incipient decay, as *niger maximus* turns pink; but we must go further and believe that he was so enamoured of his name as to persuade himself that the perfect flowers, the stems, and even the young buds were under the purpling influence of this premature decay, and that he painted them accordingly.

It has been suggested that starving and stunting and unsuitable conditions might alter the colour, but even theory could scarcely suggest that these causes would be sufficient to transform a plant bearing on a single upright leafy stem a pyramidal mass of yellow-green cup-shaped flowers into a plant which puts out branches at intervals up the stem and on each branch a single drooping purplish bud, with the full flower not rounded and cup-shaped, but with sharply pointed sepals. The foliage is so entirely different, that I think it needless to carry the comparison further. I will venture one further remark as to Curtis's knowledge of the plant. He would scarcely have expressed wonder that Linnaeus had ignored it if he had not been familiar with it himself, and I may perhaps be allowed to quote from a paper I sent to THE GARDEN last year on "Hellebores, which do we mean?" as follows: "We must remember Curtis's opportunities, as well as his accuracy. His garden in Lambeth Marshes was within a short distance of Kew, where, it is scarcely too much to assume, he would make a drawing of the identical *lividus* which furnished the elder Aiton, then still living, with the name published in his 'Hortus Kewensis.'"

Whence this eager desire to force the name of *lividus* upon the Corsican plant I cannot conceive. It is not the old name—that was *trifoliatus*; it is not a descriptive name if Curtis's plant is non-existent. Now, the intention of *argutifolius*, in botanist's Latin, seems evident enough, though I should be sorry to vindicate its classical accuracy. Why not submit to it, or revert to *trifoliatus* rather than clothe the unwilling subject in a garb which it must ignominiously part with if the lost *lividus* should re-appear? As to the dictum of Cambessèdes and Lindley, it may be impertinent for amateurs to question their infallibility, but they showed carelessness at least in their ignorance of Linnaeus's notice of the plant, and they do not

avowedly base their judgment upon any scientific basis, but upon a comparison of Curtis's and Lindley's plates. Place these two plates (Bot. Mag., plate 72, and Bot. Reg., vol. xxiv., 54) before 100 unprejudiced people, and I should not doubt having 99 on my side. I send a single stem of *argutifolius*, which it may be interesting to examine with Curtis beside it. I send also leaves with the different numbers of lobes to which I have referred. It is the latest of *Hellebores* in my garden, and the flowers are not yet out, but lie clustered in their sheath at the summit of the stem.

T. H. ARCHER-HIND.

South Devon.

NOTES ON HARDY PLANTS.

ANEMONE FULGENS.—It is well known that this tuberous-rooted Windflower miserably fails to do any good in many gardens; this is all the more to be regretted from the fact that we have not another early scarlet flower for the open garden that will nearly match it for effect. In every instance where failure has occurred here the evil has been at the roots—the tubers had been eaten, or decay had so honeycombed them, that no heart was left. Is not this the result of setting the tubers in ground either too freshly manured or too long left undressed? I have fancied such to be the case. Let me give an example. The land being deemed hungry nine years ago, a four years' course of heavy manuring was given it; during that time it was found that well-established plants and trees were benefited by it, but that many bulbs and plants of the hardiest constitution when newly set in it absolutely refused to start. This did not of course apply to nearly all, and such as were thought to need it had special care in the way of surrounding the roots with sand or maiden loam when being set. Such care, however, was not deemed needful for this *Anemone*, and for years new plantings dwindled away, sometimes from dry rot, but more frequently from being eaten by grubs and other pests infesting manure. To show that the tubers may be improved by being carefully lifted and placed in deeply-dug soil without manure being employed, a square yard consisting of two dozen roots was planted adjoining some *Hepaticas*. This plot had been dressed with "shoddy," a refuse from woollen mills largely charged with sulphuric acid; here from the first the *Anemones* did well, with the exception of last season. By chance we dug out the *Hepaticas*, which had become very large, necessitating the lifting of a row of the *Anemones*, and before they were put back, so far as the spade could work, deep digging was done. Now we are able to observe the results: that lifted row has twice the vigour of the other plants. Naturally one must learn by such accidental results; doubtless most hardy plants would be improved by being placed in newly-dug and mellow soil with timely liftings; but, generally speaking, it is not practicable to give such conditions to all; it is, therefore, well to find out such as really refuse to grow, unless special treatment is given them, especially kinds of the stamp of *Anemone fulgens*. Many, I know, grow this tuberous-rooted Windflower without the least trouble, but not a few with whom I have met have failed to get a flower, and in many cases hardly a leaf.

COLCHICUMS.—Whatever may be said for or against the shallow planting of bulbs, I think all will admit that it is sound practice to set *Colchicums* pretty near the surface. It is well known that the tendency of the bulbs is just the opposite of that of *Ornithogalums*, *Alliums*, *Crocuses*, *Gla-dioli*, &c., whose progeny issue and take their places a little higher than the parent bulb; at any rate they get no deeper, but this the *Colchicums* do yearly. Some clumps which had a worn-out appearance have just been lifted, and from the large number of wrappers, the bulbs must have been very old, whilst offsets were out of the question. They could scarcely have been less than a foot from the surface, which presumably had caused them to deteriorate in size from a moderate-sized Jargonelle Pear to that of a Filbert. Compared with the older clumps, the new plantings of

two or three years back (during which time the rule has been to set them not more than 2 inches deep) show a remarkable contrast both in leaf and flower. Some highly-coloured doubles were introduced from an old garden, and in two seasons they were so improved in size and substance, that their former owner could not recognise them. Nothing special but shallow planting on a raised bed had been resorted to. It may be worth while, for those who have a lot of these useful bulbs, to arrest their downward movement, at any rate a part of them, by re-planting, and this is a good time to do it.

HEPATICA ANGULOSA.—From the various kinds of *H. triloba* there may often be gathered a few solitary flowers during winter, but for a full display of bold and seasonable bloom *angulosa* is entitled to be placed as the earliest of *Hepaticas*. In a not over stiff loam where moisture settles, but is not stagnant, with its roots between big stones high enough to shelter the tops from north winds, big light blue flowers opened with the second month. It is not, I believe, generally known that this, the finest of all *Hepaticas*, is the easiest to grow; not only is it less particular as to soil and situation than the others, but its habit is far more vigorous, the offsets not being so few and compacted, but more in the style of underground stems than is to be found in all the *triloba* sorts. These offsets become rooted their entire length, thus either rapidly forming large masses or affording a ready means of propagation; one thing, however, is needful—the situation should be flat and moist. Many years ago—six at least—a root was set in a dry part of the rockwork; it flowers every year, but the plant has increased but little in size, having but six or eight leaves. The proper time to transplant *Hepaticas* is of importance; I would sooner divide and plant in August than at any other time, but few amateurs care to be digging up roots at that season of the year. As soon as the flowering is past and before the leaves grow, transplant, say some, but several varieties have their young foliage well out ere the flowers are over. Before blossoming I should prefer to move them, so as to be a little further off the drying March winds. Of course, the flower crop would suffer, but not much; besides, that is not the question. I have shifted *Hepaticas* about at all times with little or no injury. The chief care should be to protect the stringy, down-beset roots from drought. Summer-planted roots get well established and flower freely the following season.

DOUBLE ROCKETS.—No matter how carefully the rarer sorts of these are propagated in autumn and tended during winter, unless about this time they are carefully looked after they will not thrive; they may have been kept good and fresh up to this time, when one by one they will drop their leaves and dwindle in a puzzling manner. On carefully overhauling them a maggot will often be found rolled up in the tenderest leaves in the heart of the plant; these eat their way down into the juicy stem, and so cause the leaves to drop. The damage they do is but partial until they leave their down-like wrappers, by which their presence is discovered. Plants both in frames and in the open are alike infested—the Scotch kind as well as the French variety, and stock from different sources are all the same. Doubtless this pest has something to do with the difficulty so commonly experienced in keeping these old favourites in our gardens.

CYCLAMEN COUN.—What a treasure one feels to have in a little plant that bears numerous brilliant flowers in midwinter. High colour, purplish crimson, such as we have in this Sowbread, is what we want at this season out of doors, and small as the plant and flowers are, a dozen well-established corms are capable of producing a charming effect. On a sloping bed facing the south, but overshadowed by the branches of a young Apple tree, whose bole they surround, they seem as happy as can be; they do not suffer from stress of weather, and happily are exempt from molestation by either the creeping or feathered tribes, possibly on account of their bitterness. The corms were placed on the surface until growth began; then they had

a top-dressing of sifted refuse from under the potting bench, and after they died down another dressing of grit and decayed manure. Corms fresh from the ground soon make a start in new quarters, but dry ones are less certain; frequently canker sets in at the crowns, and in a short time the rinds, unnaturally bone-like, resemble snuff-boxes as regards their contents. Surface planting of dry corms is at least a partial remedy against this, but a better plan still is to set them on a mixture of sandy loam and leaf-mould in a box, which may stand in the open if there is no frame convenience. Under these conditions, in a month, or perhaps two, each corm will have a set of long vigorous fibres which carry the soil with them; in this state they may be permanently planted with little fear as to results. Are not the species of hardy *Cyclamen* getting much crossed? The free manner in which they seed and the way in which the blooming periods overlap would appear to facilitate crossing; as a matter of fact varieties are getting numerous, and typical features are sometimes supplanted. The work begun by Mr. Atkins surely is not finished?

WINTER CROCUSES.—We have dainty foretastes of the feast of the common kinds in such as *Crocus minimus* and *C. Imperati*, now so perfect under the present favourable weather. The genus as a whole is not difficult to cultivate, but to make the most of it for decorative purposes the planting as regards position should be carried out with judgment. All the pains otherwise taken may be rewarded with disappointment should a spell of bad weather overtake the winter bloomers. Shelter from wind without the sacrifice of direct sunlight is the chief desideratum; in such quarters they will soon settle and help to fasten our thoughts on the garden at a time when we sometimes forget it.

THE DURATION of many hardy plants is not of that fixed character under cultivation which one would like. Soil and climate are known to have influenced many by shortening their days, and usually these, rather than such as have their lives prolonged, have received notice. On the other hand, light warm soils, raised borders, and mild winters have presumably lengthened the span of life in several instances, and no doubt what has happened here will have occurred in other gardens. Yet few will credit that the common annual pot Marigold, or rather the variety called Meteor, is now in its third year having plenty of foliage and woody stems. *Calandrinia umbellata* is in its fourth year, though often proving but biennial. Plants of *Linaria alpina*, which seeded last summer, promise to flower early this year, and the same may be said of *L. reticulata*, though both are annuals. The Italian Garland Pea (*Hedysarum coronarium*), a biennial, is strong and healthy in its third year. All have flowered each year, except *Calandrinia* the first season, and all are cultivated either on raised beds or on rockwork. Though in the years added to the lives of the plants just named the bloom was of fine quality and more profuse than on younger plants, there may not be very much gained by what must be considered as but a chance extension of duration; the fact of cultural conditions may be worth noting.

J. WOOD.

HELLEBORUS NIGER VARIETIES OR HYBRIDS.

If you are not tired of this subject, which after all is not one of much importance, I would crave a little further indulgence. In the first place, I beg to assure Mr. Archer-Hind that I am not one of those "who contend that the niger section is restricted to one species with many varieties, but no hybrid." I am not entitled moreover to enter on any contention on this matter. I am no botanist—merely a humble grower of plants, and this question is one pertaining solely to botanists. If any recognised botanical authority decides that all the forms of *H. niger* are species, or that they are all but varieties of one species, with ready submission I bow to either decision. All I ask is that the question be settled one way or other. Although no botanist, I cannot be ignorant that the term hybrid

has come to be used in a wild, unscientific manner. Of course, it properly means the result of a cross between two species. But it is now frequently used to express simply the result of artificial impregnation between two plants of the self-same species, whereby some improvement in size, colour, or shape has been obtained. Fertilisation and hybridisation have been confounded in popular phraseology. This being the case, when Mr. Poë's plant was described by some as a hybrid, because it had some of the characteristics which are said to be peculiar to *H. n. angustifolius* and some peculiar to *H. n. maximus*, I wished to know whether the term was used scientifically or popularly; and as a necessary preliminary to the solution of the question, I asked if botanists of recognised authority hold that there is more than one species of *H. niger*. Mr. Archer-Hind's article (p. 112) partly clears the ground, as he allows that all the forms of *H. niger*, except *maximus*, are but varieties. And even as regards *maximus*, he does not speak very decisively. The great characteristic which he and others appear to rely on as a specific difference in *maximus* is the pink-tipped pistil. But I had many blooms this season of true *angustifolius* with very distinctly pink pistils, less pink than *maximus*, I allow, but we cannot make a difference of shade a specific difference. There is another argument of Mr. Archer-Hind's which, I think, calls for a little explanation. Is it quite fair to demand that *maximus* shall be originated from a self-fertilised typical *niger* before *maximus* can be said not to be a species? Surely when any variation, that one unexplained postulate of the Darwinian theory, has taken place in a type, then we know from Darwin that the tendency is for that variation to widen. Thus, between the more and less variations themselves on the one hand, and between them and the type on the other, is there not a sufficient possibility for the origination of all the forms of *H. niger*, including *maximus*?

The parentage of Mr. Poë's plant is probably enough, as Mr. Archer-Hind says, but if *maximus* itself be not a species, on which point I think there is room for more proof, then Mr. Poë's fine form is not strictly a hybrid.

FREDERICK TYMONS.

Names of Hellebores.—In my note to THE GARDEN (p. 135) under this heading, I appear to have enumerated only nine Asiatic Hellebores, though I stated their number to be ten. The one omitted is *H. vesicarius*, a native of the mountains of the north of Syria, and, as far as I know, not in cultivation. As regards varietal names of *H. niger*, I find, on referring to three nursery catalogues, no fewer than twelve Latin names belonging to this one species. These do not include some in Sweet's "Flower Garden," where, under *H. n. vernalis*, I find as synonyms *H. n. legitimus*, *H. n. verus*, and *H. n. flore-roseo*, making sixteen Latin names for varieties found in print with very little searching.—C. WOLLEY DOD, *Edge Hall, Malpas*.

A pretty flower garden.—Just outside Bath, about half-way up Widcombe Hill, is a pretty flower garden attached to Crowe Hall, which is built upon a steep slope; one side of the house overlooks the verdurous vale of Lyncombe, and it is on this side that the flower garden is. About the same height on the opposite side of the valley is Prior Park, whilom the residence of Ralph Allen, the prototype of Squire Allworthy. Another noteworthy object in the landscape is the ivied tower of St. Thomas à Beckett's Church. The ground is formed of seven platforms, rising one above the other like a flight of steps. These platforms are covered with Grass lawn at the edges; in the centres are the flower-beds, a different design being used for each staging. On one side is a balustrade running along the edge of a steep rock; on the other a bank formed into a rock garden, at the top about a foot high and at the opposite extremity 14 feet. The colour of foliage and flowers was varied as much as possible on each step, and all were spread simultaneously be-

fore the delightful vision of a spectator whether standing at the top or bottom. As it happens at Crowe Hall, the balustrade on the one side is a necessity. Where there was no such need there could be another rock garden; and what could be more delightful?—M. C.

Helleborus abchasicus.—Mr. Brockbank (p. 136) states that the varieties of *H. abchasicus* are all beautiful, ranging as they do from pale to deep red. I wonder what Hellebore he refers to? the only figure that exists of this species is in the *Gartenflora* for 1866, p. 33—a rich plum-purple. Mr. Moore, of the Chelsea Botanic Gardens, and Mr. Barr have for years past been trying to identify this plant, and although last spring they fixed upon a species which fairly well matches with the flower, it is doubtful if the leaf character will answer. Some of your readers may have specimens that will agree with Regel's figure. The rig in *H. torquatus* is found in several allies of *H. purpurascens*, but not so conspicuous as in the plant which was named by Mr. Archer-Hind.—ARGUS.

Helleborus lividus.—I have been reading with considerable interest the different articles in THE GARDEN on Hellebores, and as I know a little of the family. I would gladly extend this knowledge. "K." (p. 138), says the true *H. lividus* has livid or purplish flowers. Now, this is not the *H. lividus* cultivated by Mr. Barr, nor the plant Mr. Baker has so named in his paper in the *Gardeners' Chronicle*, 1877, but the Holly-leaved Corsican Hellebore with a green flower, and this is Mr. Brockbank's stumbling-block, and no doubt the stumbling-block of others who try to reconcile the name with the plant. Mr. Barr I know follows Mr. Baker in naming his collection, and it would be interesting if "K." would give a reference to the plate of *H. lividus* with the livid or purplish flowers, or say where a dried specimen may be seen.—L.

Gentiana alpina.—There still seems to be some difference of opinion as to the exact position which this *Gentian* should occupy. In the article referred to by "A. D. W." both *G. alpina* and *G. excisa* are placed under *G. acaulis*, not as synonyms, but as allied forms, hardly distinct enough from a garden standpoint to warrant separation. In Nyman's "Conspectus Europæus," however, *G. excisa* is considered to be a distinct species, under which *G. alpina* is quoted as a synonym. With the exception of getting it properly established, I have never had any serious difficulty as regards the cultivation of this little gem; indeed, it seems to be less fastidious in its requirements than our own *G. verna*. It thrives in a mixture of peat and loam on an east exposure partially shaded, and although its increase is hardly perceptible, it forms sturdy little tufts in perfect health.—D. K.

Mossy lawns.—For many years our lawns were kept in order by means of a lawn mower propelled by manual labour, but about eight years ago, considerable additions having been made to them, it became necessary to have a larger machine, which required a pony to draw it. Now it happens that one part of the old lawn was very mossy, simply because the ground was difficult to work, and the little machine was allowed to run over it lightly; in fact, two men could not pull it through if the knives were set low enough to get a good bite. This had gone on so long, that every foot-mark made an indentation in the Moss. As soon as we got the large machine to work, I selected a hot, dry time in July, and specially set to work to get rid of the Moss by setting the cutters rather low and going over the same ground two or three times until it was pared down to the surface. This proved to be a complete remedy; the heat of the sun quickly burnt up and destroyed the roots of the Moss. For a few weeks the lawn thus dealt with looked rusty, but it quickly recovered its natural colour in the autumn. We have seen no Moss there since, but plenty of Grass. Lawns overrun with Moss may also be freed from it by means of iron rakes. They should then be sown with lawn Grass seeds in spring.—J. C. C.

GARDEN FLORA.

PLATE 480.

LILIUM TIGRINUM SPLENDENS.*

THE finest of the family of Tiger Lilies is, I think, *L. tigrinum splendens*. For some time in this country a fine form of *L. tigrinum Fortunei* was sold in error for this variety, and was certificated by the floral committee. A flower, however, was sent over from Belgium which showed the true form, and bulbs soon followed. The true *L. tigrinum splendens* received a first-class certificate in July, 1872. Its principal distinctions are growth even stronger than that of *L. tigrinum Fortunei*, stem less woody, and flowers larger, with finer spots. When grown in rich soil it is a splendid Lily; it is like the old Tiger Lily, *L. tigrinum sinense*, magnified in all its parts. *L. tigrinum Fortunei* is, I believe, used as food in Japan; very large bulbs of this Lily come over from time to time. It is very handsome when grown



Bed of Tiger Lilies.

a number in a bed. The double variety of *L. tigrinum* requires to be well grown to at all show its full beauty. A good authority once said that he could not understand why I admired it so much. My answer was, wait till you grow it properly. Next season he fully admitted its merits. It has a different shade of colour from that of the other Tiger Lilies, and the larger it is grown the more beautiful it shows itself. A bed of it this season at Oakwood almost rivalled *L. tigrinum splendens*. *L. tigrinum jucundum*, the Tiger Lily having no stem bulbs, is probably a Japanese hybrid; it is generally smaller in all its parts than the rest of the family, but is, I think, the most graceful. It is beautiful in a nosegay. When grown in moist loam its height is much increased. We find that all the Tiger Lilies thrive best in a mixture of black vegetable soil and loam, and that they are not particular as to sun or shade.

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SPECIES AND VARIETIES OF LILIES.—We take the opportunity of supplementing our plate this week with the following translation of an exhaustive list of the species and varieties of cultivated Lilies, compiled by M. J. d'Hoop, a Belgian amateur, residing at Ghent, who has kindly placed it at our disposal. As may be seen, it is a careful compilation from various sources, and one which will doubtless be of interest to our readers.

* Drawn in Mr. J. Stevens' garden, Grasmere, Bysfleet, in September.



LILIUM CALIFORNICUM SPENDENS

THE GENUS LILIUM.

VARIOUS botanists, and especially Messrs. Endlicher, Charles Koch, De Cannart d'Hamale, and J. G. Baker, have suggested the division of the genus *Lilium* into groups or sub-genera. The following table summarises the last classification adopted by Mr. J. G. Baker in his "Synopsis of all the known Lilies," published in 1875.

I.—Sub-genus *CARDIOCRINUM* (leaves heart-shaped). Types—*L. cordifolium*, *L. giganteum*.

II.—Sub-genus *EULIRION* (flowers funnel-shaped). Types—*L. longiflorum*, *L. candidum*, *L. Washingtonianum*.

III.—Sub-genus *ACHELIRION* (flowers open). Types—*L. tigrinum*, *L. speciosum*, *L. auratum*.

IV.—Sub-genus *ISOLIRION* (flowers erect). Types—*L. croceum*, *L. concolor*, *L. philadelphicum*.*

V.—Sub-genus *MARTAGON* (flowers turban-shaped). Types—*L. Martagon*, *L. superbum*, *L. pomponium*, *L. polyphyllum*, &c.

Messrs. Endlicher and De Cannart d'Hamale make a special sub-genus of the Lilies which have tunicated bulbs (doubtful Lilies, approaching the Fritillaries) under the name of *AMBILIRION*, corresponding to the *NOTHOLIRION* group of Mr. Baker, who considers them to be true Fritillaries; such are: *L. Thompsonianum*, *L. camchatchense*, &c.†

Everything relating to the history, description, and culture of these beautiful flowers will be found in the monographs of the genus *LILIUM* written by Messrs. D. Spae, De Cannart d'Hamale, Duchartre, Wallace, and others, together with the articles on the subject which have appeared in numerous horticultural journals‡

The alphabetical list which follows has no more ambitious aim than that of facilitating the studies of young amateurs amid the perplexing maze of the synonyms which are applied to some Lilies, and of the conflicting opinions which exist as to the specific character of many others. It is, in fact, only a general list, with brief notes, drawn up from the excellent works enumerated in the note below.‡

ALPHABETICAL LIST OF THE SPECIES AND VARIETIES OF LILIUM.

LILIUM ABCHASICUM (II).—(Hort. Leicht., with a note of (?)§); Baker's "Synopsis," sub-sp. 5;

* Endlicher makes of *L. philadelphicum* and *L. Catesbei* a special sub-genus under the name of *PSUDOLIRION* (Lilies which have the segments of the perianth narrowed in the lower part into a long claw). To this sub-genus M. De Cannart d'Hamale also refers *L. dauricum* or *dauricum*.

† The Roman numeral after the specific names in the following alphabetical list indicates the sub-genus to which the species is referred, according to Mr. Baker's classification, the sub-genus or group *AMALLIRION* (*NOTHOLIRION*) being denoted by the numeral VI.

‡ D. Spae, *Mémoire sur les espèces du genre Lis*.—Published in the 19th vol. of the "Mémoires couronnés" of the Belgian Royal Academy, 1847.

De Cannart d'Hamale, *Monographie historique et littéraire des Lis*, Malines, 1870.

P. Duchartre, of the Institute, &c., *Observations sur le genre Lis*. Ann. de la Soc. cent. hort. de France (printed in a separate volume of 142 pages). Paris, imp. hort. de Donnad.

Dr. Wallace, *Notes on Lilies and their Culture*, Colchester, 1879.

Prof. Dr. K. Koch, *Das Geschlecht der Lilien*, in *Wochen-schrift*, 1870.

J. G. Baker, *A New Synopsis of all the known Lilies*, in *Gardeners' Chronicle*, 1874.

J. H. Krelage, *Notice sur quelques espèces et variétés de Lis*, Haarlem, 1874.

Ch. Morren, *Histoire littéraire et scientifique des Tulipes, Jacinthes, Narcisses, Lis, et Fritillaires*, Bruxelles, 1842, &c.

Elwes, H. J., *Monograph of the genus Lilium*, 1880.

§ M. Duchartre, in his excellent "Observations sur le genre Lis" (Paris, 1870), reproduces the list of species given by M. Max Leichtlin, a distinguished amateur gardener, and the head of an important manufactory at Carlsruhe. In this list M. Leichtlin indicates by the note of (?) that the designation of a species or variety is more or less doubtful, and by the note of (!) that the species or variety is well established. It must, however, be taken into account that this list is now somewhat out of date.

Wallace, "Notes on Lilies," p. 131, &c.).—A form or variety of *L. longiflorum*.

L. AFFINE (VI).—(Roem. and Sch., s. vii., 400; Spae, *Mém.*, p. 25).—This plant apparently should be referred to *L. camchatchense*.

L. AKASIM-JURI (IV).—Duchartre, *Obs.*, p. 42).—The Japanese name of *L. Parthenion* (the Virgin's Lily—Juri-Lis).

L. ALBANICUM (V).—(Griesbach, *Spicileg. fl. Rumel.*, ii., p. 385; Schur, *Transyl.*, 662; Wall., "Notes," pp. 180-181; *ibid.*, p. 113, with bulb figured; Duch., p. 19); also *L. ALBANUM*.—These two names probably refer to the same species, but Dr. Wallace appears to be of the opinion that the *albanum* of Leichtlin is a species peculiar to Transylvania (where it is found in large quantities in the neighbourhood of Verespetch), and coming very near the *L. pyrenaicum* of Gouan, while *L. albanicum*, which is found in Macedonia, should be considered a form or variety of *L. chalcidonicum*.

L. ALBUM (II).—(Bauch., *Pin.*, 76; Swert., *fl.*, t. 45).—An old name for *L. candidum*.

L. SP. ALLEGHANIES?—(Hort. Amer.).—Advertised under this name at the price of two dollars in the catalogue (1882) of Messrs. Woolson and Co., nurserymen, Passaic, New Jersey.

L. ALTERNANS (IV).—(Hort.; Baker and Dyer, *Gardeners' Chronicle*, 1872, p. 1356, amongst the given species of *L. elegans* as var. *Thunbergianum brevifolium*; Wallace, "Notes," p. 159 and 161).—A variety of *L. Thunbergianum*, passing under the names of *L. T. brevifolium*, *L. T. fulgens-maculatum*, *L. T. fulgens-alternans*, &c.

L. ALTISIMUM (V).—(Hort.).—A synonym (seldom used) for *L. excelsum*, and also for *L. testaceum* and *L. Isabellinum*.

L. ALUTACEUM (IV).—(Baker and Dyer, under this name; Wallace, "Notes," pp. 160, 161).—A variety of *L. Thunbergianum*, otherwise known as *L. Thunbergianum aureum-nigro-maculatum*.

L. ANDINUM (IV).—(Nuttall, *Gen.*, i., 221; Pursh, "Flora of S. America," p. 229, under the name of *L. umbellatum*, *Bot. Reg.*, pl. 594; Duch., p. 86).—A form or variety of *L. philadelphicum*, described by Pursh under the name of *umbellatum*, and not to be confounded with the *L. umbellatum* of gardeners. It is mentioned in American catalogues as a synonym of *L. Wansharaicum*.

L. ANGUSTIFOLIUM (V).—(Miller, *Dict.*, No. 6).—Corresponds to the *L. pomponium* of Linnaeus. According to Baker, it is a variety of this Lily with very narrow one-ribbed leaves.

L. ANGUSTIFOLIUM (IV).—(Catesb., *Carol.*, iii., pl. 8; Spae, *Mém.*, syn. p. 19).—The Lily described by Catesby under the name of *L. angustifolium fl. rubro-singulare*, should, according to Spae, be referred to *L. dauricum*.

L. ARMENIACUM (IV).—(Baker and Dyer, under this name; Wallace, "Notes," pp. 160, 161).—A variety of *L. Thunbergianum*, which comes very near *L. Thunbergianum venustum* (*L. venustum*, Spae). The flowers are of an apricot shade and without spots.

L. ATROSANGUINEUM (IV).—(Hort.; Baker and Dyer, under this name).—A variety of *L. Thunbergianum*, introduced in the first instance from Japan by Siebold (*Ann.*, p. 32), and coming near *L. Thunb. fulgens* (*L. fulgens* of Spae). Baker gives it as a synonym of *L. Thunb. coruscans*, and considers as a sub-variety of it the *L. hæmatocchrom* of Lemaire.

L. AURANTIACUM (IV).—(Siebold, *Ann.*, 1844, p. 32).—A synonym for *L. Thunbergianum aurantiacum*, and regarded as the type of *L. Thunbergianum* at the time when *L. fulgens* and *L. venustum* (or *elegans*) were ranked as distinct species.

L. AURANTIACUM (IV).—(Dumont de Courset).—Corresponds to *L. croceum*, which still passes under the former name among some Dutch nurserymen.

L. AURANTIUM (IV).—(London).—Also corresponds to *L. croceum*.

L. AURATUM (III).—(Lindley, *Gardeners' Chronicle*, 1862; *Fl. des Serres*, vol. xv., 57; Wallace,

"Notes," pp. 151, 152, &c.).—This species, which is one of the finest of the genus, was introduced from Japan into the United States by Gordon Dexter in 1860, and two years later into Europe by Messrs. Veitch. It has the synonyms of *L. Dexteri* and *L. speciosum imperiale*. Its principal varieties are *L. aurat. cruentum* (Wallace, "Notes," p. 151), a dwarf form in which the bands and spots of the flowers are of a chestnut-red colour; *L. aurat. Emperor* (Wall., "Notes," p. 152), a very handsome variety, which has the flowers tinged with pink like those of *L. speciosum*; *L. aurat. fasciculatum* (Wall., "Notes," p. 151), a flat-stemmed variety, bearing from thirty to 100 flowers, which are usually of smaller size than those of the type. *L. aurat. macranthum* (Catal. Krelage, Van Houtte, &c.), in which the flowers are of large size, with broad divisions; *L. aurat. pictum* (Wall., "Notes," p. 152), in which only the extremities of the petals are tinged with bright carmine; *L. aurat. rubro-pictum* (*ibid.*, p. 152), a handsome variety, in which the yellow band passes in the upper part into carmine-red; *L. aurat. rubro-vittatum* (*ibid.*, p. 151), in which both the band and the spots of the flowers are carmine-red; *L. aurat. virginale* (*ibid.*, p. 152), in which the flowers are of a pure white colour with yellow band and a few scattered yellowish spots; *L. aurat. Wittei* (*ibid.*, p. 152), with pure white flowers. This variety was at first regarded as a distinct species (see *L. Wittei*).

L. AUREUM (IV).—(Parkinson, *Parad.*).—Corresponds to *L. croceum*.

L. AUTUMNALE (V).—(Lodd., *Bot. Cab.*, p. 335).—A synonym of *L. carolinianum*, *L. Michauxi*, or *L. Michauxianum*.

L. AVENACEUM (V).—(Maximow., *Gart. fl.*, 1865; De Cann. d'Ham. *Hist. Litt. des Lis*, pp. 104, 105; Duch., p. 26; Wall., "Notes," p. 171; *ibid.*, p. 108 (bulb figured).—A very handsome Lily, coming near *L. Martagon*, but with orange or scarlet flowers. It is a native of Kamtschatka, Manchuria, Japan, &c., and derives its specific name of *avenaceum* from the shape of the scales of the bulb, which resemble grains of Oats (*Avena*).

L. BAKERI (III. or V.).—(Elwes' *Monog.*, p. 40).—Identical with *L. Maximowiczii Bakeri*. From the figure of this variety given by Mr. Elwes it appears to be smaller in all its parts than the type.

L. BARRIANUM (II).—(Elwes, *Monog.*, pl. 14).—Identical with *L. Kramerii Barrianum*. A variety described by Mr. Elwes as of dwarfer habit than the type. Mr. Elwes classes both the *L. Belladonna* of Baker and the *L. Elisabethæ* of Leichtlin under the name of "Kramer's Lily," which he considers to be the true *L. japonicum* of Thunberg (*Fl. jap.*, 133). He recalls the circumstance of the Japanese Government having sent to the Vienna Exhibition in 1874 a large collection of Lilies and figures of Lilies from the Royal Gardens at Miaco, and states that amongst the varieties of *L. japonicum* one of the finest was a plant which he saw in flower in M. Leichtlin's garden in 1875 under the name of *L. Elisabethæ*.

L. BARTRAMI (II).—(Nutt. *Herb.*).—A synonym for *L. Washingtonianum*.

L. BATEMANNI (IV).—(Baker, 44th species; Wall., "Notes," p. 177; *THE GARDEN*, Vol. XV., p. 39); also named *L. Batemanni* and *L. Talstajuri*.—A late-flowering Japanese species, with the habit of *L. croceum*, and bearing an umbel of flowers of a uniform apricot colour.

L. BATISUA (II).—(Hamilton, *Not. man.*; Duch., p. 67).—An East Indian Lily, discovered by Fr. Hamilton at Narainbetty, and referred by D. Don in his "Flora of Nepal" to the *L. japonicum* of Thunberg. M. Duchartre considers it identical with *L. tubiflorum* (*L. Wallichianum* and *L. neilgherrense* of R. Wright). Baker mentions it as a synonym of the *L. Wallichianum* of Roemer and Schultes. Others refer it to the *L. odoratum* of Planchon (the *L. japonicum* of nurserymen).

L. BELLADONNA (II).—(Leichtlin; Baker, 12th species).—This Lily, which has been classed by Baker under the sub-genus *Eulirion*, appears to

be a cross between *L. speciosum* and *L. longiflorum*. In its general appearance it resembles *L. caudatum*, but its flowers are tinged with dark red. It is supposed to be a native of Japan.

L. BLAKO (II.).—(Hort. jap.).—The Japanese name for *L. longiflorum*.

L. BICOLOR (IV.).—(Hort.; Moore, Fl. Mag., f. 101).—A variety of *L. Thunbergianum*, synonymous with *L. Thunb. pictum*, Hort. Sieb.

L. BICOLOR (IV.).—(Hort.).—See *L. umbellatum bicolor*.

L. BILIGULATUM (IV.).—(Hort.; Wall., "Notes," p. 161).—A variety of *L. Thunbergianum*, synonymous with *L. Thunberg. aurantiacum multiflorum*, and also, according to Wallace, with *L. Thunberg. sanguineum*.

L. BLOOMERIANUM (V.).—(Hort.; Baker, as a syn. of *L. Humboldtii*; Wall., "Notes," p. 169).—Appears to be identical with the *L. Humboldtii* of the Sierra Nevada, although it is still described by Dutch nurserymen as a distinct species or variety (see Krelage's catalogue).

L. BLOOMERIANUM OCELLATUM.—(Kellogg, Proc. Calif. Acad., p. 88, f. 4; Wall., "Notes," pp. 25 and 170).—A variety of the preceding, which is only to be found in the island of Santa Rosa, California. The purple spots on the flowers are each surrounded by a yellow circle, whence the name *ocellatum* or eyed. The plant is probably identical with the Santa Rosa form of *L. Humboldtii*.

L. BOURGELI (V.).—(Baker; Wall., Not., p. 166).—A form or variety of *L. pardalinum* occurring on the shores of Lake Winnipeg.

L. BREVIFOLIUM (IV.).—(Baker and Dyer, under this name; Wall., Not., p. 159).—A variety of *L. Thunbergianum*, distinguished by its very short, thick, broad leaves, &c.

L. BROUSSARTI (III.).—(Morren, Mém. Acad. Roy., Bruxelles, 1834).—A synonym for *L. speciosum album* (*L. lancifolium album*, Hort.).

L. BROWNII (II.).—(Hort.; "Flora des Serres," vol. i, p. 257, and vol. xxi., p. 151; Duch., pp. 25, 26, &c.; Wall., Not., p. 134; *ibid.*, p. 96 (bulb figured).—The origin of this plant is unknown. It derives its name from F. E. Brown, a nurseryman of Slough, near Windsor, who first described it in his catalogues. The flowers are long and white, tinged on the outside with purplish brown.

L. BULBIFERUM (IV.).—(Linn., Sp. Pl., i., 433; Wall., Not., p. 156, &c.).—A species originally from the south of Europe, in cultivation since the sixteenth century, and producing bulbs in the axils of the leaves. Its varieties are *L. bulb. umbellatum* (Fisch. and Lall., Bot. Mag., t. 1018); *L. bulb. latifolium* (Fisch. and Lall.); *L. bulb. ramosum* (Fisch. and Lall.); *L. bulb. foliis variegatis* (Hort.); *L. bulb. flore-pleno* (Bauhin, p. 77); *L. bulb. flore-albo*? (Miller, Dict. No. 4). These six varieties, which are described by D. Spæe in his "Mémoire" under a great number of synonyms, are no longer to be met with in gardens. It seems to be doubtful whether a white-flowered variety of this species has ever existed, as this colour is not known to occur in any Lilies which bear erect flowers. Besides the foregoing there are also *L. bulb. sibiricum splendens* (Krelage, Cat. 1876-1877), described as having yellow flowers, edged with orange, and *L. bulb. humile* (Miller, Dict., No. 4; Wall., Not., p. 157), a dwarf form with narrow leaves.

The garden forms of *L. umbellatum* come very near those of *L. bulbiferum*, except that it is a matter of very rare occurrence that they produce even a few scattered bulbils in the axils of the upper leaves.

L. BULBIFERUM (IV.).—(Redouté, f. 210; Pers., Syn., i., 358; Bot. Mag., p. 36).—The Lily described and figured by the foregoing authorities corresponds to *L. croceum*.

L. BULBIFERUM (IV.).—(Thunb., Trans. in Linn., ii., 133).—Appears to correspond to *L. Thunbergianum*.

L. BULBIFERUM (IV.).—(Thunb., Flor. jap., 134).—Corresponds to the true *L. lancifolium* of Thun-

berg (a bulb-bearing Lily which has never yet been introduced into cultivation).

L. BULBIFERUM (IV.).—(Ait., Hort. Kew., ii., 241).—Corresponds to *L. dauricum*.

L. BUSCHIANUM (IV.).—(Lodd., Bot. Cab., p. 1628).—See *L. pulchellum* Buschianum.

L. BUSCHIANUM (IV.).—(Leichtlin).—Should probably be referred to the *L. pulchellum* of Fischer.

L. BUSCHIANUM NANUM (IV.).—(Leichtlin).—Corresponds to the *L. Buschianum* of Loddiges.

L. BUSCHIANUM GRANDIFLORUM (IV.).—(Leichtlin).—A variety of *L. pulchellum* or of *L. Buschianum*; perhaps identical with the *L. sinicum* of Lindley.

L. BYZANTINUM (III.).—(Swerts-Floril., t. xlv).—Corresponds to *L. peregrinum*. *L. chalcodonium* also is sometimes found under this name (see Krelage's "Notice," &c.).

L. CALIFORNICUM (V.).—(Lind., Fl. Mag., 1872, p. 33; Baker, under *L. pardalinum*; Wall., Not., p. 166).—A species which comes very near the *L. pardalinum* of Kellogg, and, according to Baker, is a variety of that Lily. Several botanists, however, consider *L. californicum* and *L. pardalinum* identical.

L. CALLOSUM (V.).—(Sieb. and Zucc.; Thunb., Fl. jap., 134, under the name of *L. pomponium*; Wall., Not., p. 181; *ibid.*, p. 107 (bulb figured).—A very distinct species, in the style of *L. tenuifolium*, but with a much more slender habit and small scarlet flowers. *L. pumilum* of Regel and *L. stenophyllum* of Baker are both to be referred to this species.

L. CAMTSCHATCENSE (VI.).—(Gawl., Bot. Mag., p. 1216; Regel, "Gartenflora," p. 173; "Flora des Serres," vol. xii., pl. 101; De Cann. d'Ham, p. 66, &c.).—Synonymous with the *Fritillaria camtschatcensis* of Gawler, Fischer, and Künth and the *Ambilirion camtschatcense* of Swert. *L. quadri-folium* of Meyer also corresponds to this species, which is further known under the names of Sarana Lily, Small Black Lily, Blue Lily, &c.

L. CAMTSCHATICUM (IV.).—(Hort.; Krelage, Cat., 1876, 1877).—Sometimes also passing under the name of *L. camtschatcense*. A sub-species or variety of *L. croceum* was formerly grown under both these names. (See especially Krelage and some old Dutch catalogues.)

L. CANADENSE (V.*).—(Linn., Sp. 435; Wall., Not., p. 163; *ibid.*, p. 110 (bulb figured).—A native of Canada and Virginia, and cultivated in Europe since the year 1629. Its principal varieties are:—

L. CANADENSE SUPERBUM (V.).—(Elwes, Mon., pl. 27).—Mr. Elwes gives a figure of this variety, which he says is more robust, more free flowering, and finer than the type, and bears from three to eight flowers intermediate between those of *L. canadense* and *L. superbum*. He also gives a figure of a variety of *L. canadense* with very narrow and much-recurved petals, which, according to Mr. Hanson, is very abundant on Long Island, New York.

L. canadense rubrum (Bot. Mag., t. 858, under the name of *L. canadense fl. rubicundis*; Red., Lil., pl. 301), *L. canadense flavum* (Bot. Mag., t. 800; Fl. des Serres, vol. xi., p. 203), *L. canadense flavo-rubrum* (Hort., Krelage, Cat.).—Hooker distinguishes *L. canadense uniflorum* and *L. c. pluriflorum*. There are also several Lilies which are considered by some authorities to be mere varieties of *L. canadense*, but which we shall proceed to describe as sub-species or different forms.

L. CANADENSE HARTWEGI (V.).—(Baker, Gard. Chron., 1871, 321; Duch., pp. 123-124).—A Lily found in 1848 by Hartweg on the mountains of Santa Cruz, California, and considered by Baker to be identical with the *L. Roezli* of Regel, "Gartenflora," f. 167.

L. CANADENSE MINUS (V.).—(Wood, Proc. Acad. Phil., 1868, 166).—Referred by Baker to the *L. canadense parviflorum* of Hooker and the *L. Sayi* of Nuttall.

* All the Lilies of the canadense section have their leaves in whorls.

L. CANADENSE OCCIDENTALE (V.).—(Lindley and Paxton; Galcott, Journ. Hort. Prat., 1852-53; Hooker, "Flora of N. America").—A Californian variety or sub-species, with flowers larger than those of the type and heavily spotted with brownish red, &c.

L. CANADENSE PARVIFLORUM (V.).—(Hooker, Flora of N. Amer., 281; Wood, Proc. Acad. Phil., under the name of *L. canadense minus*; Fl. des Serres, vol. xxi., pl. 71, under the name of *L. parvum* var. *flore luteo* (?); Wall., Not., pp. 164-65; Nuttall, under the name of *L. Sayi*).—The *L. parviflorum* (*L. canad. parvifl.*) of Hooker must not be confounded with the *L. parvum* (*L. canad. parvum*) of Kellogg and Regel, although they resemble each other very closely. The former is a native of Columbia and Oregon, while the latter is found on the mountains of Sierra Nevada, California. They are both charming Lilies, with very small, bell-shaped, pendent, dotted flowers.

L. CANADENSE PARVUM (V.).—(Kell., Proc. Calif. Acad., ii., t. 52; Regel, Gartenfl., t. 725; Bot. Mag., t. 6146; Fl. des Serres, vol. xxi., pl. 71 (the reddish flowered variety); Wall., Not., pp. 164-165; *ibid.*, p. 110 (bulb figured).—Synonymous with *L. parvum*, but not to be confounded with *L. parviflorum* (see preceding paragraph). Krelage, in his catalogue for 1876-1877, announces several varieties of *L. parvum*, raised in his establishment—a proof that this species will become greatly modified when raised from seed.

L. CANADENSE PUBERULUM (V.).—(Wood, Proc. Acad. Phil., 1868, p. 166; Torrey, under the name of *L. puberulum*; Baker, as a variety of *L. Humboldtii*; Wall., Not., p. 170).—Identical with the *L. puberulum* of Torrey. Baker considers it a variety of *L. Humboldtii*, in which the stem and the undersides of the leaves are downy. It is not to be confounded with *L. puberulum*, Hort. Leicht (also known as *L. pallidifolium*), which Baker describes as a variety of *L. pardalinum*.

L. CANADENSE WALKERI (V.).—(Wood, under this name; Baker, as the second variety of *L. canadense*; Wall., Not., p. 164).—Also known as *L. Walkeri*. A Californian Lily placed by Baker amongst the varieties of *L. canadense*.

L. CANDIDUM (II.).—(Linn., Sp. plant, i., 433; Thunb., Fl. jap., 133; Wall., Not., p. 139, &c.).—One of the oldest Lilies in cultivation, universally known, and always regarded as one of the most beautiful. Its principal varieties are, *L. candidum striatum* (Fl. des Serres, vol. vii., p. 247), also known as *L. candidum maculatum* and *L. candidum purpureo-striatum*. In this variety the bulb, leaves, and flowers are variegated with small purple streaks. *L. candidum flore-pleno* (Hort.), also known as *L. monstrosum* or *L. spicatum*. In this variety the petals are arranged in a spike at the end of the peduncle. *L. candidum foliis variegatis* (Hort.).—Of this there are several sub-varieties with spotted, margined, or striped leaves. *L. candidum fl.-pl. foliis anreo-variegatis* (Cat. Van Houtte, 1883).—A novelty. *L. candidum monstrosum* (Hort.).—See *L. candidum fl.-pl. or spicatum*. *L. candidum maculatum* (Hort.).—See *L. candidum striatum*. *L. candidum speciosum* (Krelage).—Blossoms earlier than the type and has somewhat smaller flowers. *L. candidum spicatum* (Hort.).—See *L. cand. monstrosum* and *L. cand. flore-pleno*.

L. CANDIDUM SPECIES (II.).—(Linn., Sp. pl., i., 433). *L. CANDIDUM BYZANTINUM* (II.).—(Lob., Jc., 163).—Both of these Lilies are referred to *L. peregrinum*.

L. CARNIOLICUM (V.).—(Bernhardt, Deutsch. fl. ii., 536; Wall., Not., p. 176; *ibid.*, p. 113 (bulb figured).—A species which very closely resembles *L. chalcodonium* in its leaves and *L. pomponium* in its flowers.

L. CAROLINIANUM (V.).—(Michaux, fl. i., 197; Bot. Mag., t. 2280; Bot. Reg., p. 580; Lodd., Bot. Cab., p. 335, under the name of *L. autumnale*; Wall., Not., p. 167).—This species comes very near *L. superbum*, and is also known by the names of *L. Michauxii*, *L. Michauxianum*, and *L. autumnale*.

L. CAROLINIANUM (IV.).—(Catesby, Carol., ii., 58; Lamk., Encyc., iii., 535).—This Lily is not to

be referred to the preceding species, but to the following one (*L. Catesbæi*).

L. CATESBÆI (IV.).—(Walter, Fl. Carol., 123; Bot. Mag., t. 259; Lodd., Bot. Cab., pl. 807; Wall., Not., p. 162; *ibid.*, p. 103 (bulb figured); Duch., *Observ.*, v. table).—Identical with the *L. spectabile* of Salisbury, but not with the *L. spectabile* of Fischer and Linck, the former of which is to be referred to *L. dauricum*, and the latter to *L. bulbiferum* (*L. Catesbæi*, Hort. Bonch., 1852, is not to be referred to the present species, but to *L. dauricum*).—This handsome Lily, which is tender and still continues scarce, has been placed by Endlicher in a special sub-genus—*Pseudolirion*—containing those Lilies in which the segments of the perianth are narrowed in the lower part into a long claw. This section includes only two species—viz., *L. Catesbæi* and *L. philadelphicum*, together with the forms of the latter species—*L. andinum*, *L. Wansharaicum*, &c.

L. CATTANÆE (V.).—(Visiani).—See *L. Martagon Cattaneæ*.

L. CHAIXI (IV.).—(Geo. Maw, Gard. Chron., vol. x., p. 37; Wall., Not., p. 158, in note; figured in Elwes' "Monograph").—Also known as *L. croceum Chaixi*. A variety of *L. croceum*, which starts into growth earlier than the type, but flowers later, and has a shorter stem, bearing at the most two or three flowers.

L. CHALCEDONICUM (V.).—(Linn., Sp., i., 434; Fl. des Serres, vol. xxi., p. 29; Bot. Mag., t. 933; De Cann. d'Ham., p. 52 *et seq.*; Wall., Not., p. 180).—Formerly known as *L. rubrum byzantinum* and *L. Martagon constantinopolitanum* (Parkinson). The type, which has deep scarlet flowers, seems to be disappearing from cultivation. The varieties are:—

L. chalconicum elatior (Krelage, Cat. for 1876, 1877).—A handsome variety taller than the type. *L. chal. græcum* (*ibid.*).—A variety from Greece, with flowers of a lighter shade than those of the type. *L. chal. majus* (Hort. Leicht.).—Identical with *L. chal. elatior*. *L. chal. flore luteo* (*ibid.*).—Should not this variety rather be referred to the *L. pyrenaicum* of Gouan (?) (See note). *L. chal. punctatum* (Hort. Leicht.).—So named in M. Leichtlin's list. *L. chal. flore pleno* (De Cann. d'Ham., p. 52 *et seq.*).—A very handsome old variety, which has long since disappeared from cultivation, known also as *L. Zusiniare*, *L. Corona di Re*, &c. *L. chal. fol. alb. marginalis* (Küth, syn., iv., 262).—This variety no longer exists in collections. *L. byzantinum minutum* (Bauhin, Pin., 78), *L. b. polianthus* (*ibid.*), and *L. b. purpureo-sanguineum* (*), &c. (*ibid.*).—Old varieties mentioned by Bauhin. (See the "Mémoire" of D. Spæe.)

L. CHALCEDONICUM (V.).—(Mert. and Koch, ii., p. 535; Jacq., fl. Aust. supp., t. 20).—This species is not to be referred to the *L. chalconicum* of Linnæus, but to the *L. carniolicum* of Bernhardt.

L. CHALCEDONICUM (V.).—(Gmel., Syst., 544).—Should be referred to the *L. pyrenaicum* of Gouan.

L. CITRINUM (IV.).—(Hort. Wilson; Wall., Not., p. 160).—Identical with *L. Thunbergianum citrinum*. A variety with very large citron-yellow flowers.

L. COLCHESTERI (II.).—(Fl. des Serres, vol. xxi., p. 73, copied from the figure of Dr. Wallace).—Identical with *L. japonicum colchesteri*, and also to be met with under the name of *L. japonicum flavum*. The flowers are of a yellowish white streaked with purple externally.

L. COLCHICUM (V.).—(Stevens).—See *L. Szovitzianum*.

L. COLUMBIANUM (V.).—(Hanson, in Hort. Leicht.; Wall., Not., p. 169; *ibid.*, p. 113 (bulb figured)).—Also known as *L. oregonense* and *L.*

nitidum of English gardens. A pretty little Lily from Oregon, resembling *L. canadense*, but with recurved petals.

L. CONCOLOR (IV.).—(Salisb., Parad., 47; Bot. Mag., t. 1165; Wall., Not., p. 150; *ibid.*, p. 106 (bulb figured)).—A native of China, and introduced into European collections in 1806 by the Hon. C. Greville. It is a species difficult to grow and still continues scarce. The flowers are small, scarlet, and erect.

L. concolor luteum—(Regel; Maxim. in Herb. Petr., Gartenfl., t. 885; figured in Elwes' "Monograph").—A yellow-flowered variety of the preceding.

L. concolor sinicum—(Bot. Mag., t. 6005).—See *L. sinicum*.

L. CORDIFOLIUM (I.).—(Thunb., Linn. Tr., ii., 332; Fl. des Serres, vol. iii., 216; Wall., Not., p. 124; *ibid.*, p. 90) (bulb figured).—Identical with the *Hemerocallis cordata* of Thunberg, Fl. jap., 143. The *L. Glehnii* of F. Schmidt is a variety of this Lily.

L. CORDIFOLIUM (I.).—(D. Don. Prod. Fl. Nep. 52).—This species is not to be referred to the *L. cordifolium* of Thunberg, but to *L. giganteum*.

L. CORIDION (IV.).—(Sieb. and Devr., Tuinb., f. 11, 341; Wall., Not., p. 156; Duch., p. 40 *et seq.*).—A small Japanese Lily of the same section as *L. concolor*, *L. pulchellum*, *L. Partheuon*, &c. According to Baker, it differs from *L. Partheuon* only in the yellow tinge of its flowers.

L. CORUSCANS (IV.).—(Hort.).—A variety of *L. Thunbergianum*, and apparently identical with *L. Thunbergianum atrosanguineum*.

L. CROCEUM (IV.).—(Fuchs, Stirp., p. 365; Bot. Mag., t. 36, under the erroneous name of *L. bulbiferum*, as a set-off to which the Bot. Cab., pl. 874, gives a figure of a Lily, which is probably *L. dauricum*, or perhaps may be *L. croceum præcox* or *L. umbellatum*. The *L. croceum* of Bernhardt (Enumer. i.) apparently should be referred to the *L. pubescens* of that botanist).—*L. croceum* (the present species) is one of the oldest cultivated and bardest Lilies, and accordingly we find it mentioned by old writers under a great number of different names. It is notably the *L. aureum* of Parkinson, the *L. purpureum majus* and *L. purpureum minus* of Dodonæus and Delobel, the *L. aurantiacum* of several Dutch nurserymen, &c. Its principal varieties are:—

L. croceum Chaixi (G. Maw, THE GARDEN, Vol. X., p. 37; Wall., Not., p. 158).—A variety which flowers earlier than the type, although it is later in starting into growth; it bears, at the most, two or three flowers. *L. croceum fl.-pl.* (Bas. Besler, Hort. Eystt.; De Cann. d'Ham., p. 47).—A variety which has long disappeared from cultivation. *L. croceum flore-saturato* (Hort. Leicht.). *L. croceum grandiflorum* (Cat. of the Colchester Plant Co.). *L. croceum humile* (Fisch. and Lal.).—Perhaps an unnecessary synonym for *L. croceum minus*. *L. croceum majus* (Fisch. and Lal.).—In the establishment of M. Van Houtte two forms of *L. croceum* are grown, which differ very much in height. This year (1883) I saw there a plant of *L. croceum*, the stem of which measured 5 feet 4 inches in height, and bore eighteen flowers regularly arranged in pyramid form. *L. croceum minus* (Krelage, Cat.). *L. croceum præcox* and *L. croceum serotinum* (Fisch. and Lal., Krelage Cat.).—See the "Mémoire" of D. Spæe for the synonyms which are applied to several of these varieties. *L. croceum sibiricum* (Krelage, Cat.). *L. croceum tenuifolium* (Wall., Not., p. 158 in note).—A very difficult species to cultivate, and resembling *L. dauricum* in appearance; the leaves are narrow, pointed, and closely set; bulb small, and easily broken or bruised.

L. CRUENTUM (III.).—(Hort., Wall., Not., p. 151).—See the varieties of *L. auratum*.

L. CRUENTUM (IV.).—(Hort.; Catel Van Houtte).—Identical with *L. Thunbergianum cruentum*, a variety with blood-red flowers spotted with blackish brown.

L. CRUENTUM (III.).—(Hort.; Wall., Not., p. 150).—Identical with *L. speciosum cruentum*, a remarkable sub-variety of *L. speciosum rubrum*.

L. DALMATICUM (V.).—(Visiani).—See *L. Martagon dalmaticum*.

L. DAURICUM (IV.).—(Gawl., "Bot. Mag." t. 872, under the name of *L. pennsylvanicum*; Bot. Reg., 594; Roem. and Sch., vii., 414; Wall., Not., p. 162; *ibid.*, pp. 104, 105 (bulb figured).—Identical with *L. davuricum*, *L. spectabile* (Fischer), and *L. pennsylvanicum* (Gawler). This Lily, which has cottony flower-buds and flowers which resemble those of some varieties of *L. croceum*, comes into bloom in May. The bulb is comparatively small and delicate.

L. DAVIDI (IV.).—(Duch. MS.; Wall., Not., p. 156).—A small Lily of the concolor and coridion section, discovered in Thibet at an elevation of 9000 feet above the sea-level in June, 1869. The flowers are star-shaped and orange-coloured with purple points.

L. DEXTERI (III.).—(Hovey, Mag. of Hort.).—Identical with *L. auratum*, and derives its name from Gordon Dexter, who first introduced this Lily from Japan into the United States.

L. ELEGANS (IV.).—(Thunb., Mém. Acad. Petr., iii., 203).—This Lily, which was at first considered a distinct species, also known as *L. venustum*, is now generally placed among the forms or varieties of *L. Thunbergianum*. The flowers are large, of a pure orange-yellow, in umbels.

L. ELISABETHÆ (II.).—(Hort. Leicht.; Elwes, Monogr.).—Described in Mr. Elwes' "Monograph" as identical with the *L. japonicum* of Thunberg, the *L. Kramerii* of Hooker, and the *L. Belladonna* (?) of Baker.

L. ELLACOMBEI (V.).—(Elwes, Monogr.).—Identical with *L. pardalinum Ellacombei*. A variety of *L. pardalinum*, distinguished by its double whorls, which each contain from 12 to 24 leaves, and flowering 15 to 20 days later than the other varieties. Mr. Elwes considers *L. californicum* a variety of *L. pardalinum*, of which Lily he gives the following classification:—

- (1.) *L. pardalinum californicum*, fig. on pl. 29, with the synonyms *L. californicum* and *L. Robinsonianum*. A form with large brilliant flowers resembling those of *L. Humboldtii* in size and beauty. The peduncles usually spring from the same point and are not pyramidally disposed, as in the other varieties. The flowers are generally two or three in number, and never more than five. Mr. Elwes is inclined to refer to this form *L. pardalinum* var. *Bourgai*, *L. canadense Hartwegi*, *L. canadense Walkeri*, *L. puberulum* or *canadense puberulum* (Torrey), *L. Roetzli*, &c.
- (2.) *L. pardalinum angustifolium* (Kellogg).—Fig. on pl. 28. This form bears up to 11 or 12 flowers in a pyramid.
- (3.) *L. pardalinum occidentale* (Hort. Ware).—Comes near the preceding, but has narrower and more pointed leaves, 12 to 15 in a whorl; the segments of the flowers are broader, longer, and more widely opened out.
- (4.) *L. pardalinum Ellacombei*.—See above.
- (5.) *L. pardalinum pallidifolium* (Baker).—Identical with the *L. puberulum* of Leichtlin. This Lily has short pale or light green leaves, and bears from 20 to 30 flowers on the same stem, growing from 5 feet to 8 feet high.

L. EMPEROR (III.).—(Wall., Not., p. 152).—See the varieties of *L. auratum*.

L. ERECTUM (III.).—(Wall., Not., p. 157; *ibid.*, p. 174).—Identical either with *L. umbellatum erectum* or with *L. tigrinum erectum* (*L. tig. Materi*).

L. EXCELSUM (V.).—(Hort.; L'ndl., Bot. Reg., 1842, Misc. No. 51, and 1844, pl. ii. under the name of *L. testaceum*; Fl. des Serres, vol. i., p. 221; Wall., Not., p. 176; Duch., p. 46 *et seq.*).—Also known as *L. testaceum*, *L. altissimum*, and *L. Isabellinum*. M. Duchartre agrees with M.

(*) Messrs. Krelage in their catalogue for 1876, 1877, when mentioning as varieties of *L. chalconicum* the Lilies named *Chrysolora*, *Garibaldi*, *Koh-i-noor*, *Magenta*, *Princesse d'Orange*, and *Von Moltke*, all of which have flowers of a more or less deep shade of yellow or orange, observe, with a good deal of reason, that it is very difficult to determine to which of the three species, *chalconicum*, *pomponium*, and *pyrenaicum*, some of varieties enumerated in that list should be referred.

Koch in considering *L. Isabellinum* to be a variety of *L. testaceum*. A handsome hardy Lily, of uncertain origin, probably a cross between *L. candidum* and *L. chalcidonicum*. The flowers are of a pale chamois colour. It was first introduced into Belgium in 1838 under the name of *L. peregrinum* (see Spae's "Mémoire," p. 210).

L. EXIMIUM (II.).—(Court. Mag. d'Hort., No. 300; Fl. des Serres, vol. iii., p. 283; Duch., p. 39; Wall., Not., pp. 130, 131).—A handsome Lily of the longiflorum section. See the foregoing authorities for a description of the characters which distinguish it both from *L. longiflorum* and from other forms of Lilies with long white flowers.

L. EXIMIUM (III.).—(Hort. Sec. Zucc.).—Identical with *L. speciosum album*.

L. FUKINATA (IV.).—(Hort. jap.).—A Japanese variety of *L. Thunbergianum*.

L. FINE-JURI (V.).—(Hort. jap.).—The Japanese name for *L. callosum*.

L. FIU-KWAMA (IV.).—(Hort. jap.).—The Japanese name for *L. Thunbergianum* var. *pictum*.

L. FLAVUM (V.).—(Lamk.) and *L. flavum angustifolium* (V.) (Tour., 371).—These two Lilies are either identical with the *L. pyrenaicum* of Gouan, or else are yellow-flowered varieties of *L. pomponium*.

L. FORMOSUM (IV.).—(Illus. Hort., 1865, p. 459).—A Lily introduced by M. A. Verschaffelt, of Ghent, as a distinct species, but since proved to be only a variety of *L. Thunbergianum* with flowers of a fiery-red colour shaded with yellow.

L. FORMOSISSIMUM (IV.).—(Hort.; Krelage, Cat., 1876-1879).—A variety of *L. Thunbergianum*.

L. FORTUNEI (III.).—(Lindl. and Koch).—See *L. tigrinum Fortunei*.

L. FULGENS (IV.).—(Morren, Not. sur les Lis du Japon; Spae, 7th species, with the synonyms *L. atrosanguineum*, *L. Thunbergianum atrosanguineum*, &c.).—This Lily, which has several sub-varieties, was for a long time regarded as a distinct species. It is now, however, placed among the varieties or sub-species of *L. Thunbergianum*.

L. FULGIDUM (IV.).—(Hort.).—See *L. umbellatum fulgidum*.

L. GIGANTEUM (I.).—(Wallich; Bot. Mag., 4673; Fl. des Serres, vol. viii., p. 59; Wall., Not., p. 125; ibid., p. 91 (bulb figured)).—This giant Lily, which grows nearly 10 feet high and has heart-shaped leaves and white flowers striped with violet-red on the inside, was discovered in the Himalayas by Wallich in 1820, and was introduced into England in 1847 by Major Madden. It is erroneously described under the name of *L. cordifolium* (a different species) by D. Don in his "Prodromus Florum Nepal," p. 52.

L. GLEHNII (I.).—(F. Schmidt).—A slightly different form of the *L. cordifolium* of Thunberg.

L. GRACILE (VI.).—(Ebel. Zwölf Tage auf Montenegro, pp. 8, 9, pl. I, fig. 1; Wall., Not., p. 181).—This species, which was not in flower when discovered in Montenegro in 1842, should apparently be referred to the *Fritillarias*.

L. HANSONI (V.).—(Leichtlin; Bot. Mag., t. 6126, under the name of *L. maculatum*; Wall., Not., p. 37; ibid., p. 109 (bulb figured)).—A very distinct species, discovered by Maximowicz in Japan in 1860. Its general appearance is that of a *Martagon* Lily, with orange-yellow flowers spotted with dark purple.

L. HARRISI (II.).—(Hort.).—A variety or sub-species of *L. eximium*, with flowers larger than those of *L. longiflorum* and very numerous. It has the peculiarity of producing several shoots, which, it is said, bear a succession of flowers.

L. HARTWEGII (V.).—(Baker, Gard. Chron., 1871, p. 321).—See *L. canadense Hartwegii* and *L. Roezli*.

L. HEMATOCHROMUM (IV.).—(Lemaire, Ill. Hort., p. 503).—A variety of *L. Thunbergianum*, with deep blood-red flowers. This variety was at first described and figured as a distinct species.

L. HIRSTUTUM (V.).—(Miller, Dict. No. 10).—See *L. Martagon*.

L. HOOKERI (VI.).—(Baker, Bot. Mag., t. 6385; Gard. Chron., 1871; Wall., Not., p. 185).—Iden-

tical with *Fritillaria Hookeri*. This Lily comes very near *L. Thompsonianum* (*Fritillaria Thompsoniana*), from which, however, it differs specifically. It was discovered by Dr. Hooker, in 1849, in the temperate region of the Himalayas.

L. HORSMANNI (IV.).—(Hort.).—A variety of *L. Thunbergianum*, with broad petals of a deep blood-red colour and spotted.

L. HUMBOLDTI (V.).—(Roezl and Leichtlin; Duch., p. 105, &c.; Regel, Gartenfl., p. 724; Fl. des Serres, vol. xix., pl. 65; Wall., Not., p. 169).—A handsome and tall species from the Sierra Nevada (California), the flowers of which resemble those of *L. superbum*, while the bulb is like that of *L. speciosum*. The *L. Humboldtii* of Harford is a different form of the present species peculiar to the island of Santa Rosa, opposite Santa Barbara, and has light green pointed leaves, which are disposed in more regular whorls than those of the type. It is also considered to be a more robust Lily than the latter. The plates in the "Gartenflora" and the "Flore des Serres" are very truthful representations of the Santa Rosa form. From all appearances *L. Bloomerianum* (Hort.) should be regarded as identical with the Sierra Nevada form of *L. Humboldtii*, and *L. Bloomerianum ocellatum* (Hort.) as representing the *L. Humboldtii* of Santa Rosa. *L. Humboldtii* seems to have a very great tendency to vary when raised from seeds, as M. Krelage, in his catalogue for 1870-1880, mentions several new varieties under the names of *Linnaeus*, *Dodonæus*, *Lobelius*, *Clausius*, &c.

Mr. Baker regards the *L. canadense puberulum* of Torrey (not the *L. canad. puber.* of Leichtlin) as a variety of *L. Humboldtii*.

L. HUMILE (IV.).—(Fischer; Spae, Mém., p. 18).—See *L. croceum humile*.

L. HUMILE (IV.).—(Miller, Dict., No. 4; Spae, Mém., p. 16; Wall., Not., p. 157).—This Lily is either identical with the typical form of *L. bulbiferum*, or else is a form of that species.

L. HYACINTHUS.—(Siebold; Morren, Not. sur un Lis du Japon; Mess. des Sciences et des Arts de Gand, 1833).—Among the Lilies brought by M. Von Siebold from Japan and handed over to the Botanic Garden at Ghent, one Lily (which could not be kept alive) was found labelled *L. Hyacinthus*. (See also L. Matignon pannonicum.)

L. IMPERIALE (II.).—(Rodb., Hort.; Spae, Mém., p. 14).—Identical with *L. eximium*.

L. IMPERIALE (III.).—(Hort., Sieb.).—Identical with *L. speciosum imperiale* and *L. auratum*.

L. INCOMPARABILE (IV.).—(Hort.).—Identical with *L. umbellatum incomparabile*. A variety highly commended by Messrs. Krelage, Wallace, and others.

L. ISABELLINUM (V.).—(Kunze, Bot. Zeit., i, 609; Walp., Ann. Bot., i, p. 853).—According to Messrs. Koch and Duchartre, this Lily is a variety of *L. testaceum* (*L. excelsum*).

L. JAMA-JURI (II.).—(Hort. jap.).—Identical with *L. Takesima* or *L. longiflorum Takesima*. This species comes near *L. longiflorum*, but is more robust in all its parts and bears from three to four flowers.

L. JAPONICUM (II.).—(Thunb., Fl. jap., 133; Planchon, Fl. des Serres, vol. ix., p. 53, in the article headed *L. odorum*).—According to M. Planchon, the true *L. japonicum* of Thunberg, of which an authentic specimen is preserved in the "Album of Delessert," has never been seen in a living state in Europe. He says that it is quite a mistake to believe that the *L. japonicum* of nurserymen (which he has re-named *L. odorum*) is the true plant. A note in the "Flore des Serres," vol. xxi., p. 73, states that the true *L. japonicum* of Thunberg might have been recognised in a Lily which was exhibited at South Kensington in 1875 by Mr. Wilson under the name of *L. Kramerii flore-albo* (?).

L. JAPONICUM (II.).—(Hort.; Planchon, under this name; Herb. de l'amat., pl. 375; Bot. Mag., t. 1591; Bot. Cab., pl. 438; Spae, Mém., p. 11).—This is the old *L. japonicum* of nurserymen and identical with the *L. odorum* of M. Planchon. It was introduced into Europe in 1804 by Mr. Kirk-

patrick. Although it was very common in the gardens at Ghent about the year 1830, this species has now entirely disappeared from them.

L. JAPONICUM (II.).—(D. Don, Prodr. Nep., p. 52 (not Thunberg)).—According to Mr. Baker this Lily is identical with the *L. Wallichianum* of Roemer and Schultes.

L. JAPONICUM COLCHESTERI (II.).—(Fl. des Serres, vol. xxi., p. 73).—See *L. colchesteri*.

L. JAPONICUM FLAVUM (II.).—(Hort.).—A name sometimes applied to the preceding species, on account of the yellowish white colour of its flowers.

L. JAPONICUM PURPUREO-VITTATUM (II.).—(Catal. Thunb.).—This is apparently identical with *L. Jama-Juri* (*L. Takesima*).

L. JEFFERSONI? (Leichtlin).—So named in the list of M. Leichtlin (see note on p. 151).

L. JUCUNDUM (III.).—(Hort.).—See *L. tigrinum jucundum*.

L. KASBIKA (III.).—(Hort. jap.).—The Japanese name for the *L. versicolor* of Kämpfer, Amœn., 871, which is identical with *L. speciosum rubrum*.

L. KENTAN (III.).—(Hort. jap.).—D. Spae, in his "Mémoire," places this name among the synonyms of both the *L. tigrinum* and the *L. lancifolium* of Thunberg.

L. KI-FINE-JURI (IV.).—(Hort. jap.).—The Japanese name for *L. Coridion*.

L. KONOKKO-JURI (III.).—(Hort. jap.; Sir Jos. Banks and Kämpfer).—Identical with *L. speciosum*.

L. KORAI-JURI (III.).—(Hort. jap.).—A Korean Lily, identical with *L. speciosum*.

L. KEMPFERI (III.).—(Zucc. in Sieb., Fl. jap., pl. 12, 13).—A variety of *L. speciosum*.

L. KRAMERI (II.).—(Kramer, Bot. Mag., t. 6058; Fl. des Serres, vol. xx., p. 31; Wall., Not., p. 138).—A Japanese Lily, with large white flowers slightly tinged with pink. It is probably a cross between *L. speciosum* and one of the longiflorum section, perhaps *L. Browni* or *L. odorum*. There exists one variety of it, viz., *L. Kramerii flore-albo*, which, when exhibited at South Kensington in 1875 by Mr. Wilson, was considered by many to be the true *L. japonicum* of Thunberg.

L. KRETZERI (III.).—(Hort.).—Named by the Japanese "Teppo." (See the sub-varieties of *L. speciosum album*.)

L. KURUMA-JURI (IV.).—(Hort. jap.).—The Japanese name for *L. medeoloides* (the two-whorled Lily).

L. LANCIFOLIUM (IV.).—(Thunb., Trans. of the Linn. Soc., ii, 1794, p. 333; Spae, Mém., 22nd species, p. 24; Duch., pp. 12, 13, 14, &c.; Wall., Not., p. 149 in note).—This Lily, which has never been introduced into Europe, has a bulbiferous stem, with sessile leaves and small white flowers. According to Dr. Wallace, the *L. lancifolium* of Thunberg is a miniature form of *L. Thunbergianum* (?). This Lily is not to be confounded with the *L. speciosum*, which is often met with in commerce under the name of *L. lancifolium*.

L. LANCIFOLIUM (IV.).—(Hort. Bouch.).—This is a variety of *L. bulbiferum*, probably the *L. bulbiferum latifolium* of Fischer.

L. LANCIFOLIUM (III.).—(Hort.; the *L. lancifolium* of Paxton's "Magazine," 267, is identical with *L. speciosum punctatum*).—This name was originally applied to *L. speciosum*, which flowered in Europe for the first time in the Botanic Garden at Gand in 1832. (See *L. speciosum album* and *L. speciosum rubrum*.)

L. LANDRATH LEISNER (III.).—(Hamburg Exhibition, 1869).—See *L. tigrinum flore-pleno*.

L. LATIFOLIUM (IV.).—(Link., Enum. h. ber. alt., i, p. 21).—Identical with the *L. bulbiferum latifolium* of Fischer.

L. LATIFOLIUM (?).—(Leichtlin).—So named in M. Leichtlin's list (see note, p. 151).

L. LEDEBOURI (V.).—(Baker; Ledeb., Fl. Ross., iv., 151, under the name of *L. pyrenaicum*; Wall., Not., p. 173).—This is a form or variety of *L. monadelphum*, *L. Loddigesianum*, or *L. colchi-*

cum. It is identical with the *L. pyrenaicum* of Ledebour, but not with the *L. pyrenaicum* of Gouan.

L. LEICHTLINI (V.).—(Hooker, Bot. Mag., t. 5673; Fl. des Serres, vol. xvii., p. 39; Floral Mag., t. 509; Wall., Not., p. 177; *ibid.*, p. 99 (bulb figured).—This handsome Lily resembles a *L. tigrinum*, which would have the ground colour of the petals of acitron-yellow marked with numerous dark spots. The stem is about 3½ feet high, and is slender and smooth; leaves alternate, sessile, lanceolate.

L. LEICHTLINI MAJUS (V.).—(Wilson, Journal of Hort., 1873, p. 371).—A variety of the preceding with luxuriant proportions, the stem being about 5 feet high and the leaves 6 inches or 7 inches in length.

L. LEOPOLDI (III.).—(Hort.).—See *L. tigrinum* Leopoldi (*L. tigrinum splendens*).

L. LILACINUM?—(Leichtlin).—So named in M. Leichtlin's list (see note, p. 151).

L. LINIFOLIUM (V.).—(Hornem., Hort., Hafn., 326).—This small Lily should be referred either to the *L. tenuifolium* of Fischer or to the *L. pulmulum* of Redouté. Many botanists consider these two Lilies identical.

L. LISHMANI (III.).—(Moore, Fl. and Pom., s. 3, vol. vi., p. 16).—See *L. tigrinum* Lishmani.

L. LIU KIU (II.).—(Hort. jap.).—See *L. longiflorum* Liu-kiu.

L. LODDIGESIANUM (V.).—(Schult., Syst. Veg., vii., 416; Spae, Mém., 44th species, p. 43; Wall., Not., pp. 173, 174, 175).—*L. Loddigesianum*, *L. monadelphum*, *L. Szovitzianum* (*L. Colchicum*), and *L. ponticum*, all of which have sessile leaves and turban or Martagon flowers of a more or less bright yellow colour and more or less spotted, are natives of Russia, the Caucasus, Colchis, &c., and were at first regarded as distinct species. M. Spae, who was not acquainted with *L. ponticum*, considered *L. Szovitzianum* (*L. colchicum*), *L. monadelphum*, and *L. Loddigesianum* as specifically distinct (see species 42, 43, 44, in his "Mémoire"). Mr. Baker admits *L. monadelphum* and *L. ponticum* as the 38th and 40th species of his "Synopsis." Dr. Wallace seems inclined to look upon all these Lilies as merely forms or varieties of one single type.

L. LONGIFLORUM (V.).—(Thunberg; Lodd., Bot. Cab., p. 985; Fl. des Serres, vol. ii., p. 270; Wall., Not., p. 129; *ibid.*, p. 92 (bulb figured).—This Lily was introduced from Japan in 1819, and is one of the most extensively cultivated of the Lilies with long white flowers. There are a great number of sub-species or varieties of it in existence. Besides the species or forms which come very near it, and which will be found under the names *L. eximium*, *L. abchasicum*, *L. odorum* (*L. japonicum*), *L. Harrisii*, &c., the following are generally placed among the varieties, properly so called, of *L. longiflorum*: *L. longiflorum grandiflorum* (Wall., Not., p. 131, in note). *L. longif. fol. albo-marginatis* (Hort. Catal. Van Houtte, 1883). This variety has the leaves margined with a broad silvery white band. *L. longif. Liu-kiu* (Hort. jap.; Catal. Krelage, Van Houtte, &c.).—This variety has a green stem, taller than that of the type, and rather long and slightly drooping flowers, which have an odour of Orange blossom. *L. longif. Liu-kiu precox* (Catal. Krelage).—An early-flowering variety of the preceding.* *L. longif. Mdma. Von Siebold* (Wall., Not., p. 132).—The leaves of this variety are intermediate between those of the type and those of *L. eximium*. It is a dwarf form, with the petals or segments of the flowers very much opened out, but not revolute. *L. longif. Takesima* or *Jama-juri* (Hort. jap.; Wall., Not., p. 131).—A robust, well-marked sub-species or variety, with a brownish stem, bearing two or three flowers. *L. longif. Wilsoni*

(Leicht. ; Wall., Not., p. 132).—A variety growing to the height of 3½ feet and bearing from three to five flowers. It is the *L. eximium* of many amateurs, and is not to be confounded with the *L. Wilsoni* of Duchartre (pp. 55, 125), a Lily of the Thunbergianum section. *L. longif. suaveolens* or *uniflorum* (Bot. Reg., p. 560; Hort. Belge, i., 182).—According to D. Spae (see "Mémoire"), this Lily should not be considered a variety of *L. longiflorum*, but of the *L. Wallichianum* of Roemer and Schultes.

L. LONGIFOLIUM (VI.).—(W. Griffith, Jc. pl. asiat., pl. 277).—Identical with *L. Thompsonianum* (*Fritillaria Thompsoniana*).

L. LUCIDUM (V.).—(Kellogg; Gard. Chron., vol. x., p. 627; Baker, 31st species; Wall., Not., p. 168).—A native of the Oregon and Washington territories, coming near *L. superbum* and *L. carolinianum*, and considered by several authorities as merely a variety of *L. canadense*.

L. MACROPHYLLUM (II.).—(Wall., Not., p. 19).—From the letters of collectors quoted by Dr. Wallace this Lily would appear to be a handsome E. Indian (Cashmere) species, bearing four or five pure white sweet-scented flowers in a cluster.

L. MACULATUM (IV. or V.).—(Thunb. in Linn. Trans., ii., 334; Roemer and Sch., s. vii., 408; Kunth, Syn., iv., 258; Spae, Mém., 30th species, p. 30; Wall., Not., p. 154; Duch., p. 122).—With respect to the *L. maculatum* of Thunberg a great diversity of opinion exists. D. Spae makes it his 30th species, and allies it with *L. canadense*. Asa Gray refers it to *L. superbum*. Baker quotes it as a synonym of the *L. medeoloides* of Asa Gray. Koch also considers it identical with the last named Lily, which he refers to *L. Thunbergianum* (series of *L. Thunb. fulgens* and *L. Thunb. atrosanguineum*); while Baker allies his own *L. maculatum*, which he makes synonymous with *L. medeoloides*, with *L. Martagon* and *L. avenaceum*.

L. MACULATUM (V.).—(Bot. Mag., t. 6126).—The figure given under this erroneous name in the *Botanical Magazine* most evidently represents *L. Hansonii*.

L. MARITIMUM (V.).—(Kellogg, Proc. Calif. Acad., vi., 140; Wall., Not., p. 165).—This Lily, which is found in peaty meadows on the Californian coast near San Francisco, comes near *L. parvum* and *L. parviflorum*. The petals are more recurved than those of either of these two Lilies, while the bulb resembles that of *L. columbianum*.

L. MARMORATUM (V.).—(Hort.).—This and *L. marmoratum aureum* are varieties of *L. Thunbergianum*.

L. MARTAGON (V.).—(Linn., Sp. 435).—A native of Europe, and a favourite garden flower with all classes for more than two centuries; leaves in whorls; flowers numerous, pendent, turban-shaped, and regarded as the type of those of the sub-genus of Martagon Lilies. The garden varieties are numerous, smooth or downy, with single or double flowers more or less spotted, and of every shade from pure white to blackish purple, the gradations passing through the pink and lilac tints, but never through the yellow or red.* The following are the most marked varieties of the true *L. Martagon*: *L. M. album* (Spring, Syst., ii., 62; Swert, Flor., pl. 53).—Identical with the *L. glabrum* of Spreng. A variety with smooth leaves and white flowers. (See also further on.)

L. M. Cattanae (Visiani, Fl. Dalm. supp. 32, 33; Wall., Not., p. 171).—A variety, or perhaps a sub-species, with flowers of a very dark glistening purple colour, received from Montenegro by M. Leichtlin. *L. M. dalmaticum* (Visiani; Fl. des Serres, vol. xi., pl. 121; Wall., Not., p. 171).—Very near the preceding variety, and perhaps identical with it. *L. M. flore-pleno* (Hort.).—A variety with double white and another with double purple flowers. *L. M. hirsutum* (Miller, Dict., No. 10), also known as *L. hirsutum* and *L. Milleri*.—A variety with downy peduncles and flower-buds,

stem very hairy, leaves narrower, and the whorls further apart than in the type. Along with this variety it appears that we should also class the white-flowered one, the leaves of which are not smooth, but bear in their axils a very appreciable quantity of white down (Swert.). *L. M. punctatum* (Hort.).—In this variety the ground colour of the flowers is a very pale lilac-pink relieved by well marked spots. *L. M. maculatum splendens*, *L. M. superbum*, and *L. M. tigrinum tardivum* (Leichtlin).—Three varieties mentioned in M. Leichtlin's list.

L. MARTAGON POMPYNI (V.).—(Swert, Flor., pl. 49).—Identical with *L. pomponium*.

L. MARTAGON LUTEUM (V.).—Also known as *L. flavum* and *L. aureum*, and to be referred either to the varieties of *L. pomponium* or those of the *L. pyrenaicum* of Gouan.

L. MARTAGON (V.).—(Walter, Carol., 125).—Identical with *L. carolinianum* (*L. Michauxianum*).

L. Martagon (V.).—(Ledeb., Fl. Ross., iv. 149).—This Lily, according to Mr. Baker, is identical with *L. avenaceum*. In the Bot. Mag., t. 6126, the *L. Martagon* of Ledebour is described as synonymous with *L. maculatum*, under which latter name the figure of *L. Hansonii* is erroneously given there.

L. MARTAGON CONSTANTINOPOLITANUM (V.).—(Parkinson, Parad., 34).—Identical with *L. chalcidonicum*.

L. MARTAGON PANNONICUM (V.).—(Parkinson, Parad., 35; Wall., Not., p. 175).—In old writers, such as Eyst, Matthioli, Merianns, &c., this name is applied to the common *L. Martagon*. M. De Caurant d'Hamale (pp. 48 and 49 of his "Monographie") mentions the following additional names which were formerly applied to *L. Martagon*—viz., *Asphodelus femina* (Fuchs), *Lilium sylvestre* (Dodoens), *Hyacinthus ferrugineus* (Virgilus), *Hyacinthus poetarum* (Tragus), *Turk's-cap*, *Turkish Lily*, *Lily of Calvary*, &c. According to Dr. Wallace, the *L. Mart. pannonicum* of Parkinson should be referred to the *L. carniolicum* of Bernhardt.

L. MATERI (III.).—(Hort.).—See *L. tigrinum* Materi.

L. MAXIMOWICZI (III. or V.).—(Regel, Ind. sem. h. Petrop., 1866, p. 26; Gartenflora, November, 1868, pl. 596; Duch., p. 54; Wall., Not., pp. 70 and 179; *ibid.*, p. 100 (bulb figured).—This Lily comes very near *L. tigrinum jucundum* and *L. tigrinum Lishmani*. M. Duchartre considers it quite a distinct species, while Mr. Baker regards it as identical with the *L. pseudo-tigrinum* of Carrière, which he also considers to be nothing more than a variety of *L. Leichtlinii*.

L. MAWI (IV.).—(Hort.; Wall., Not., p. 161).—A variety of *L. Thunbergianum* with large bright carmine-tinted orange flowers, copiously and clearly spotted.

L. MEDEOLOIDES (IV.).—(Asa Gray, Mem. Amer. Acad., vi., 6, 415; Miguel, Ann. Mus. Lug. Bat., iii., 156; Wall., Not., p. 154).—A Japanese Lily, from the neighbourhood of Hakodadi, Isle of Corea, &c. The leaves resemble those of *L. Martagon*, and the flowers are like those of *L. concolor* and *L. pulchellum*, and are of a brilliant orange colour. The plant comes very near *L. avenaceum*. According to Mr. Baker, this Lily is no other than the *L. maculatum* of Thunberg, which has been the subject of so much controversy.

L. MELPOMENE (III.).—(Of English gardens; Wall., Not., pp. 65 and 152).—A hybrid from *L. auratum* and *L. speciosum*, and described by Dr. Wallace as being one of the finest varieties raised by Mr. Hovey, president of the Massachusetts Horticultural Society.

L. METZII (II.).—(Steudel, Plan. Ind. Orient., 1851, No. 954).—Identical with the *L. neilgherrense* of R. Wight, of which the *L. Wallichianum* and the *L. tubiflorum* of the same botanist are slightly different forms. (N.B.—Not to be confounded with the *L. Wallichianum* of Roemer and Schultes, which see.)

* I saw in the grounds of M. L. Van Houtte, at Gentbrugge, a border in which hundreds of these Lilies were in full bloom in the end of June and beginning of July, when the typical *L. longiflorum* and the old varieties *Liu-kiu* and *Jama-juri*, which were planted in adjoining beds under the same conditions, were scarcely commencing to show their flower buds.

* Among the new species, *L. avenaceum* bears a tolerably good resemblance to a true Martagon with scarlet flowers, and *L. Hansonii* is not unlike a Martagon with flowers of a fine orange-yellow.

L. MICHAUXIANUM (V.)—(Roem. and Sch., s. vii, 404; Poir., Encl., iii., 457, under the name of *L. Michauxi*; Bot. Mag., t. 2280; Lodd., Bot. Cab., p. 335; Baker, as a variety of *L. superbum*; Wall., Not., p. 167).—Identical with *L. carolinianum* (L. autumnale), which see.

L. MILLERI (V.)—(Schult., Obs., 67).—Identical with *L. hirsutum* (Martagon Milleri, Martagon hirsutum).

L. MINIATUM (V.)—(Bauhin, Pin., 79; Hort. anc.).—Bauhin (1623) describes a variety of *L. pomponium* under the name of *L. miniatum odoratum angustifolium*.

L. MONADELPHUM (V.)—(Bieberstein, Fl. cauc., i., p. 267; Bot. Mag., t. 1405; Spae, Mém., 43rd species; Baker, 38th species, with the synonyms of Loddigesianum and Szovitzianum; Duch., p. 23; Wall., Not., p. 174).—This handsome Lily, a native of the Caucasus, has been the subject of much controversy. One of the specific characters of the typical plant is that the stamens of its flowers are monadelphous. At the present day it is pretty generally agreed that *L. monadelphum*, *L. Szovitzianum* (L. Colchicum), *L. Loddigesianum*, and even *L. ponticum* and *L. Ledebouri* are all merely forms or varieties of the same species—*L. Szovitzianum* (L. Colchicum). All of them have sessile leaves and turban-shaped flowers of a more or less bright yellow colour and slightly spotted.

L. MONSTROSUM (II. and III.)—(Hort.).—This name is applied by nurserymen sometimes to *L. candidum flore-pleno* (L. spicatum) and sometimes to the fasciated or flat-stemmed varieties of *L. speciosum* (L. sp. fasciatum or corymbiflorum).

L. MONTANUM (V.)—(Clusius, Hist., ii., p. 255).—Under the name of *L. montanum flore-flavo*, Clusius describes a Lily which probably should be referred to the *L. pyrenaicum* of Gouan.

L. NANUM (VI.)—(Klotzsch—Erg.d.r.d. Prinz Waldemar, 1862, p. 53; Duch., p. 74; Wall., Not., pp. 19 and 184).—Identical with the *Fritillaria Gardneriana* of Baker. A dwarf Lily, with drooping white flowers, discovered in the Himalayas when Prince Waldemar of Prussia was travelling there in 1862, and not yet to be found in collections.

L. NEILGHERRICUM (II.)—(Lemaire; Fl. des Serres, vol. xxii., p. 5; Ill. Hort., 1861, p. 353).—A Lily with large honey-yellow-coloured flowers resembling those of *L. eximium* in shape. There is a variety of it with pink flowers (*N. neilgher. roseum*?). Contrary to the opinion of M. Lemaire, it appears that this Lily should be regarded as identical with the *L. neilgherrense* of Dr. Robert Wight.

L. NEILGHERRENSE (II.)—(Robt. Wight, Ic., p. 2031-2; *ibid.*, p. 2033-4, under the name of *L. tubiflorum*; *ibid.*, p. 2035, under the name of *L. Wallichianum*; Steudel, in Hoh., ind. v. exsic., No. 954, under the name of *L. Metzii*; Duch., pp. 71, 72; Wall., Not., p. 132; *ibid.*, p. 93 (bulb figured).—This fine Lily, with its long honey-yellow-coloured flowers, still scarce and difficult to grow, is rich in synonyms. Besides *L. Metzii* of Steudel, *L. neilgherricum* of Lemaire, and *L. tubiflorum majus latifolium* of Duchartre, we should also refer to it, as very closely allied forms, the *L. tubiflorum* and *L. Wallichianum* of R. Wight, the last-named species being identical with the *L. tubiflorum minus* of Duchartre. The *L. Wallichianum* of R. Wight (a form coming very near *L. neilgherrense*), however, should not be confounded with the *L. Wallichianum* of Roemer and Schultes, which is a different species with green-tinted white flowers, the petals or segments of which are very much recurved.

L. NEPALENSE (II.)—(D. Don, Wern. Trans., iii., 412; Wallich, Pl. As. rar., iii., 67-291; also Wallich, in Herb. Lindl., under the name of *L. ochroleucum*; Wall., Not., p. 139).—A Lily from Nepal, with large white flowers tinged with yellowish green. This species, which was introduced into England in 1855, unfortunately no longer exists in collections. It is also known as *L. ochroleucum*.

L. NITIDUM (V.)—(English gardens).—The Lily which under this name received a first-class certificate in England is referred to *L. columbianum*. (See catalogue of New Plant and Bulb Co., Colchester.)

L. OCELLATUM (V.)—(Kellogg, Proc. Calif. Acad.).—See *L. Bloomerianum ocellatum*.

L. OCHROLEUCUM (II.)—(Wallich, in Herb. Lindl.).—See *L. nepalense*.

L. ODORUM (II.)—(Planchon, Fl. des Serres, vol. ix., p. 53).—Identical with the old *L. japonicum* of nurserymen. (See *L. japonicum*.)

L. ONI-JURI (III.)—(Hort. jap.).—The Japanese name for *L. tigrinum*.

L. OREGONENSE (V.)—(Hort.).—A name sometimes applied to *L. columbianum* (*L. nitidum*).

L. OSHIROI (I.)—(Hort. jap.).—The Japanese name for *L. cordifolium*.

L. OXYPETALUM (III.)—(Baker, 17th species, placed under the sub-genus *Archelirion*; Klotzsch, Reise des Prinz Waldemar, &c., under the name of *L. triceps*; Royle, III. Himal., 388, and Hooker, Bot. Mag., t. 4731, under the name of *Fritillaria oxypetala*; Duch., pp. 73, 74, &c.; Wall., Not., p. 147; *ibid.*, p. 115 (bulb figured).—Identical with *L. triceps* and *Fritillaria oxypetala*. A small Lily with white or faintly purplish flowers, discovered in the Himalayas by Dr. Hofmeister in 1845. It is a species of the Snake's-head Lily, which up to the present is very little known.

L. PALLIDIFOLIUM (V.)—(Baker; Wall., Not., p. 166).—Identical with the *L. puberulum* of Leichtlin, but not with the *L. puberulum* or *canadense puberulum* of Torrey, the former of which Mr. Baker makes a variety of *L. pardalinum* and the latter a variety of *L. Humboldtii*.

L. PARKMANI (III.)—(Th. Moore, Gard. Chron., vol. xv., p. 456; Fl. des Serres, vol. xxi., p. 159).—A hybrid, the flowers of which resemble those of *L. auratum* in shape and those of *L. speciosum rubrum* in their carmine tint.

L. PARDALINUM (V.)—(Kellogg, Proc. Calif. Acad., ii., p. 12; Wall., Not., p. 165; *ibid.*, p. 112 (bulb figured).—This Lily, which resembles *L. superbum* in its flowers, is much more robust in habit. It has a tendency to form a tuft, the new bulbs growing one upon another, or at a very short distance from the old one, while the new bulbs of *L. superbum* run out to some length. In the catalogue of Messrs. Woolson & Co., Passaic, New Jersey, is mentioned the variety *L. pardal. angustifolium*. Mr. Baker, who makes *L. pardalinum* his twenty-eighth species, assigns to it as sub-species *L. californicum*, *L. pallidifolium* (*L. puberulum* of Leichtlin), and *L. Bourgei*, to which Dr. Wallace adds, as a fourth form, *L. Robinsonianum* and also *L. Ellacombei* (see these names).

L. PARDINUM (IV.)—(Hort.).—Identical with *L. Thunbergianum pardinum* (*L. Thunberg. Wilsoni*), and not to be confounded with *L. longiflorum Wilsoni*.

L. PARRYI (II.)—(Watson; Dr. Parry, Proc. Davenport Acad. of Nat. Sc., vol. ii., p. 188; Bot. Mag., t. 6650; Wall., Not., p. 143).—A very pretty Lily from Southern California, discovered in 1876, with pale yellow flowers spotted with purple and resembling those of *L. Washingtonianum* in shape. It has been introduced into cultivation, but is still scarce.

L. PARTHENEION (IV.)—(Sieb. and Devr., Tuinb. Fl., ii., 341; Wall., Not., p. 155; Duch., p. 42).—A small Lily from Japan (where it is known by the name *Akasim-juri*), coming very near *L. Coridion*, of which it is probably only a yellow-flowered variety.

L. PARVUM (V.)—See *L. canadense parvum*.

L. PARVUM FLORE-LETEO (V.)—See *L. canadense parvum flore-luteo*.

L. PARVIFLORUM (V.)—See *L. canadense parviflorum*.

L. PENDULIFLORUM (V.)—(Cels, Catal.).—Identical with the *L. pendulum* of Cels.

L. PENDULIFLORUM (V.)—(Redouté, Lil., pl. 105; D. Spae, Mém., syn. p. 27).—This should not

be referred to the *L. penduliflorum* or *pendulum* of Cels, but to *L. canadense rubrum*.

L. PENDULUM (V.)—(Cels; Encycl. du Regne vég., Bruxelles, pl. genre Lis; De Cann. d'Ham., p. 73; Duch., p. 92).—Also known as *L. penduliflorum*. This Lily is now generally regarded as merely a variety of *L. canadense*.

L. PENNSYLVANICUM (IV.)—(Gawler, Bot. Mag., t. 872; Pursh, Fl., 229).—Identical with *L. dauricum* or *davuricum*, and also with the *L. spectabile* of Fischer.

L. PEREGRINUM (II.)—(Miller, Dict., No. 2; Red. Lil., 199; D. Spae, Mém., 2nd species; De Cann. d'Ham., p. 58).—A Lily closely allied to *L. candidum*, and now very rare in cultivation. It was formerly known by the names *L. candidum Byzantinum* and *L. Sultan-Zambach*.

L. PEREGRINUM (V.)—(Of German gardens).—It was under this name that Messrs. Van Houtte and Van Geert, of Ghent, originally introduced *L. testaceum* (*L. excelsum*) into Belgium in 1838, and this Lily is still named *L. peregrinum* in some German gardens.

L. PHILADELPHICUM (IV.)—(Linn., Spec., 435; Red., Lil., pl. 104; Bot. Mag., t. 519; Bot. Cab., pl. 976; Wall., Not., p. 152; *ibid.*, p. 102 (bulb figured).—A very handsome Lily, with whorled leaves and erect orange-red flowers, introduced into England in 1757. It is difficult to grow and still rather scarce. The bulb is small and very brittle. This Lily is found under a variety of different forms according to the district in which it occurs in the wild state. Some of the most noteworthy of these forms are—*L. philad. andinum* (see *L. andinum*) *L. philad. wanscharicum* (see *L. wanscharicum*), *L. philad. of Brentwood*, *L. philad. of Connecticut*, *L. philad. of Massachusetts*, *L. philad. of the Orange Mountains*. These four forms are mentioned in M. Leichtlin's list (see note, p. 151); *L. philad. varietas* (Hooker), a variety with sub-umbellate flowers probably referable to *L. philad. andinum*.

L. PHILADELPHICUM (IV.)—(Hort. Berol., 1839).—Identical with *L. dauricum*.

L. PHILADELPHICUM (IV.)—(Thunb., Fl. jap., 135).—Identical with *L. Thunbergianum*.

L. PHILIPPINENSE (II.)—(Hort. Veitch; Baker Gard. Chron., 1873; Bot. Mag., t. 6250; Wall., Not., p. 127; Cat. Van Houtte, 1844).—Also known as *L. philippense*. A Lily of the long white-flowered section discovered in the island of Luzon by G. Wallis in 1871. According to the accounts of some travellers, the tube of the flower is sometimes 10 inches or 12 inches in length.

L. PICTUM (III.)—(Hort.; Wall., Not., p. 152). A variety of *L. auratum*.

L. PICTUM (IV.)—(Hort.; Wall., Not., p. 161).—Identical with *L. umbellatum bicolor*.

L. PINIFOLIUM (V.)—(Hort.; Leichtlin's list with the note of? (See note, p. 151).—Under this name some nurserymen grow the *L. pomponium verum* of English gardens. This Lily, with its very slender leaves, in its earlier growth bears a marked resemblance to a young Pine tree.

L. POLYPHYLLUM (V.)—(D. Don, in Royle, III. Himal., 388; Kunth, Enum., iv., 677; Duch., p. 70 *et seq.* (*L. polyphyllum*) and p. 76 (*L. punctatum*); Wall., Not., p. 174; *ibid.*, pp. 114, 115 (bulb figured).—Also known as *Fritillaria polyphylla*.—A handsome species from the Himalayas, discovered in 1862, with turban-shaped flowers of a creamy or pale yellow colour, streaked and dotted with purple. Bulb very much elongated in the upper part. According to Mr. Baker, the *L. polyphyllum* of Royle and the *L. punctatum* of Jacquemont are identical with this plant. Elwes gives a splendid figure of it in his Monograph, p. 48.

L. POMPONIUM (V.)—(Linn., Sp., i., 434; Bot. Mag., t. 971; Wall., Not., p. 171).—There are numerous varieties of this species with flowers of more or less deep shades of red, vermilion, and orange. The yellow-flowered forms should in part be referred to the *L. pyrenaicum* of Gouan. This Lily is also known as the *L. angustifolium* of Miller (probably a variety), the *L. Martagon pom-*

pony of Swert, and the *L. miniatum odoratum angustifolium* of Bauhin.

L. POMPONIUM (V.)—(Geo. Maw; Hort. Angl.; Wall., Not., p. 180, in note).—From the Maritime Alps. This Lily resembles the preceding one in habit, and has bright vermilion-coloured long-stalked flowers, and very narrow leaves. When it starts into growth it almost exactly resembles a young Pine tree, on which account the specific name of pinifolium is sometimes applied to it.*

L. POMPONIUM (V.)—(Gawler, Bot. Mag., t. 798).—Identical with *L. pyrenaicum*.

L. POMPONIUM (V.)—(Lam. Enc., iii., 536).—Identical with *L. pyrenaicum*.

L. POMPONIUM (V.)—(Thunb., Fl. jap., p. 134).—Identical with *L. callosum*.

L. POMPONIUM (V.)—(Lour., Fl. Coch., 257).—Identical with *L. tigrinum*.

L. PONTICUM (V.)—(K. Koch, Linnæa, xxii., 234; Baker, 40th species; Duch., p. 22; Wall., Not., p. 175).—A species from Transylvania, coming near *L. monadelphum* and *L. pyrenaicum*. Mr. Baker makes it his 40th species, and remarks that the figure on plate 436 in Regel's "Gartenflora," given for *L. ponticum*, in reality is that of *L. Szovitzianum*. *L. ponticum*, however, is now considered to be a variety of the last-named Lily. (See *L. monadelphum*, &c.)

L. PSEUDO-TIGRINUM (III. or V.)—(Carrière, Rev. hort., 1867, p. 410; Regel, Gartenfl., 1868, p. 118; Duch., p. 27; Wall., Not., p. 179; *ibid.*, p. 100 (bulb figured); Elwes, Monog., pl. 40, as a variety of *L. Maximowiczii*).—Botanists are very much at variance in their opinions about this Lily. M. Ch. Koch considers it identical with *L. tigrinum* Fortunei, while M. Leichtlin gives these two Lilies in his list as distinct species. Regel describes *L. pseudo-tigrinum* as allied to *L. Maximowiczii* (the *L. tigrinum* jucundum of several authorities), while Dr. Wallace regards these names as synonymous. The flowers are of a fine dull red colour dotted and spotted with dark brown. Stem green, without bulbils. Leaves with a single mid-rib.

L. PUBERULUM (V.)—(Leichtlin; Wall., Not., p. 166).—Identical with *L. pallidifolium*, which Baker makes a variety of *L. pardalinum*.

L. PUBERULUM (V.)—(Torrey).—See *L. canadense puberulum*.

L. PUBESCENS (IV.)—(Bernh., in Horn., hort. Hafo., ii., p. 962; D. Spæ, Mém., 14th species; probably also the *L. croceum* of Bernh., Enum., i., 321).—A Lily coming very near *L. croceum*, and admitted into his list as a distinct species by M. Leichtlin, and also by D. Spæ in his "Mémoire." According to M. Koch, it is identical with *L. dauricum*. It is probably a variety either of the last-named Lily or of *L. croceum*.

L. PUDICUM (VI.)—(Pursh, Fl. of N. Amer., i., p. 228; Duch., pp. 84, 85).—A North American Lily, with a small solitary pendent flower, and placed by Roemer and Schultes among the Fritillaries. Hooker thinks it might be made the type of a special genus.

L. PULCHELLUM (IV.)—(Fisch., Hort. Berol., 1834; Regel, Gartenfl., 1860, 81; Wall., Not., p. 155; *ibid.*, p. 106 (bulb figured).—A handsome Lily from Davuria, with erect flowers of a bright orange-red colour and more robust in habit than *L. concolor*, of which Mr. Baker makes it a variety. According to Maximowicz, a yellow-flowered variety of it is grown in Japan.

L. PULCHELLUM BUSCHIANUM (IV.)—(Lodd., Bot. Cab., 1628; Duch., p. 125; Wall., Not., p. 155).—Identical with *L. Buschianum*. The form or variety of this Lily is a disputed point with botanists. Mr. Baker makes it a variety of *L. concolor* and synonymous with *L. pulchellum* (Revue Hort., 1862) and with *L. concolor sinicum* (Bot. Mag.,

p. 600). M. Koch seems inclined to regard *L. pulchellum* and *L. Buschianum* as forming a single species. M. Leichtlin does not give *L. pulchellum* in his list, although he mentions *L. Buschianum*, *L. Buschianum grandiflorum*, and *L. Buschianum grandiflorum nanum*. In M. Kregela's catalogues we find *L. pulchellum*, *L. pulchellum Buschianum*, and *L. pulchellum Buschianum nanum*. In M. Van Houtte's catalogue for 1883 are quoted *L. pulchellum*, price 3 francs, and *L. pulchellum Buschianum*, price 5 francs.

L. PUMILUM (V.)—(Redouté, Lil., pl. 378; Bot. Reg., p. 132; Lodd., Bot. Cab., 358; Roemer and Sch., s. vii., 410; D. Spæ, Mém., 36th species, with the syn. *linifolium*; Hora. R. Hafn., 326, and *L. uniflorum* of English gardens).—A small Lily from Davuria, introduced into Europe in 1816, coming very near the *L. tenuifolium* of Fischer. Several botanists, including Messrs. Baker and Koch, consider the two species identical.

L. PUMILUM (V.)—(Hort.; Wall., Not., p. 182).—This name, and also that of *L. stenophyllum*, are sometimes applied to a form of *L. callosum*.

L. PUMILUM (V.)—(Regel; Wall., Not., p. 182).—This Lily, the *L. pumilum* from Manchuria described by Regel, appears to be identical with *L. callosum*.

L. PUMILUM (IV.)—(Hort. Bouch., 1834).—See *L. croceum pumilum*.

L. PUNCTATUM (V.)—(Jacquemont).—A Himalayan species with pale yellow flowers spotted with purple. Mr. Baker considers it identical with *L. polyphyllum*, which see.

L. PUNCTATUM (III.)—(Hort.).—See *L. speciosum punctatum*.

L. PUNCTATUM (IV.)—(Hort.).—See *L. umbellatum punctatum*. This variety has richly-coloured flowers, and is also known under the name of *L. rubens*.

L. PUNICEUM (V.)—(Sieb. and Devr.).—A Lily introduced into Europe from Japan by Siebold in 1856. According to M. Leichtlin, it is a variety of the *L. tenuifolium* of Fischer, but of more robust habit and more floriferous than the type.

L. PURPUREUM (II.)—(Hort.).—See *L. Washingtonianum purpureum*.

L. PYGMÆUM.—(Leichtlin).—So named in M. Leichtlin's list. (See note, p. 151.)

L. PYRAMIDALE (V.)—(Hort.).—See *L. superbum pyramidale*.

L. PYRENAICUM (V.)—(Gouan, Ill., 25; Bot. Mag., t. 798, under the erroneous name of *L. pomponium*; Red., Lil., 145; Lam., Gall., iii., 283, under the name of *L. flavum*).—The varieties of this Lily have flowers of a more or less deep shade of yellow and more or less tinged with green. It is also met with under the erroneous names of *L. pomponium flavum*, *L. pomponium luteum*, and even *Martagon luteum*. We cannot coincide in the opinion of some authorities, who regard the *L. pomponium* of Dutch nurserymen as a red-flowered variety of *L. pyrenaicum*.

L. PYRENAICUM (V.)—(Ledebour, Fl. Ross., iv., 151; Wall., Not., p. 173).—Identical with *L. Ledebouri*. This Lily is a form or variety of the section which includes *L. Szovitzianum*, *L. monadelphum*, &c. (See these names.)

L. PYRENAICUM (V.)—(Baumg., Transylv.; W.-i., Not., p. 181).—This Lily, which Mr. Baker refers to *L. chalcidonicum*, is a form or variety peculiar to the mountain forests of Albania and Transylvania. The flowers are yellow and most frequently solitary.

L. QUADRIFOLIATUM (VI.)—(Meyer; Spæ, Mém., synon. p. 25).—This Lily is to be referred to *L. camtschatcense* (*Fritillaria camtschatcensis*).

L. REGELI (III. or V.)—(Elwes, Monog.).—Elwes places this Lily among the varieties of *L. Maximowiczii* along with *L. Maxim. Bakeri* and *L. Maxim. pseudo-tigrinum*.

L. ROBINSONIANUM (V.)—(Dr. Moore; "Florist," October, 1875; Elwes, Monog., pl. 29, under the name of *L. pardalinum* var. *californicum*).—A form or variety of *L. pardalinum*. Stem pale

green; leaves lanceolate, the lower ones alternate. The flowers have the extremities of the petals of a deeper red, and the dark spots encircled with yellow which occur on the red part of the petals are more strongly marked than in the type.

L. ROEZLII (V.)—(Regel, Gartenfl., f. 667; Baker, Gard. Chron., 1871, 321; Duch., pp. 123-4; Wall., Not., p. 168).—Identical with *L. Hartwegi* (*L. canadense Hartwegi*). This Lily was discovered by Hartweg on the mountains of Santa Cruz (California) in 1848. Mr. Baker, who makes it his thirty-second species under the name of *L. Roezlii*, says that it is easily distinguished by its linear leaves and the pointed petals or divisions of its flowers.

L. ROSEUM (VI.)—(Wall., Catal., No. 5077; Hooker, Bot. Mag., t. 4725).—Identical with *L. Thompsonianum* (*Fritillaria Thompsoniana*), which see.

L. RUBESCENS (II.)—(Hort. Amer.; Catal. of Woolson and Co., Passaic, New Jersey).—Identical with *L. Washingtonianum purpureum*.

L. RUBRUM (V.)—(Lamk., Gall., iii., 283).—This and its variety, *L. rubrum angustifolium* (Bauhin, Pin., 78), *L. rubrum præcox* (Clus., Hist., i., p. 133), are to be referred to *L. pomponium* and its varieties.

L. RUBRUM BYZANTINUM (V.)—(Parkinson, Parad., 34).—Identical with *L. chalcidonicum* and *L. Martagon constantinopolitanum*.

L. SANGUINEUM (IV?)—(Leichtlin).—So named in M. Leichtlin's list. It is probably a variety of *L. Thunbergianum*.

L. SANTAN (V.)—(Hort. jap.).—A Japanese name for *L. callosum*.

L. SAPPHO (IV.)—(Hort.).—A good variety of *L. umbellatum*.

L. SARANA (VI.).—A name given by the natives of Kamtschatka to *L. camtschatcense*, the bulbs of which are eaten by them. According to the Bot. Mag., p. 784, the name Sarana is also applied by the natives of Tartary to a Lily of the croceum section.

L. SAYI (V.)—(Nuttall).—Identical with the *L. parviflorum* of Hooker. See *L. canadense parviflorum*.

L. SAZURI (II.)—(Hort. jap.).—A Japanese name for the *L. odorum* of Planchon (the *L. japonicum* of nurserymen).

L. SCABRUM (IV.)—(Moench., Meth.).—Identical with *L. bulbiferum*.

L. SCHRYMAKERSII (III.)—(Hort.).—A sub-variety of *L. speciosum rubrum*, coming very near the sub-varieties *L. spec. rub. atro-purpureum*, *L. spec. rub. purpuratum*, *L. spec. rub. extra*, &c.

L. SEROTINUM (IV.)—(Fischer; Red., Lil., pl. 210).—A variety of *L. croceum*.

L. SIBIRICUM (IV.)—(Willd., Hort. Berol., Sup., p. 17).—D. Spæ gives this name in his "Mémoire" as a doubtful synonym for *L. pulchellum*.

L. SIEBOLDI?—(Leichtlin).—So named in M. Leichtlin's list. (See note, p. 151.)

L. SINENSE (III.)—(Hort.).—Under this name *L. tigrinum* is sometimes met with.

L. SINICUM (IV.)—(Lindl., in Paxton's Fl. Gard., 1851-1852; Bot. Mag., t. 6005, under the name of *L. concolor sinicum*; Fl. des Serres, vol. xii., p. 49; Duch., pp. 25 and 117; Wall., Not., pp. 154-155).—Also known as *L. concolor sinicum*. A small Lily, as yet little known, coming very near the *L. concolor* of Salisbury, and introduced from China in 1824 into the gardens of the London Horticultural Society. The stem grows 10 inches or 12 inches high, with sessile leaves, and bears at the extremity several medium-sized flowers of a fine scarlet colour. According to Mr. Baker, the *L. sinicum* of Lindley is identical with the *L. concolor* of Salisbury, and the *L. concolor sinicum* of the Bot. Mag. is the same as *L. Buschianum* or *L. pulchellum Buschianum*.

L. SJIRE, OR SJIROI (I.)—(Kämpf, amœn., 870).—A Japanese name for *L. cordifolium*.

L. SPECIOSUM (III.)—(Thunberg, N.B.—The *L. speciosum* of Andrews (Bot. Rep., 586) is identi-

* This Lily far surpasses in merit the old *L. pomponium* of the Dutch nurserymen. The very long-stalked flowers, the foliage, the bulb, the habit of growth, the period of flowering, everything, in fact, distinguishes it so clearly from the old *L. pomponium*, that we have no doubt that botanists will eventually class it by itself as a very distinct species.

cal with *L. tigrinum*).—This is the *L. lancifolium* of many cultivators. A handsome Japanese Lily, first observed by Kämpfer, afterwards by Thunberg, and introduced into Europe by Siebold. The varieties *L. spec. album* and *L. spec. rubrum* flowered, for the first time in Europe, in the Botanic Gardens at Ghent in August, 1832. See further on the different forms and varieties of this species, which may be classed under the three heads of (1) *L. speciosum album*, which has pure white flowers, (2) *L. spec. rubrum*, with flowers more or less tinged and spotted with pink or carmine, and (3) *L. spec. punctatum* (a more difficult form to cultivate), the white flowers of which are marked with spots of a very delicate pink.

L. SPECIOSUM ALBUM (III).—(Morren).—This form is also met with under the names of *L. lancifolium album* (Hort.), *L. Broussarti* (Morren), *L. Tametome* (Zucc.), and formerly even under the name of *L. eximium*, which properly belongs to a species of the longiflorum section. Its principal varieties are—*L. spec. album fasciatum* (Hort. angl.; Wall., Not., p. 149), also known by the names *L. corymbiflorum*, *L. fasciculatum corymbosum*, *L. monstrosum album*, &c.;* *L. spec. album multiflorum* (Sub., Wall., Not., p. 150), a very floriferous variety, with a tall and very branching stem; *L. spec. album vestale* (Wall., Not., p. 150), a variety with pure white flowers, imported direct from Japan; *L. spec. album Kretzeri* or *japonicum* (Wall., Not., p. 149), named "Peppo" by the Japanese, a form in which the petals are marked in the centre with a greenish band or streak; *L. spec. album præcox* (Hort.).

L. SPECIOSUM IMPERIALE (III).—(Siebold).—Identical with *L. auratum*.

L. SPECIOSUM RUBRUM (III).—(Fl. des Serres, Vol. III., p. 276).—Identical with *L. lancifolium rubrum*. A great number of sub-varieties are in cultivation, of which the following are the most noteworthy: *L. spec. rubrum fasciatum* (Hort. angl.; Wall., Not., p. 149), also known as *L. corymbiflorum*, *L. fasciculatum corymbosum*, *L. monstrosum rubrum*, &c.; *L. spec. rubrum japonicum* (Wall., Not., p. 150), a variety in which the petals are marked with a broad carmine band or streak, imported direct from Japan; *L. spec. rubrum purpuratum* (ibid.), *L. spec. rubrum Schrymackersi* (ibid.), *L. spec. rubrum atropurpureum* (ibid.), *L. spec. rubrum cruentum* (ibid.). These four sub-varieties have their flowers tinged and spotted with red of a more or less bright or dark shade; they are, possibly, identical. *L. spec. rubrum roseum* (ibid.). In this form the flowers are tinged with a lighter red, and the stem is of a light green colour.

L. SPECIOSUM PUNCTATUM (III).—(Lemaire; Bot. Mag., t. 3785, under the names of *L. speciosum Tametome* and *L. spec. albiflorum*; Paxton, Mag., p. 267, under the name of *L. speciosum roseum*).—Identical with *L. lancifolium punctatum* (Hort.).—This variety has white flowers slightly spotted with very pale pink. The leaves are frequently twisted. It is a more difficult form to grow than the others. There is a sub-variety of it, known as *L. spec. punct. fasciculatum* (Hort. angl.) and also as *L. spec. punct. corymbosum*. (See the catalogues of nurseries, especially those of Messrs. Krelage, de Haarlem, for numerous forms and varieties of *L. speciosum*.)†

L. SPECTABILE (IV).—(Fischer).—Identical with *L. davuricum*.

L. SPECTABILE (IV).—(Link., Enum., 321).—This should apparently be referred to *L. bulbiferum*.

L. SPECTABILE (IV).—(Salisb., Stirp. rar., ix., p. 5).—Identical with *L. Catesbaei*.

L. SPECTABILE BICOLOR (?) (Leichtlin).—So named in M. Leichtlin's list. (See note, p. 151).

* See analogous forms of *L. speciosum rubrum* and *L. spec. punctatum*. These varieties, which are more curious than attractive in appearance, have flat stems that are sometimes very broad towards the top, and bear a great number of flowers, which are usually smaller than those of the type. It often happens that many of the flower-buds open imperfectly.

† Dr. Wallace, in his "Notes," p. 149, broaches a scheme for classifying the different varieties of *L. speciosum*.

L. SPECTABILE MACULATUM (?) (Leichtlin).—Same remark.

L. SPICATUM (II).—(Hort.).—Identical with *L. candidum flore-pleno* (*L. candidum monstrosum*).

L. SPLENDENS (III).—See *L. tigrinum splendens* (*L. tigrinum Leopoldi*).

L. STAMINOSUM (IV).—(Lemaire, Ill. hort., vol. xi., pl. 422). Identical with *L. fulgens staminosum*.—A variety of *L. Thunbergianum*, at first regarded as a distinct species, in which the stamens are transformed into a narrow tongue-shaped process after the manner of double flowers. Introduced from Japan by Jacob-Makoy.

L. STENOPHYLLUM (V).—(Baker; Wall., Not., p. 482).—A form or variety of *L. callosum*, which is sometimes also met with under the name of *L. pumilum* (Hort.) (not the *L. pumilum* of Redouté, which comes very near the *L. tenuifolium* of Fischer).

L. STRIATUM (II).—(Hort.).—See *L. candidum flore purpureo-striato*.

L. STYLOSUM (V).—(Klotsch, in Herb. Berol.).—Elwes, in his Monograph, makes this identical with *L. polyphyllum*.

L. SULTAN-ZAMBACH (II).—(Clus. Stirp. Pan. Hist., 137; De Cann. d'Ham., Mon. p. 58).—An old name for *L. peregrinum*.

L. SUPERBUM (V).—(Lion, sp. 434; Herb. de l'Amer., vol. vi., p. 421; Bot. Mag., t. 936; Wall., Not., p. 167; ibid., p. 111 (bulb figured).—A native of North America, introduced into Europe in 1727. In Redouté's "Liliaceæ," plate 103 represents this Lily under the name of *L. carolinianum*, which is a different species. There is a variety of it named *L. superbum pyramidale* (Hort.; Fl. des Serres, vol. x., p. 121; Spae, Mém., p. 29). This is taller than the type, sometimes attaining the height of 7 feet or 8 feet, and bearing a pyramid of flowers, which are often forty or fifty in number. The figure in the *Flore des Serres* is a very good representation of this variety, while Spae's figure is a very exact delineation of the usual appearance of the type.

L. CALIFORNICUM (?) (V).—(Krelage, Catal.).—So named in M. Krelage's catalogue for 1876–1877, and quoted under a different number and a different price from those of *L. superbum* and *L. californicum*.

L. DU CONNECTICUT (?) (V).—(ibid.).—See the same catalogue.

L. SUPERBUM (V).—(Thunb., Fl. jap., 131).—Identical with *L. speciosum*.

L. SYLVESTRE (V).—(Dodon.).—An old name for *L. Martagon*.

L. SZOVITZIANUM (V).—(Fischer; D. Spae, Mém., 42d. sp.; Wall., Not., p. 37).—A native of Colchis, introduced into the Botanic Gardens at St. Petersburg about the year 1810. This Lily is identical with the *L. colchicum* of Steven, and is considered by several botanists to be identical (at least as regards the species) with *L. Loddigesianum*, *L. monadelphum*, *L. ponticum*, &c. (See these names).*

L. TAKESIMA (II).—(Hort. jap.).—See *L. longiflorum Takesima*.

L. TALSTA-JURI (IV).—(Wall., Not., p. 177).—Identical with *L. Batemannii*, which see.

L. TAMETOME (III).—(Hort. jap.; Zucc. in Siebold, Fl. jap., p. 31; Bot. Mag., t. 3785; D. Spae, Mém., p. 37).—A Japanese name for *L. speciosum album* (*L. Broussarti*). Plate 3785 of the

* Mr. Elwes devotes the thirty-sixth plate in his Monograph to a specimen of *L. monadelphum*, which bears thirteen flowers of a uniform yellow colour, hardly marked by a very few minute dark dots, and with yellow stamens. Plate 37 represents a Lily (which he names *L. monadelphum Szovitzianum*) bearing five flowers of a yellow colour, tinged with white, heavily dotted at the edges, and with red stamens. With respect to these Lilies, he remarks that the variety *monadelphum*, which in his own garden produced twenty-nine flowers on the same stem, appears to be confined to the regions of the northern and eastern Caucasus, while the variety *Szovitzianum* is found towards the south, in the provinces of Imeritia, Mingrelia, and Georgia. The variety *monadelphum* flowers three weeks earlier than *Szovitzianum*, and after starting into growth, the flower-buds of the former are always exposed to view, while those of the latter remain concealed by the leaves up to the very moment when they burst into bloom.

Bot. Mag. in reality represents *L. speciosum punctatum*.

L. TENUIFOLIUM (V).—(Fischer; Bot. Mag., t. 3140; D. Spae, Mém., thirty-fifth species, p. 33; Wall., Not., p. 182; ibid., p. 106 (bulb figured).—The Botanic Gardens at Ghent received this handsome Lily from Dr. Fischer in 1831. Its bulbs do not keep long, but the species is easily reproduced from seed, the plants flowering in the second or third year after sowing. The *L. puniceum* introduced into Europe by Siebold in 1856 is a more robust form of this Lily. According to Reichenbach, *L. linifolium* and *L. tenuifolium* are identical, while Spae considers *L. linifolium* identical with the *L. pumilum* of Redouté. Other botanists, including Messrs. Baker and Koch, regard all these forms as constituting only one single species.

L. TEPPU (III).—(Wall., Not., p. 149).—A Japanese name for the variety of *L. speciosum album* which is also known by the name of *L. Krætzeri*.

L. TESTACEUM (V).—(Lindl.).—Identical with *L. excelsum*, which see.

L. THOMPSONIANUM (VI).—(Lindl., Bot. Beg., 1845, pl. 1; Hooker, Bot. Mag., t. 4725, under the name of *L. roseum*; Fl. des Serres, vol. ix., pl. 867).—Identical with the *Fritillaria Thompsoniana* of Royle, the *Fritillaria macrophylla* of D. Don, the *L. roseum* of Wallich, and the *L. longifolium* of W. Griffith. A native of the western regions of the Himalayas, this Lily flowered for the first time in Europe in 1844 in the grounds of Messrs. Loddiges. This species of Lily or *Fritillaria* very rarely flowers in cultivation.

L. THUNBERGIANUM (IV).—(Roem. and Schult., Syst. Veg., vii., 415; Krelage, Notice; Wall., Not., p. 159 et seq.; D. Spae, Mém., p. 19 et seq.).—This Lily constitutes the type to which the great majority of botanists at the present day refer several forms and varieties which were formerly described as distinct species, such as *L. fulgens*, *L. atro-sanguineum*, *L. venustum*, *L. elegans*, *L. hematochrum*, *L. Wilsoni*, &c. The *L. fulgens* of Morren, *L. Thunbergianum* of Roemer and Schultes, and *L. venustum* of Hort. Berol., 1844, have for a long time been regarded as specifically distinct (see particularly *L. Spae*, Mém., species 16, 17, and 18), and these have produced a great number of varieties, which is still tending to increase.* Several attempts have been made to classify these varieties, but that of Dr. Wallace, which divides all the forms into three groups, according to the shape of the flower, appears to be by far the most sensible. It is as follows:—

GROUP A.—(Flowers with long narrow segments, widely opened out).—This group especially comprises *L. Thunbergianum armeniacum* (*L. venustum*) (Fl. des Serres, vol. vii., p. 33; Elwes, Monog., pl. 19); *L. Thunb. fulgens fl.-pl.* (also *L. transiens fl.-pl.* and *L. staminosum*; *L. Thunb. fulgens atro-sanguineum* (Elwes, Monog., pl. 19); *L. Thunb. fulgens alternans*; *L. Thunb. sanguineum* (*L. biligulatum*); *L. Thunb. alutaceum* (*grandiflorum, aureum nigro-maculatum*) (Elwes, Monog., pl. 19); *L. Thunb. Prince d'Orange*, &c.

GROUP B.—(Flowers with broad segments, widely and symmetrically opened out).—This group especially comprises *L. Thunb. bicolor* (picture); *L. Thunb. aurantiacum verum* (Paxton, vol. vi., fig. 127); *L. Thunb. marmoratum*; *L. Thunb. marmoratum aureum*; *L. Thunb. Alice Wilson* (Elwes, Monog., pl. 20); *L. Thunb. Mawii*; *L. Thunb. Van Houttei* (Hort. Van Houtte), a very handsome variety, with deep blood-red flowers; *L. Thunb. Horsmanni*, &c.

GROUP C.—(Flowers with broad segments and cup-shaped).—This group especially comprises *L. Thunb. brevifolium*; *L. Thunb. splendens*; *L.*

* This year (1884) I saw in Mr. Van Houtte's fine establishment at Ghent a great number of new seedlings of *L. Thunbergianum* far surpassing the old varieties. I am indebted to the courtesy of the worthy director of this establishment, and the civility of his intelligent foreman of the bulb department, for having been enabled to make a great number of notes and sketches relating to new or rare Lilies. It is well known that the Lilies from Mr. Van Houtte's establishment have carried off numerous prizes and distinctions at floral contests and exhibitions.

Thunb. *Wilsoni* (pardinum) ("Florist," 186, 121; Duch., p. 55; Wall., Not., p. 105 (bulb figured)).

This is a fine Japanese variety, at first considered a distinct species. It is the latest of all in flowering.*

L. TIGRINUM (III.).—(Gawler, Bot. Mag., t. 1237; Red. Liliaceae, 395 and 475; Wall., Not., p. 146; *ibid.*, p. 99 (bulb figured)).—This Lily, which is one of the most popular, is sometimes also met with under the name of *L. sinense* or *L. tigrinum sinense* (Hort.). The *L. speciosum* of Andrews (Bot. Reg., 586) is identical with it. A great number of forms or varieties are in cultivation, the most noteworthy of which are *L. tigrinum splendens* (L. Leopoldi), *L. tigr. flore-pleno*, and *L. tigr. Materi* (L. erectum). The following varieties are met with in commerce: *L. tigr. angustifolium* (Krelage), identical with *L. tigr. laciniatum*; *L. tigr. Carolinum* (Krelage, 1876), given as a doubtful variety; *L. tigr. erectum* (Leichtlin) (see *L. tigr. Materi*); *L. tigr. flore-pleno* (Leichtlin; Gard. Chron., 1874, f. 38, p. 146; Fl. des Serres, vol. xix, p. 113). This Lily made its appearance in Europe about the year 1869, when it was to be found in both English and German collections. At Hamburg it was offered for sale in that year by Messrs. Laurentius under the name of *L. Landrath Leyser*. M. Regel figured it the following year in the "Gartenflora" from M. Leichtlin's plant under the name of *L. tigrinum flore-pleno*. Siebold announced it as *L. tigrinum Fortunei flore-pleno* (see in M. Krelage's "Notes," p. 17 *et seq.*, a long and interesting article on this remarkable variety); *L. tigr. fol. variegatis* (Leichtlin); *L. tigr. Fortunei* (Lindl., Gard. Chron., 1862, p. 12; Koch, Woch., sc. v., 1862, p. 301), a late variety with cottony peduncles and flower-buds. From the figure and description which Mr. Elwes gives of it in his "Monograph" (pl. 38), this variety appears to rival *L. tigrinum splendens* in attractiveness. *L. tigr. Fortunei giganteum* (Catal. of the Bulb Co., Colchester; Wall., Not., p. 147, in note), a fine pyramidal form; *L. tigr. Fortunei flore-pleno* (Hort.), identical with *L. tigrinum flore-pleno*; *L. tigr. japonicum* (Hort.) and *L. tigr. jap. latifolium* (Hort.), identical with *L. tigrinum latifolium*; *L. tigr. jap. fol. variegatis* (Siebold), identical with *L. tigrinum fol. variegatis*; *L. tigr. jucundum* (Krelage; Wall., Not., p. 179, in note), a Japanese variety with vermilion-red flowers spotted with black. Dr. Wallace regards it as coming very near the *L. pseudo-tigrinum* of Carrière and the *L. Maximowiczii* of Regel; *L. tigr. laciniatum* (Krelage), *L. tigr. Landrath Leyser* (see *L. tigrinum flore-pleno*), *L. tigr. Leopoldi* (see *L. tigrinum splendens*), *L. tigr. Lishmanni* (Moore, Fl. and Pom., iii. v. 6, p. 16; Gard. Chron., 1872, p. 1137; Wall., Not., p. 147).—A Lily received from Japan, in 1871, by Mr. Tuffnell, of Belmont Park, and which obtained a first-class certificate at South Kensington. The spots on the flowers are marked in a different manner from those in other varieties of *L. tigrinum*, and no bulbils are produced in the axils of the leaves, from which Dr. Wallace concludes that this Lily should be regarded as a form of *L. Maximowiczii* rather than of *L. tigrinum*; *L. tigr. macranthum* (Krelage), a variety with large orange-red flowers spotted with black; *L. tigr. Materi* (Hort., Duch.) pp. 44-45; Wall., Not., p. 147, identical with the *L. erectum* of Leichtlin, and also known by the names *L. tigr. præcox* and *præcox erectum*. This form, which is of dwarf stature and has almost erect flowers with segments not much recurved, was introduced into England by Captain Kirkpatrick in 1804. In 1791 Sir Joseph Banks had figured this Lily without applying any special name to it; *L. tigr. Mitchellii* (Krelage, Catal., 1876), given as a doubtful variety; *L. tigr. perfectum* (Siebold; Krelage, Catal., 1876), a Japanese variety of py-

ramidal habit, described as a splendid form, surpassing even *L. tigr. splendens*, and bearing up to 30 flowers, which are, however, of a somewhat lighter shade than those of *L. tigr. splendens*; *L. tigr. præcox* (Hort.) (see *L. tigr. Materi*); *L. tigr. Sieboldi* (Krelage, Not. sur Lis, p. 16), a variety with paler flowers than those of the type, bearing few bulbils, and very late in blooming; *L. tigr. Sieboldi fl. pleno* (Siebold; Krelage, under this name), probably identical with one of the other double-flowered forms; *L. tigr. splendens* (Leichtlin; Fl. des Serres, vol. xviii., pl. 48, and vol. xix., p. 5; Wilson, Journal of Hort., 1875, 25, i; Floral Mag., p. 509; Wall., Not., p. 146), the most remarkable of all the varieties of *L. tigrinum*, of robust habit, and bearing numerous bright red flowers marked with very black broad spots.

L. TOPHO (III.).—(Hort. ind.).—An East Indian name for *L. nepalense*.

L. TRANSIENS (IV.).—(Hort.).—See the varieties of *L. Thunbergianum*.

L. TRICEPS (III.).—(Klotsch).—Identical with *L. oxypetalum*, which see.

L. TRICOLOR? (Leichtlin).—So named in M. Leichtlin's list. (See note, p. 151.)

L. TUBIFLORUM (II.).—(R. Wight).—This Lily, and also the *L. Wallichianum* of Wight (which is not to be confounded with the *L. Wallichianum* of Roemer and Schultes), are merely forms of the *L. neilgherrense* of Wight. (See this name.)

L. tubiflorum majus (II.).—(Duch., Obs., p. 73) and *L. tubifl. minus* (*ibid.*).—M. Duchartre thinks that the *L. neilgherrense* of Wight (l.c. pl. Ind. Or., vi., pl. 2031-2032) would be better designated by the name *L. tubiflorum majus*, and the *L. Wallichianum* of Wight (*ibid.*, pl. 2035) by the name *L. tubiflorum minus*.

L. UDI (III.).—(Hort. jap.).—A Japanese name for *L. auratum*.

L. UMBELLATUM (IV.).—(Hort.; Wall., Not., pp. 157 and 159).—Under this name we find in commerce a number of hybrids, probably from *L. croceum* and *L. davuricum*,* variously modified by an intermixture with the numerous and diverse varieties of the *Thunbergianum* section. The most noteworthy of these are, *L. umbellatum atro-sanguineum* (Hort.), which bears a fine cluster of large blood-red flowers dotted with black; *L. umbell. bicolor* (Hort.), a handsome form, the flowers of which are half yellow and half red; *L. umbell. fulgidum* (Hort.), flowers orange-red; *L. umbell. incomparabile* (Hort.; Elwes, Monog., pl. 20, under the name of *L. elegans incomparabile?*), flowers dark red with orange centre, a very free-flowering and handsome variety; *L. umbell. nanum* or *Prince of Wales* (Hort.), flowers fiery blood-red; *L. umbell. splendens* (Hort.), flowers fiery orange-red spotted with blood-red. All the foregoing varieties are given in M. Van Houtte's catalogues. In addition, there are *L. umbell. punctatum* or *Rubens* (Hort.), *L. umbell. immaculatum* or *Vulcan* (Hort.), and a great many other varieties mentioned in the catalogues of Messrs. Krelage and other nurserymen.

L. UMBELLATUM (IV.).—(Parkinson, Parad., p. 37, f. 2; Fischer and Lall., Ind. Sem., 1839; Spae, Mém., p. 16, syn.).—This appears to refer to an umbel-flowered variety of *L. bulbiferum*.

L. UMBELLATUM (IV.).—Pursh., Fl. i., 229; Roem. and Sch., s. vii., 411).—Identical with *L. Andinum* (*L. philadelphicum andinum*).

L. UNIFLORUM (V.).—(Hort. angl.; Spae, Mém., p. 34, syn.).—According to Spae, this Lily is identical with the *L. pumilum* of Redouté.

L. VAN HOUTTEI (V.).—(Roelz; Elwes, Monog., under the heading of *L. maritimum*).

L. VAN HOUTTEI (IV.).—(Hort.).—A remarkable variety of *L. Thunbergianum* with deep blood-red flowers.

* Mr. Baker regards the Lilies of the umbellatum section as robust forms of *L. davuricum*, while Dr. Wallace thinks it more reasonable to refer them to *L. bulbiferum*. The absence of bulbils from the axils of the leaves, however, inclines us rather to consider them as modifications of *L. croceum*, which they resemble in their bulbs, their habit of growth, and their robustness.

L. VENUSTUM (IV.).—(Hort. Berol.; Spae, Mém., 18th species, p. 21).—Identical with *L. elegans*, *L. Thunbergianum venustum*, &c. This Lily is now usually included among the varieties of *L. Thunbergianum*, which see.

L. VERSICOLOR (III.).—(Kämpfer).—Identical with *L. speciosum rubrum*.

L. VERTICILLATUM (IV.).—(Willd., Herb., No. 6537?; Spae, Mém., p. 25, syn.).—Identical with *L. philadelphicum*.

L. VESTALE (III.).—See the sub-varieties of *L. speciosum album*.

L. VIRGINALE (III.).—(Bull.).—A variety of *L. auratum*, with pure white flowers.

L. WALKERI (V.).—See *L. canadense Walkeri*.

L. WALLACEI (V.).—(Baker; Wall., Not., p. 179).—This Lily comes very near *L. Leichtlini*, and is probably a Japanese hybrid from *L. Maximowiczii* and *L. concolor*. The flowers are of a rich orange-shaded vermilion, with numerous chestnut-coloured spots. The bulbs send out several stems, and have a great tendency to become divided, in consequence of which the plants bear few flowers. The foliage resembles that of a young *L. tigrinum*.

L. WALLICHIANUM (II.).—(R. Wight).—See *L. neilgherrense*.

L. WALLICHIANUM (II.).—(Roemer and Schultes, Syst., vii., 1869; Hooker, Bot. Mag., t. 4561; Fl. des Serres, vol. vi., p. 247, and vol. xix., p. 139; Spae, Mém., 8th species, p. 13; Wall., Not., pp. 128 and 132; *ibid.*, p. 94 (bulb figured); Elwes, Monog., pl. 4).—A handsome East Indian Lily from the temperate region of the Himalayas, with large white flowers tinged with green on the outside of the segments, which are very much recurved. Mr. Baker considers it identical with the *L. Batisna* of Hamilton (see this name), the *L. japonicum* of Don, and the *L. longiflorum* of Wallich. (See Dr. Wallace's "Notes," p. 132, for the differences between the *L. Wallichianum* (or *neilgherrense*) of R. Wight and the *L. Wallichianum* of Roemer and Schultes.*

L. WANSHARACUM (IV.).—(Hort.; Elwes, Monog., pl. 17).—A form or variety of *L. philadelphicum* peculiar to the region of Wanshara, United States. Several botanists consider it identical with *L. andinum* (*L. philadelphicum andinum*). Mr. Elwes gives a figure of it, and regards it as a variety of *L. philadelphicum* and identical with the *L. philadelphicum angustifolium* of Duchartre.

L. WASHINGTONIANUM (II.).—(Kellogg, Proc. Calif. Acad., ii., 13; Regel, "Gartenflora," f. 170; Fl. des Serres, vol. xix., p. 69; Nutt., Herb., under the name of *L. Bartrami*; Wall., Not., p. 141; *ibid.*, p. 98 (bulb figured); Elwes, Monog., pl. 10).—Identical with the *L. Bartrami* of Nuttall. A Lily with whorled leaves and white flowers passing into purplish pink and resembling those of the white Lily (*L. candidum*) in shape. It was discovered by Jeffrey in the Sierra Nevada, California, in 1853. Kellogg mentions a variety of it, which has narrower leaves, under the name of *L. Washingtonianum angustifolium*.

L. PURPUREUM (II.).—(Hort. angl.; Baker, 14th species; Wall., Not., p. 143; Elwes, Monog., pl. 11).—Also known as the *L. rubescens* of American gardens. A more delicate and slender form of the preceding species, cultivated in England since 1873. The flowers, which are borne in an umbel, are white, passing into a vinous purple, and entirely overspread with small purplish spots.

* From all that has been previously stated, it is a necessary conclusion that we must assign the following synonyms respectively to the *L. Wallichianum* of Wight and the *L. Wallichianum* of Roemer and Schultes.

Synonyms of the L. Wallichianum of R. Wight, which has flowers of a honey-yellow or cream colour:—
L. neilgherrense (Wight)
L. neilgherriicum (Lemaire)
L. Metzi (Steudel)
L. tubiflorum majus latifolium (Duchartre)
L. t. minus (Duchartre)
L. tubiflorum (Wight)
The last two forms differ slightly from the type.

Synonyms of the L. Wallichianum of Roemer and Schultes, which has white flowers tinged with green, and the petals or segments very much recurved:—
L. Batisna (Hamilton?)
L. japonicum (D. Don)
L. longiflorum (Wallich)

* NOTE.—Besides the varieties mentioned by Dr. Wallace, a great many others of more or less merit are to be referred to *L. Thunbergianum*. These include several of Japanese origin, known by the names *Fekinata*, *Ja-Éthal*, *Kikak*, *Kimi-Gogo*, *Sayetsu*, &c. For the names and descriptions of these varieties, see the catalogues of Messrs. Van Houtte, of Ghent; Krelage, of Haarlem, and the New Plant and Bulb Co., Colchester, &c.

L. WILSONI (IV).—(Hort.; Duch., *Observ.*, p. 55; Wall., *Not.*, p. 161).—Identical with *L. pardinum* (*L. Thunbergianum pardinum*). A fine Japanese variety, bearing up to twenty flowers of an orange-red colour, with central bands of golden yellow. This variety was at first regarded as a distinct species.

L. WILSONI (II).—(Leichtlin; Krelage, *Catal.*; Wall., *Not.*, p. 152; *ibid.*, p. 105 (bulb figured)).—Identical with *L. longiflorum Wilsoni*, and also, according to several authorities, with the true *L. eximium*. Messrs. Krelage, however, mention these two Lilies separately in their catalogue for 1879-1880, the former at the price of fr. 7.20, and the latter at fr. 2.40.

L. WITTEI (III)—(Dr. Suringar; Koch., *Woch. Sch.*, 1867, p. 294; Krelage, *Not.*, pl. color. and text, p. 22; Duch., *Obs.*, pp. 52, 53, and 127; Wall., *Not.*, p. 151).—A fine variety or hybrid of *L. auratum*, with pure white flowers without spots, and having the petals or segments quite smooth on the inside and marked with a central line of a fine yellow colour. Introduced from Japan by M. Van Leeuwen, of Rotterdam, in whose grounds it flowered for the first time in 1867.

L. Yama-juri (III).—(Hort. jap.).—A Japanese name for *L. auratum*, signifying "the Lily of the Hills."

DOUBTFUL SPECIES ASSIGNED BY VARIOUS BOTANISTS TO DIFFERENT GENERA.
Ambilirion camtschatcense—(Sweet).—Identical with *Lilium camtschatcense*.

Fritillaria camtschatcensis—(Gawler, *Bot Mag.*, t. 1216; also Fischer and Kunth).—Identical with *L. camtschatcense*.

„ *Gardneriana*—(Baker).—Identical with the *Lilium nanum* of Klotzsch.
„ *Hookeri*—(Baker).—Identical with *L. Hookeri*.

„ *macrophylla*—(D. Don, *Prod. Nep.*, 1825).—Identical with *L. Thompsonianum* (*L. roseum*).

„ *oxypetala*—(Royle, *III. Himal.*, 388?; Hooker, *Bot. Mag.*, t. 4731).—Identical with *L. oxypetalum* (*L. triceps*).

„ *polyphylla*—Identical with *L. polyphyllum*.

„ *Thompsoniana*—(D. Don, in Royle, *III. Himal.*, p. 388).—Identical with *L. Thompsonianum*.

Hemerocallis cordata—(Thunb. *Fl. jap.*, 143).—Identical with *L. cordifolium*.

Sarana camtschatcensis—Identical with *L. camtschatcense*.

Saussurea—(Salis., in *Linn. Trans.*, viii., p. 1).—In this genus Salisbury proposed to place the Lilies which have heart-shaped leaves, such as *L. giganteum*, *L. cordifolium*, &c.

GARDENERS' BENEVOLENT INSTITUTION.

SALARY £160, honorarium £88 odd, and into the bargain travelling expenses paid to an officer of a charity that pays its pensioners the munificent sum of £12 and £16 per annum respectively, and yet the society was founded for their benefit. Well, they get a little certainly, the secretary much more, stationers and printers a good round sum, and "diners out" a smattering. It would be interesting to learn whether such an enormous proportion, say about one-third of the income of the charity that is paid away in expenses, can be justified by the committee of management. As a member of the charity of many years standing, I have long felt that a move should be made towards greater economy in management, and as matters continue to improve in the wrong direction, that move should be made quickly. I do not deny that the secretary is equal to his duties and has served the society well; but what of that? he has been well paid, and that is all that is due to him. "Delta" and Mr. H. J. Clayton (p. 118) seem to think that the secretary does all the collecting and soliciting of subscription business, but they are mistaken, unless they give him credit for doing this by sending out his collecting cards

here, there, and everywhere, likely and unlikely places, disregarding expenses of printing, postage, &c. The charity pays that, and an additional 5 per cent. on the total collection, as if £1.60 per annum were not sufficient. Mr. Clayton thinks that because "J. S. W." is not a member of the society he has no right to criticise its doings. He doubtless knows that "J. S. W." is a well-known gardener, and as such has no doubt frequently been requested to become a member, and in all probability would have been one had the rules, &c., been in accordance with his views of what real benevolence is; he, therefore, has as much right to criticise it as I myself claim to have as a member. I have been the means of several joining the charity, but of late years I have so frequently been repulsed by some such words as these, "No: not till it is more economically managed, or till there is less difficulty about myself or friends being placed on the pension list should we require it," that I have discontinued all canvassing; and as to collections, the 5 per cent. item must be struck off before another penny goes from here.—H. W. W.

—As "J. S. W." (p. 110) persists in putting an unfair construction on this balance sheet, I have to ask you to again allow me to refer to the matter in order to put it in what I conceive to be an unbiassed form—thus, receipts £4725 odd, expenditure £670 odd. This shows the latter to be nearly one-seventh of the former. "J. S. W." infers it to be one-half. Truly, the old adage, that figures can be made to prove anything, comes in here. "J. S. W." also talks about wrangling and reasoning. Your readers will decide to which of us these remarks apply. One thing I must claim, viz., that I have no desire to be the "Senior Wrangler." My only wish is that truth should prevail. My part in this matter has been far from a pleasant duty, and must now close.—H. J. CLAYTON, *Grimston Park, Tadcaster*.

The trustees of the Veitch Memorial Fund have decided to offer the following medals and prizes during the present year, namely: One medal and prize of £5 to the Botanical and Horticultural Society of Durham, Northumberland, and Newcastle-on-Tyne; one medal and prize to the National Rose Society; and one medal and prize to the Chrysanthemum Society. The medals and prizes are to be offered for subjects to be selected by the committees of the respective societies. The trustees have also determined to place three medals and £5 prizes at the disposal of the committee which is to have charge of the Orchid conference to take place at South Kensington in May next. In all cases the awards are to be made in favour of bona-fide gentlemen's gardeners and amateurs only.

QUESTIONS.

5320—**Snowdrops and Anemones**—Can any of your correspondents tell me in what part of Lincolnshire Snowdrops and double red Anemones are largely grown?—H. T.

5321—**Scilla taurica**—I observe it mentioned that this is in Captain Nelson's garden and also at Bilton. On looking up the bulb lists, however, I fail to find it. Is it *Ixiolirion tataricum*, which by some is classed among the Squills? or is it a new variety of recent introduction? Perhaps someone will kindly enlighten me.—R. B. V.

5322—**Gardenias**.—Can any of your readers inform me as to the cause of the thickening of the bark in Gardenia plants? The thickening commences at the bottom of the stem very near the root, and spreads at intervals over the main stem and branches. Though I have several varieties of Gardenia in the same house, plants of *G. florida* are the only ones affected. I should be glad to know if this is likely to injure them, and also if the plunging of Gardenias in pots in Cocoa nut fibre is advisable.—G. H. B. P.

5323—**Aponogeton distachyon** flowers well each winter in the open air, but it has enemies which baffle me. I had it in a pool which does not freeze, but as soon as it began to bloom both flower and leaf-stalks were nipped off and left floating. Supposing it to be rats which did this, I removed it to a small pool, which I enclosed in wire netting, so that rats could not get to the plants, but the same thing still occurs. I can find no trace whatever of water slugs in the pool. Do birds attack it? If any of your readers can enlighten me as to the depredator, he will confer on me a favour.—R. MILNE-REIDHEAD, *Holden Clough, Clitheroe*.

Cottage gardening.—"J. S. W." (p. 104) has misread my statement. What I said was that visitors to this locality were loud in their praise of the perfection to which floriculture was carried by our cottagers. I made no remark about vegetables or fruits. As to the latter, the Kentish labourer thinks of growing little else; cottage walls here clothed with Roses are in Kent covered with Plums, Cherries, Pears, &c. I could mention scores of working men in Kent who pay the rent of their cottages with the Morello Cherries that grow on their walls. I have not yet seen such a thing in this locality; therefore I could not assert, nor did I mean to do so, that the cottagers of the south excel in all branches of gardening.—J. GROOM, *Gosport*.

The botany of the "Pall Mall."—The very common habit of growth by which so many of our commonest plants increase and spread about has led some would-be scientific writer to give birth to the following foolish paragraph in the usually stirring pages of the *Pall Mall*:—

"To the number of curious plants, such as the carnivorous and fly-catching plant, a new specimen has lately been added which is described as the travelling plant. It is said to be of the Lily of the Valley species (*Convallaria polygonatum*), and has a root formed of knots, by which it annually advances about an inch distant from the place where the plant was first rooted. Every year another knot is added, which drags the plant further on, so that in twenty years' time the plant has travelled about 20 inches from its original place."—*Pall Mall Gazette*, February 11.

Why do editors meddle with such matters, and leave them in the hands of those capable of writing such as above? In the same number of the *Pall Mall* a number of amusingly stupid answers are given from some examination papers, not one of which is so absurd as the above note.

LATE NOTES.

Cattleya Trianae (*J. E. Ravenscroft*).—A poor variety, in no way remarkable either for size, form, or colour.

Primulas (*F. H. L.*).—An uncommon shaped leaf, quite distinct from that of others that you send, all of which indicate remarkable vigour.

Lily of the Valley (*R. Andrews*).—Your failure is doubtless attributable to the want of vigour in the "eyes" of the plant you lifted. In order to obtain early flowers of Lily of the Valley you must obtain specially prepared roots which have large plump eyes. These are imported in autumn. You may get flowers from lifted plants of ordinary grown Lily of the Valley later in the season, say next month and onwards, till they come out-of-doors.

McBrade's label damper.—This is used for damping gummed labels, postage stamps, envelopes, or seed packets. It consists of a circular box, 5 inches across, closed at top and bottom, with the exception of a small opening at top close to the side. Through this water is put into the box, and into it is inserted the tongue of a fibrous mat or piece of felt, which, overlying the lid, is thus kept moist and ready for use by means of capillary attraction. The felt thus placed will keep constantly damp until the water in the box is exhausted, when it must be refilled. It is sold by Messrs. Corry, Soper & Co., 18, Finsbury Street, and will doubtless be useful, especially in seed houses.

Naming plants.—Four kinds of plants or flowers only can be named at one time, and this only when good specimens are sent.

Names of plants.—A. Z.—1, apparently *Atriplex Halimifolia*; 2, *Callistemon rigidum*.—A. K.—*Amaryllis equestris*, *Leucojum carpathicum*, a form of *L. vernum*; 1, *Begonia ascotensis*; 2, same as No. 1; 3, *B. insignis*; 4, send in flower.—Dr. W.—*Veltheimia viridifolia*.—W. E.—*Vandia tricolor insignis*, apparently *Ocimum carthaginense*. The *Odontoglossum crispum* represents a very fine variety, but the union of the sepals is probably accidental.—R. Young.—1, *Restrepia attonifera*; 2, *Cattleya Aclandiae*; 3, *C. Percivaliana*; 4, *Cypripedium Roehlii*.—W. Wilks.—*Ruscus racemosus* (Alexandrian Laurel) hardly evergreen shrubby plant belonging to the Lily family.—T. R. White.—Variety of *Begonia Rex*.—T. M.—*Leucojum vernum*.—A. Jenkins.—White flower is *Calliphuraria Hartwegii*; Orchid is not sent.—Mrs. Dowell.—*Chimonanthus fragrans graudiflorus*.

CATALOGUES RECEIVED.

MCKENZIE & SON'S, Dublin, *Seeds*.
J. & P. THYNNE'S, Glasgow, *Seeds*.
HARTLAND'S, Cork, *New Book*.
DOBIE & MASON'S, Manchester, *Seeds*.
T. S. WARE'S, Tottenham, *Flower Seeds*.
SMITH & SIMON'S, Glasgow, *Cultural Guide*.
FISHER, SON, & SIBBAY'S, Sheffield, *Seeds*.
J. & G. MC HATTIE'S, Chester, *Seeds*.
W. RUMSEY'S, Waltham Cross, *Seeds and Potatoes*.
J. COCKER'S, Aberdeen, *Hardy Plants, Tubers, &c.*

"This is an Art
Which does mend Nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

NOTES ON RECENT NUMBERS.

Dog Rose covering a Thorn with a profusion of flowers (p. 143).—We have in our garden an old Dog Rose which has found its home in a tall Cypress, from out of which hang the long graceful shoots, and very pretty the effect is when covered with bloom. Like "Subscriber's" Rose, it is in very poor soil, in a wild part of the wood, where it has been for a great many years. A pretty effect may be obtained from a plant of Traveller's Joy being allowed to run riot in an Ilex, reminding one of Banksian Roses among Olive trees, for which, indeed, in this climate the combination of the two is a good substitute. Clematis montana on a Scotch Fir is also a "happy marriage," the white blooms and green leaves showing themselves off so well against the red stem.

Leucopogon Cunninghami, sometimes known as *Styphelia parviflora* (p. 143).—It is much to be regretted that so many of the rarer and most desirable flowering shrubs and trees are known by two, or more, totally different sets of names with no apparent similarity, and unless both are given there is nothing to lead one to recognise the plant for which one is searching, if one is not aware of the alias. Opening a catalogue at random, one finds that *Pavia macrostachya* in one place turns into *macrothyrsus discolor* in another, and *Pavia Whitleyi* into *Wildenoviana sanguinea*, &c. In some cases I have noticed an old friend brought out with a flourish, under a second name, as a novelty; but what I wish to point out is the difficulty experienced by anyone, who wants such a plant as this *Leucopogon*, in finding it out in a catalogue where it is only inserted under *Styphelia*. The printer's bill would be heavy if all synonyms were to be included, and the result would be bulky, as in the list of Lilies in last week's number, which must convict somebody of a needless multiplication of names—e.g., *Lilium testaceum excelsum isabellinum*.

How to form a rookery (p. 145).—I have heard of a good many attempts made and a good many dodges tried to make a rookery. Unlike the members of the Primrose League, these birds are not ready to "found a habitation" in many of the most desirable and likely places; and I know of some instances where, after being established with nests for a year or two, they have been tempted away by neighbouring rooks. In St. Leonard's Forest in this county the rooks and the nightingales are said to have disturbed the saint at his prayers, for which he banished them both, and certain it is, from whatever cause, that, say or do what you will, to this day neither will the nightingales sing nor the rooks build in the woodlands which still bear his name. It is commonly supposed to be a sign of good luck if rooks come and build in a fresh place. It is not generally known how easily they may be tamed, and what interesting and amusing pets they are. Though I believe that they do much more good than harm, I owe them a grudge for pulling up and mixing a set of my garden labels one year.

Leptospermum lanigerum (p. 145) is said in Loddiges' "Botanical Cabinet" "to seed sometimes in this country." The English name of the family, South Sea Myrtle, was not mentioned in the notice of it. One of our nursery firms has just started as an agency for New Zealand seeds. Are there no gardens in different parts of Australia from which similar agencies might be taken up by some enterprising tradesmen, in order to supply us with seedlings instead of worn-out grafts

or cuttings? It is now rather too late in the season to give a word or two of warning to planters, but if people would only insist, in many cases, on having seedling plants, what much better results we should have. All must have seen the effect of cuttings from the side shoots of various Pines, &c., and the nuisance of keeping down the stocks of such plants as Rhododendrons, Thorns, or Magnolias, where there are many, is fearful. Every year the Rhododendrons have to be cleared when once they have started to throw up suckers, and the more one clears the more they seem to grow, till at last the plant is often eaten up by "robbers." Azaleas are almost as bad, and many other plants too; but Thorns, such as the Cockspur, when planted in quantities often have to look after themselves, as it is not always possible to give them the requisite attention. If nurserymen will grow and advertise proved seedlings (for instance, of Magnolias), I am sure they will find a demand for them, and buyers will be forthcoming who will be willing to pay a higher price. I am speaking, of course, of trees, shrubs, &c., for permanent plantations, not of plants for cut-flower or temporary greenhouse work—to be thrown away when done with, or after a few years' use.

The doubling of Daffodils (p. 150).—I visited a garden in the sunny south last year in which the owner told me that all his Anemones—and he grew a great number—after three years became double. There were a number of Narcissus freshly planted in one part, but most of the flowers were over; however, I saw one bloom of poeticus which was just beginning the multiplication table. Round about here the pseudo-Narcissus seeds itself freely, which shows that it is happy; they bother me very much by coming up all over the garden where I keep most of my rarer Daffodils. I found a bloom two years ago among some *Telamonius fl.-pl.* like the description of those sent to Mr. Wolley Dod from Gloucestershire and Anglesey. If it flowers this year I will save it, but in this neighbourhood the wild ones do not come up double, even if transplanted upside down, as Primroses are supposed to do! Another curious thing about the double *Telamonius*, besides the fact that it does not revert to single, owing, of course, to the same cause, is that it always seems to retain the same amount of doubleness, and its offsets do the same.

The list of Lilies, which looks rather appalling at first, after a slight examination clearly shows its utility. To be able, by glancing at names placed in alphabetical order, to refer at once each Lily to its better known and more correct designation, is a boon for which many will be thankful. The addition of the Japanese names is a good feature, as I believe they are fairly correct and systematic in this matter in Japan, and invariably send them with the bulbs. It forms a good and serviceable index with such a book as Elwes's "Monograph" for those who are fortunate enough to possess his valuable work; to others less fortunate it will be no less useful for ready reference in clearing the doubts and confusion which arise from the diversity of names usually given in different catalogues. If one might be allowed to suggest an improvement, it would be that where the consensus of authorities points to one synonym rather than another as the correct title, that one should have been printed in bolder or blacker type, in order to suggest its use more prominently to those who are in doubt as to which is right.

C. R. S. D.

Iris reticulata.—After twice failing—first in a hotbed and next in the open air—I have at last succeeded in successfully flowering this lovely little Caucasian Iris. It is worth any amount of trouble both for its delicious fragrance and the intense, though subdued, beauty of its colours. It was potted up in the beginning of October and placed in a cold frame, so that the soil should be barely damp without being at any time dry. In the first week in December I set the pots on a shelf that runs round a plant pit, and here the

roots continued active, except when the temperature fell below the freezing point, which was very seldom, and the blooms opened on February 10. No water was given during the whole time. Success next year will depend on full sunlight, perfect ripening of the foliage, and consequent ripening of the bulb—points that will interest several of your readers.—W. J. M., *Clonmel.*

YOUNG GARDENERS AT KEW.

SPEAKING as an old Kew man, I entirely agree with your comments upon the circular recently issued from the Royal Gardens, Kew, in reference to the admission of young men into that establishment. You justly complain of the new rule which states that "preference will be given to young men who have had experience under glass." The enforcement of this rule simply means that an intelligent young gardener desirous of acquiring experience in all branches of his art is to be excluded from participating in the advantages of Kew if he has not had an opportunity to work in glass houses, though that department is probably the one in which he desires to gain experience. On the face of it this rule cannot be said to have been framed on any broad principle, and it certainly ought to be expunged from a code of rules in connection with a government garden. Another important subject on which you commented was that of confining the young men almost exclusively to the houses during the whole time they are at Kew. This has been, and probably still is, a standing complaint among the men. The men are kept at routine work in the houses while labourers are deputed to do that which really requires some intelligence in order to do it properly. For instance, an old man, nearly blind, used to do the important work of gathering, sorting, cleaning, and labelling the whole of the seeds in the herbaceous department, and another labourer does similar work in the arboretum. This is work that should be done by young gardeners—work in which they would take much interest, and thus intuitively learn in one season more than they could acquire in ten under the present arrangement. Again, why should not half a dozen young gardeners be always employed outside, either in the arboretum or in the botanic garden? Young men would be only too pleased to exchange indoor for outdoor work. It is by constantly working amongst open-air vegetation that a true knowledge of it is obtained, not by a listless half hour now and then.

I notice that a contemporary criticises the comments made in THE GARDEN with regard to the circular above alluded to, and how rightly the following will show. For instance, he says, *the temperate house is as good a school as any in the world for a young gardener*. Just so, but is the writer aware that the whole of the work in this house is, and always has been, done by labourers, and that the only opportunity which the young gardeners have for their "schooling" in this house is limited to two or three half hours a week allowed them for visiting houses other than those in which they work, and these half hours are generally absorbed in going to and from the house, lying as it does so far away from the rest? The exclusion of the young gardeners from this house has always been a sore point among the young men, seeing that it is one of the most interesting houses in the garden, containing as it does those plants a knowledge of which is of so much importance to a gardener. Attached to this house is a propagating department and a large open nursery, where all the stock for the arboretum and pleasure grounds is raised. From these also the young gardeners are excluded, and in my time were not even allowed to visit them, and I daresay the same restriction still holds good. These are among the things to be complained of in the management of the young men at Kew, and unless young men see that they are to get all the advantages the place affords they are not likely to leave good places to take a low pay, and the standard of the Kew young men will not rank high. Another point upon which your contemporary betrays an ignorance of facts is that with

regard to the young men doing duty in the houses looking after the public. The writer says that visitors like to ask questions and receive intelligent answers concerning the plants. Now, unless the rule has been altered, this questioning and answering is discouraged by the authorities, and rightly so, for it is a well known fact that unscrupulous visitors engage a young man in conversation while a confederate does the pilfering. There would be just as much propriety in expecting a policeman in the street to entertain one with a description of things in a shop window. The young men are simply put there to prevent overcrowding of the paths and pilfering of plants, and in your comments you justly contend that such work is more fitting for the labourers, and I know that young men used to consider it beneath their dignity, and it was only the extra pay that induced them to tolerate it.

From what I gather from your comments you have no desire to disparage indoor culture, and no one would think of curtailing the amount of attention that is bestowed on the noble glasshouses at Kew. The real fault is in making the outside departments subordinate to the indoor; whereas nine-tenths of the visitors for whom Kew really exists, to a great extent, derive far more enjoyment in the outside garden. Witness the crowds that visit the Azaleas in the pleasure grounds when in bloom in May. Again, what a source of pleasure is the new rockery to hosts of visitors. If these outside garden features could be multiplied, they would tend to make Kew more popular even than it now is, and they would in no sense interfere with the so-called scientific objects of the garden. That Kew may maintain its supremacy over every other garden in the world, and that it may turn out even better trained men than hitherto, is the wish of all, and especially of AN OLD KEW MAN.

PLANTS IN FLOWER:

Narcissus pallidus præcox is now expanding its beautiful sulphur-coloured blossoms in the open, and will, as happened last year, be nearly a fortnight in advance of all others. In Messrs. Barr's bulb grounds, Tooting, the first flower opened about February 15.

Imantophyllum Mrs. Laing.—Flowers of this fine new variety have been sent to us by Messrs. Laing, Forest Hill. It is one of the best forms we have yet seen. The flowers are large and the sepals broad, and they overlap, so as to form a symmetrical bloom. The colour is a vivid orange-scarlet, merging into honey yellow on the lower parts of the sepals. If the truss is large and the growth vigorous, this new sort will be difficult to match.

Primula floribunda.—We send you a plant of *Primula floribunda*, the parent plants having bloomed profusely since last May, and to all appearance they will carry flowers the whole year round. In a greenhouse this is the most prolific flowering plant we know. In habit it is very dwarf; the flowers are borne in whorls, after the manner of *Primula japonica*. They are bright yellow. It is quite hardy in sheltered nooks or shady situations, and is a capital plant for pot culture in a cool greenhouse or cold pit. The plant sent was raised from seed saved and sown in July last, and grown on in cold frames.—RODGER, McCLELLAND & Co., *Nerry*.

*** Quite a gem among Primulas, and a great gain for the greenhouse. We have no knowledge of its hardiness in England; it certainly does not look very hardy.—ED.

Corbularia monophyllum (Clusii and albus).—These two lovely Narcissi have been blooming in Messrs. Barr's grounds at Tooting since the middle of January, and will continue to do so for some weeks yet; they are growing under a frame. Early in autumn the bulbs were planted in a mixture of sand and loam; the bed was raised a few inches above the general level and covered with the frame; the lights were raised sufficiently to admit air, but to protect from the

cold autumn rains. When the leaves had advanced an inch or two the sides of the frame were alternately raised, thus fully exposing the plants, except when there was a severe frost or heavy rains; then air only was admitted, and this will be followed till the weather becomes dry and warm, when the glass will be kept constantly down, only admitting air.

ORCHIDS.

MR. PHILBRICK'S ORCHIDS

At Oldfield, Bickley, are remarkable alike for richness in the way of variety and also for fine growth, the pure air and clear light of Bickley imparting to them a healthier appearance and finer colour than that of plants grown in densely populated districts. The *Phalenopsis* house, a low span-roofed structure running north and south, seems to suit its inmates exceedingly well, and I would recommend those who contemplate the cultivation of this class of plants to pay a visit to Oldfield before deciding on houses for them of other descriptions. The plants just now in flower, all of which are in excellent condition, are *P. amabilis*, always good; *P. Schilleriana*, fragrant and fine in colour; *P. grandiflora*, with wonderfully large and fine flowers; *P. rosea*, extra good and always in flower; *P. Sanderiana*, the fine rose-coloured variety; a grand form of *P. Stuartiana* and *P. violacea* and *Berkeleyi* all equally good. Amongst the *Cattleyas* noticed several fine varieties of the *Trianæ* section in flower and bud and otherwise in fine condition; also some fine examples of *C. Mendeli* and other varieties, all showing good sheaths and promising to flower well. Of *Lælia purpurata* there are some fine masses and a grand collection of the rarest *Cypripediums* all showing flower. *Odontoglossums* are grown here in a north house, and whatever may be said to the contrary against a north aspect the plants go far to prove that they thrive as well there as in any other position. Amongst them are some very fine varieties of crispum and various other kinds, prominent amongst which was a very high-coloured example of *O. blandum* in flower. For the cultivation of *Sophranitis grandiflora* Oldfield is noted, and in one of the greenhouses is a fine specimen of *Sobralia macrantha*. Of *Lælia anceps* many fine varieties are in flower, notably *Williamsi*, *Percivaliana*, *delicatissima*, and *Dawsoni*, the latter still the best both as regards colour and substance

F.C.

PHALENOPSIS AT ANNER HOUSE, CLONMEL.

MR. F. CLIBBORN showed myself and some gardening friends the other day some very promising specimens of *Phalenopsis* either in bloom or preparing to do so. Although a comparatively young Orchid grower, his collection now amounts to 100, consisting of about a dozen distinct kinds. His system of treatment has been a success from the beginning, and he attributed much of it to proper shading in summer, and as a rule maintaining a minimum temperature of 65° Fahr. during the winter months. Being natives of moist tropical countries, almost all require the same treatment; but how to retain moisture around the plants without having it in excess, as is generally the case, seems to be the point when grown in pots rather than in baskets. Here they are all grown in baskets, and the moisture-retaining problem, if I may so speak, is solved by using living *Sphagnum*, which fortunately is to be had in plenty on the hills adjacent. Mr. Clibborn finds that the surest indication of a plant doing satisfactorily is to see the *Sphagnum* in luxuriant health. Another hint in the case of small houses is when in winter there is a chance of a fall of the temperature during the night to draw on the shading in the evening when the plants are near the glass. Of the varieties in bloom here at present the premier place must be given to *P. Schilleriana*. Of this there are numbers in bloom, and, curiously enough, they all differ more or less one from another, either in the

size, colour, or shape of the sepals, or in the depth of tinting of the lip. In two, that seemed to deserve the name, *P. S. superba*, the petals are large and entirely overlap, and though the plants were comparatively small, the individual blooms measured nearly 2½ inches across, and last about six weeks. Next in number of specimens comes that queen of Orchids, *P. amabilis*, almost pure white, and fully half an inch larger than the last. The warm, dry atmosphere here prevents that damping or spotting often noticed on this Orchid. Next, and perhaps one of the finest of all, is *P. grandiflora*, and still more so *P. g. aurea*; this last differs in shape in having the petals more rounded; and closely allied is the smaller *P. rosea*, but producing more spikes of bloom. Among the newer introductions here are *P. Esmeralda*, *P. tetraspes*, *P. Sanderiana* (very fine), and the rare and difficult to manage *P. Lowi*. One of the curiosities of this house was a tame otter, that follows its master like a spaniel. W. J. MURPHY.

Bulbous Calanthes.—I have read Mr. Baines' remarks on these, but I fear I have not rightly understood him. If not, I should feel obliged by his setting me right. Am I to understand him as having had 120 flowers on a single spike, for according to the length and numbers of flowers on my spikes he should have had spikes no less than 10½ feet in length, which would be an enormous length? I follow as near as possible his treatment, except that I grow mine in baskets, and he his in pots. Again, I should like to know if he was able to get them to retain their foliage up to the time of their flowering. I have never been able to do so, neither have I seen it done—i.e., green foliage, and I have seen them grown in many of the best places in England. I would also like to know why it is my old bulbs, which he retains, always immediately after commencing to flower either shrivel up or turn black, and consequently become of no use to the bulbs that are dowering as regards storage, which he recommends so much.—P. W., *Cork*.

Orchids at Messrs. Shuttleworth and Carder's, Clapham Road.—The *Popayan* varieties of *Cattleya Trianæ* are coming nicely into flower here, and under the bright weather which we are having better development than hitherto may be expected. Even in the dull days of early February some of the flowers opened with richly coloured labellums. They measured 6 inches across, but Mr. Shuttleworth showed me dried specimens 8 inches across. In the *lague* varieties the flowers are paler, and some of these are in their way of quite as much value commercially as the others, being delicately beautiful. *C. speciosissima* is also in flower and very handsome. *Odontoglossum Oerstedii majus* is quite a charming form, two flowers being on a spike; here also is *Odontoglossum aspersum*. By no rule of Orchid nomenclature ought *aspersum* to be the specific name; it is a yellow-tinted form of *C. Rossi*, and, therefore, the name ought to be *C. Rossi aspersum*. It is very handsome, and has five flowers on a spike. *Lycaste Skinneri* was here in many fine forms, and plants of *Masdevallia Harryana*, growing in cold frames with the protection of mats only during frosty weather, were highly satisfactory; they were making vigorous growths.—J. DOUGLAS.

Tulipa Ostrowskiana.—According to the "Gartenflora," this new Tulip, which comes from Turkestan, is a showy and attractive species, the petals being bright scarlet marked at the base with triangular spots, and bordered with yellow. The flower-stem does not attain a height of more than 8 inches; the leaves are glaucous, the lower ones of which are broad, and the others narrow and lanceolate. It belongs to the same section as the now tolerably well-known Greigi. M. Regel says that these Turkestan Tulips are the better for being lifted after flowering. They should be planted again in autumn in light soil in a warm aspect, and mulched with leaves for the winter.—J. C. E.

PALMS AT BORDIGHERA.

As you pass along the line of railway (interrupted by frequent stoppages and tunnels innumerable) which, skirting the coast, is the direct road from Marseilles to Genoa, you observe the beautiful little promontory of La Mortola, where Mr. Hanbury has created a transalpine Eden. Further on are the rugged heights of Ventimiglia, and you approach a small, but highly picturesque town clustering on the mountain side, the summit of which is crowned by a quaint campanile where white villas peep out from groves of Oranges, Olives, Palms, and Aloes. This is Bordighera, which has been described as a strip of Africa fitted into South Europe. The Palms are after all the great feature of the place. Olives, Oranges, and Lemons grow all along the Riviera, and here and there fine specimens of both the Fan and the Date Palm are met with, but they are nowhere abundant. As you leave San Remo behind they become more and more rare, till you almost cease to see them as you approach Genoa. It is said that the Date Palm was brought to Bordighera by a community of Dominican monks some centuries ago. This reminds us of the legend of S. Dominic having introduced the Orange into Italy from Spain; is not the traveller duly shown the identical tree in the garden of the Dominican monastery of Santa Sabina, on Mount Aventine? The inhabitants of Bordighera possess the privilege of furnishing Palms to the Chapter of St. Peter's. The Pope blesses them, and they are then distributed to the people. The chief street of New Bordighera is a continuation of the Cornice Road. This road is bordered by Violet gardens, which in spring scent the air. Gathering and packing these flowers, mostly of the pale double variety, is a branch of flourishing industry. In walking to Ventimiglia in early morning I have often seen troops of men, women and children picking and tying them up; and trucks of flowers of all sorts are constantly to be noticed at the station ready for exportation. But by far the most lucrative trade is in Palms. They are planted in every available spot and most carefully cultivated; the soil is excellent and suits them well. As the plants attain a certain height they are swathed or tied up in the same way that we treat Lettuces. Large quantities thus blanched are sent to Rome and other places for Palm Sunday, while a considerable number find their way in the month of August to different Jewish communities for the Feast of Tabernacles. I once saw a box of them packed up for a friend who was going to take them to England. It seemed that the tying-up process had given the graceful feathery plant a silvery appearance. Many old Palms have strings of orange-coloured Dates depending from their crowns, but these are never fit for food. The private gardens of Bordighera are very lovely. The two principal hotels stand in beautiful pleasure grounds; smooth turf as we know is impossible, but the broad stretches of Grass beneath the Olives are gemmed with Anemones and the star-like Periwinkle. The Hôtel d'Angleterre (a house where everyone feels happy and at home), besides its own garden, where all the winter long

sweet Heliotropes climb up the front and peep in at the windows, where Stocks, Roses, and Mignonette seem to be ever in flower, possesses a dependence with two noble Palms overshadowing the house, which is surrounded by an Orange grove.

The Strada Romana, a long road leading down from the picturesque, but extremely dirty ancient part of the town, is bordered by fair villas, each in its own delightful garden. One of the most pretentious is that which was the abode of Queen Margaret when she spent a winter at Bordighera some years ago. A long Latin inscription affixed to the front sets forth how "Dominus Raphael Bischoffsheim" had lent his poor house to her Majesty, who had found health amid the delights of Bordighera.

Continuing the walk along the Strada Romana, you reach a path turning to the right. This leads to a mountain road, rough, but practicable for carriages, past Campo Rosso, noted for its fields of

a villa could hardly have been chosen by the accomplished architect of the Paris Opera-house for his country home. Shaded from cold winds by the background of the Maritime Alps, the garden is always full of fragrant flowers. The villa itself is a pretty, cheerful, but unpretending structure, and from the windows and terraces you look out on the vast expanse of the blue Mediterranean. Here and there a bright sail reflects the light, and you catch the murmur of the waves dashing on the rock-bound shore. Below you is the dusty road (enlivened by companies of gay peasants), which leads away to the deserted English cemetery, with its dark, funereal Cypresses, its neglected flower-overgrown graves—past Violet gardens and golden Orange groves to Ospedaletti and San Remo.

W. N.

TAR-PAVED WALKS.

THESE when well made are very durable and need not necessarily be offensive to the eye. I should certainly consider them well adapted for the kitchen garden, where one often sees nothing but the ordinary soil for paths with the usual result in wet weather. As to any odour arising from well-made tar walks, there is none; if any it is the result of improperly made walks. It is an error to suppose that these walks can be successfully made by simply pouring tar over stones, cinders, clinkers, &c., however good the foundation may be; such a course of procedure can only lead to disappointment, and has been the cause of much that has been written against them. There are few who thoroughly understand the proper method of making tar walks. First, the foundation must be perfectly solid, and constructed of hard and durable material, 3 inches in thickness of the tar paving being ample for all purposes; the stones used should be perfectly free from dirt and of a hard, flinty angular character, in order that they may wear well and keep firmly together. The stones must be burnt in large heaps like ordinary clay ballast, sifted while they are very hot, and mixed with tar that has been heated until the whole is thoroughly saturated. This



GROVE OF DATE PALMS AT BORDIGHERA.

scarlet Anemones and fragrant Narcissi, to the ancient, but decayed, town of Dolceacqua, dominated by the ruins of a fine castle—a feudal relic of the Dorians. Here you see no more Palms; other fine trees abound; the Olive, with its gnarled trunk (the patriarch of Liguria), Opuntias, tall Aloes, the stately Carouba, the graceful Eucalyptus, but Mediterranean Palms do not grow far away from the shore. The villa of Mons. Garnier, once before described in these pages, occupies a commanding position on the slope of the hills which "stand about" Bordighera. It overlooks the high road. I visited it about two years ago, and was shown the beautiful terraced garden, with Palms growing in every conceivable spot. Some very ancient ones, to which the gardener assigned an almost fabulous age, were growing out of the rude stone walls which support the terraces. The rough jagged trunks of venerable trees were bent and contorted by the weight of years. A more charming situation for

process is the secret of making tar-paving. If mixed when the stones are too hot, the tar is burnt; if when too cold, the saturation is imperfect. It requires some experience to know the exact heat necessary for successful mixing. These paths should always be edged with durable material, never live edgings, although, if desired, such may be planted outside the edging. The tile or brick edging serves to prevent the crumbling away of the paving. Take care in laying the paving that it is rolled until no interstices are left; the ordinary iron garden roller is of no use for the purpose. A heavy one of solid stone is needed for consolidating all properly. The material should be laid in two coats, one coarser than the other. As to the surface, shingle, crushed spar or shells and sharp sand may be used; I prefer the shell, which may also be sprinkled on the path occasionally after the paving is perfectly dry. Walks thus constructed are very durable, clean, and perfectly free from smell or liability to

soften in the hottest weather; their maintenance, too, is extremely trifling, consisting of a coat of tar every few years put on with brushes. When well done, I maintain that tar-paved walks cannot fail to give satisfaction, in spite of their assumed unsightliness. C. D.

NOTES.

Early Chrysanthemums.—For open-air culture there is a great future before these plants. A few plants of Madame Castex Desgrange or La Vierge give a good display early in October and are the best of the white kinds, although Mrs. Cullingford is good on a sunny wall. Lyon is the finest of the claret-purple kinds, and Early Flora is a very effective yellow. Salter's Blush is another beautiful variety. Cuttings of these rooted now in a cold frame will be ready for planting out in May, and if liberally treated will form fine bushes by the flowering season. The above selection would form a fine autumn bed, or single bushes light up the herbaceous borders just before the frost comes to cut down more tender things. Another year it is to be hoped that special prizes will be offered in this important class by the National Chrysanthemum Society, and more especially for additions to *bona-fide* open-air varieties.

In Madelra.—What a place this is for flowers! The narrow streets of Funchal are steep and quaint, their white-washed walls o'erspread with fragrant Jasmine, Hoya, and Stephanotis, while scarlet Hibiscus, blue Plumbago, and yellow Allamandas trail about in the most luxuriant festoons. On Palheiro is a fine group of Stone Pines, and Camellias grow there as trees 40 feet to 50 feet in height, forming great canopies of red and white blossoms, and their falling petals quite cover the ground below. Here also clumps of Belladonna Lilies are to be seen in glorious profusion. Ferns are abundant, clustering around moist tree trunks and draping the wet rocks or moist walls. Some of the trees are entirely clothed with the Hare's-foot Fern, and the Mosses are most luxuriant; here and there one sees Bougainvilleas covering an outhouse or low tree with a certain of brilliant colour, and now and then near the houses the lovely Cherokee Rose covers walls and bushes with its bridal veil-like beauty. The climate is as variable as it is enjoyable, and the island may be described as an enormous open-air conservatory, in which nearly all our hothouse flowers find a home.

Shakespeare's country.—"Over one of the houses built of sad-coloured stone clambered a pale grey-leaved Grape Vine, which reminded us that we were close to the most ancient Grape growing district in England. The Cotswold Hills are still terraced in many places with the supposed remains of vineyards, and from Shakespeare's frequent allusions to Vines and Grapes, one fancies he must have been familiar with the Gloucestershire vineyards, from which good wine was made even in the last century. There was an air of depression about the place which gets its name from the poor soil hereabouts. Yet even in sad pale Grafton there were Roses, Roses fit for Shakespeare's self, notably one gigantic standard of the dear old-fashioned pink Moss Rose that filled our horticultural souls with envy. Why will not modern gardens grow such Moss Roses, and why must every modern gardener try, and try in vain, to improve upon so perfect a kind instead of perpetuating it for the joy of all beholders?" The above is a little sketch by Rose Kingsley in the February number of the *English Illustrated Magazine*, which all lovers of old-fashioned flowers should see for themselves.

Freesias.—And so we have all been wrong in trying to make the best of our Freesias under prolonged cool treatment, as a judicious combination of cool treatment in the earlier stages with warmth and manure water in the later stages is proved to be best for them. The Guernsey growers place the plants into heat (55° to 65° F.) when the flower-spikes appear, giving at the same time weak dressings of manure or weak manure

water, and exposing the plants to sun and air. Freesias in bloom from September to June is a result worth trying for. By sowing seeds in succession as well as bulbs, no doubt we might nearly girdle the year with these deliciously sweet and delicate flowers. Loam, sand, and cow manure seem to be the best compost for them. But, as often happens in gardening, there seems "another way," since Mrs. Gibson Black obtains spikes of *Freesia refracta alba* 2 feet high and bearing dozens of flowers by starting the bulbs in heat and removing them to a light and airy intermediate temperature to flower. In both cases, however, manure water is employed, and the "refractory Freesia" yields us one more proof that in the garden nothing is impossible!

Fruitful blossoming.—"Paradise was a place full of flowers, it is said. Well, the flowers are always striving to grow wherever we suffer them, and the fairer the closer. There may, indeed, have been a fall of flowers, as a fall of man; but assuredly creatures such as we are can fancy nothing lovelier than Roses and Lilies, which would grow for us side by side, leaf overlapping leaf, till the earth was white and red with them, if we cared to have it so. And Paradise was full of pleasant shades and fruitful avenues. Well, what hinders us from covering as much of the world as we like with pleasant shade and pure blossom and goodly fruit? Who forbids its valleys to be covered over with corn? Who prevents its dark forests from being changed into infinite orchards, wreathing the hills with frail-floretted snow, far away to the half-lighted horizon of April, and flushing the face of all the autumnal earth with a glow of clustered food?" Thus writes Ruskin, who is ever in sympathy with good gardening, and whose writings all gardeners would do well to study. The land on which Briers luxuriate may be a field of Roses, and that wherever Crabs grow Apple trees might be made to flourish, is by no means the least important of his teachings.

Snowdrops variable.—All the more common species of snowdrop are extremely variable. This is especially true of *G. Elwesii*, which when seen at its best is one of the largest and finest of all, but in an imported batch the majority have very puny flowers, in some cases not nearly so fine as those of the common Snowdrop, although readily distinguishable by the basal green blotch on each of the inner perianth divisions and by their tube-like arrangement. The finest form which was last year figured in these notes, viz., *G. Elwesii* major, with great globose buds and very broad petals, is now in bloom and is much admired. *G. plicatus* is also variable, and we have three forms of it now in flower—viz., the well-known type, a narrow-leaved form in which a pale green blotch extends the whole length of the inner petals (remining one of the "virescens" form of *G. nivalis*), and, best of all, *G. plicatus* major with great pearl-like buds and large flowers, which remind one of those of the giant Imperati. *G. Melvillei* is here by far the finest form of the common Snowdrop.

Melons from Khiva.—The Asiatic traveller, the Rev. Dr. Lansdell, writing recently to the *Times*, makes the following allusion to these fruits: "I had expected great things from the Khivan fruits, especially the Melons, which excel everything of the kind I have tasted in other parts of the world, those of Constantinople coming nearest. Melons are the most lucrative article of agricultural produce in Central Asia. An acre will yield from 10,000 to 14,000 of them, which, at the lowest price of five farthings each, brings from £50 to £70; but in Khiva the wholesale price was given me as from £6 to £10 per 1000. Certain sorts of Khiva Melons possess the great advantage that they will keep as long as Apples do with us." In all hot countries Melons are not only luxuries, as with us, but almost necessities of life, and their culture assumes proportions not easy to realise under our cloudy skies. All travellers to the East praise the Melons. Poor O'Donovan and the late Colonel Burnaby brought home seeds, from which great things were expected, but they did not bear out their good character in English gardens. Certainly

one of the finest flavoured Melons we ever tasted was grown in England from some seeds brought home by Sir Samuel Baker, but the second season's seed from these fine fruits did not give good results. In most cases they are too rampant in growth for hothouse culture. After all, the mode of culture adopted exerts a wonderful effect on the flavour of Melons, a fact which old gardeners knew years ago. It is also a well-known fact that the fatigue and excitement of foreign travel do much to influence one's judgment as to flavour, and a fruit which abroad is delicious would not be thought so here at home.

Hybrid Hellebores.—During the early spring of 1882 I dug up from the borders a plant each of three species of *Helleborus*—viz., *H. niger* (type), *H. atro-rubens*, and *H. olympicus* major. These were intercrossed—i.e., the pollen of each of the species was applied to the third—the plants being potted and placed in a cool greenhouse porch. I ought to say that the flowers as they opened had all their anthers removed, so that the potted plants were kept as seed-bearers only, pollen being brought in every morning and dusted over the stigmas as they became receptive. Under this treatment *H. niger* produced bladder-like capsules, but no perfect seeds; *H. atro-rubens* and *H. olympicus* major each produced a few seeds, not more than a dozen each, many of their capsules being empty. I sowed the seeds as soon as ripe, and now have about a dozen strong and healthy seedling plants nearly all strong enough to bloom next year. There is some diversity of leaf formation, and I await their blooming with considerable interest, when I hope to be able to publish the results, but there seems some trace of the *H. niger* pollen having borne a part in the production of two or three of the plants, their foliage being different from that of either seed parent.

In a garden.—Hepaticas in England almost always look discontented, and this is no marvel to any who has seen them wild in their own place. I remember as clear as yesterday the joy of finding the blue Hepatica for the first time. It was in a narrow lovely valley at Mentone on a mossy bank beside the little stony river. We were gathering Violets which abounded in that place, but on the edge of the bank and over its steep side, intermingled with deep Moss and Ferns, there was another blue, which was not the blue of Violets. It was like the surprise and wonder of a new world thus unawares to come upon such a flower—the beloved of childhood—in such rich profusion, a flower we had never seen before that happy day, save in rare scanty patches in some damp garden border. About the same time I saw also both the pink and white Hepaticas from the Pine woods on the slopes of the Alpes Maritimes. Thus writes the fair authoress of "Days and Hours in a Garden," whose experience is that of most of us, for certainly in nearly all the gardens I know Hepaticas are bare, leafless, and miserable. No doubt they like the root moisture and the shelter of the mossy stones, and we may some day wake up to the fact that a bare wind-swept border is not the best of artificial homes for these and other lovely hardy flowers.

The parson's garden.—"Upon an eminence of clustered flowers was a tasteful cottage, completely covered with Roses in full bloom. It was here the good man dwelt, a small house, a large garden—that was his idea of comfort. And what a garden! The turf was composed of tiny Grasses of the finest kinds. Here might be seen a palisade of Jasmines; there a dusky tapestry where red Roses grew into an impenetrable wall. It was the paradise of butterflies; they flitted through the flowery mazes of that exquisite garden at their happiest. Trellis work and espaliers hung heavy with creepers; and here were palisades of Roses; there Vines upon Hazels. Leafy arcades and arbours of Roses and Lanreels, and at the back a grand old holly hedge. There was a rustic chair, of knots of wood, whereon the pastor dozed while the sunshine was sleeping upon all the garden. It was *le jardin delectable* in miniature. Attached were Melon and Cucumber houses and an orchard house planted with

Peach and Nectarine trees, the buildings being concealed from view by noble clumps of Rhododendrons."

Christmas Roses.—In a recent note I said that the varieties of *Helleborus niger* would form a sliding scale, beginning with the puny little *H. niger* minor and running up through all the variations until *H. altifolius*, the giant or greater Christmas Rose, is reached. I have now before me six different varieties of *H. niger*, from Mr. Barr, which have all been grown side by side at Tooting. They may be divided into green-stalked and red-dotted-stalked sections for comparison. The only two varieties having stalks clear pale pea-green without any red dotting whatever are "St. Brigid's" Christmas Rose and the Cheshire variety. I once thought that these two kinds when grown side by side might prove the same, but they are not so; they differ both in flower and leafage, and of the two the Irish plant is the best. In this opinion I am joined by those who have seen the two plants growing side by side, since the evidence afforded by the plants themselves is very clear. Miss Hope's plant is quite distinct in leafage and in flower and has red-dotted scapes, so that when I first drew attention to the pale-stalked forms two years ago there was no evidence of their having previously been mentioned in the gardening journals.

The Rush Lily.—Yesterday the claret-purple bells of *Sisyrinchium grandiflorum* were swaying and tossing bravely in the wind among Snowdrops and Aconites; to-day their heads are bowed down in the snow, but it is still bright and beautiful. Well established clumps of it are very lovely planted near to some of the giant Snowdrops. It enjoys a rich gritty soil, and increases rapidly when thoroughly satisfied with its quarters. The white variety is a little more delicate in constitution, but so lovely and fairy-like, that no trouble is too much for its happiness. It is called by some growers the Satin Flower, so glossy are its petals as seen glistening in the sun. Both varieties flower freely in pots in a cold frame or greenhouse, and when so sheltered from wind, snow, and pelting rains the flowers are seen at their freshest and best.

The name *Veronica* has been puzzling the learned, and we are as far off its real meaning as ever. We all know the story of St. Veronica and the miraculous likeness on her handkerchief; but Mr. Wolley Dod rather leans to the idea that the word has been derived from the Macedonian form of the Greek name "Pherenike" (Winner of Victory), which occurs in the "Odes" of Pindar as having been given to a racehorse of his age. "The transition from 'Pherenike'—or its corrupted form, 'Peronike'—to 'Veronica' is easy and natural," says Mr. Dod; but so it would have been also to 'Peronike' or 'Beronike,' or to many other words of similar sound. After all, nothing is to be gained by guesses at truth in this way. We are too late in the field to trace back legendary words of this type through the complicated growth of centuries. Some of us prefer beautiful things to words of thundering sound, and there is no more lovely thing on earth than to see the little blue-eyed Germander or Speedwell as it blinks in the sunshine amongst the lush young meadow grass. Some other writer suggests that "Veronica" may have come from Beticana, the early uses of which were brought into notice by the Vetones of the Pyrenees. It is the old story, that "doctors ever differ."

Warwickshire gardens.—Broom is an unimportant little hamlet with the pretty gardens which all these Shakespearean villages possess. We still hear the children here who gather a bunch of wild flowers in the cornfields call the little wild Pansy Love-in-idleness, and the best time to see the country itself is in the spring, of course, "when Wheat is green, when Hawthorn buds appear." The time of all others for a pilgrimage among the old country houses, with their low ceilings and quaint timbering, is when the hedges are white with Sloe blossom and the Pear trees look like great snow rucks reared up against the

cool grey sky. "Clopton garden on a warm spring day is a delightful place, with its smooth lawns, its splendid trees, its shrubberies that shelter hundreds of singing birds, its shady ponds, its pleasant mixture of fruit trees and flowers, its old walls and unexpected alleys, and, above all, its Wallflowers. Never were such Wallflowers seen—sheets of richest red-brown or banks of golden yellow against some mossy brick wall. The air is laden with their scent, and floats in through the open windows, filling every room in the house with delicious fragrance. The owners of Clopton attribute the wealth of flowers to the excellence of the seed, which comes direct from Frankfort, but I must believe there is some unknown virtue in the Clopton soil."

VERONICA.

FRUIT GARDEN.

FRUIT AT POWDERHAM CASTLE.

HARDY fruits are well managed here. The trees do not, perhaps, cover so large an area as in some gardens, but sure and steady progress is being made in forming a collection of kinds suitable to the locality. Of Apples, the following are being planted—viz., Golden Noble, Echlinville, Hawthornden, Cox's Pomona, Cox's Orange Pippin, Cellini, Lord Suffield, Gravenstein, Keswick Codlin, and Peasgood's Nonsuch, the last being highly valued as a late keeper. Strawberries are limited to three sorts, the old Marguerite being the sheet anchor both for outdoor and indoor culture, as it bears carriage well. The soil here evidently suits it, as it grows most vigorously; even late in the summer I saw some very fine fruit of it in open quarters; other sorts consist of Sir C. Napier and President. Apricots on open walls receive special attention; favoured by a deep loamy soil, they produce magnificent fruit. Moor Park is the one grown most largely, and although here, as elsewhere, trees of it lose a branch or two every year, it is considered the best variety that can be grown. I have certainly seen no better fruit of it anywhere than at Powderham; it was large and highly coloured. To take the place of old trees disfigured through loss of branches a few young trees are planted every year or two. Open-air Peach culture is also carried out here on a liberal scale on a long south wall fitted with a glass coping about 2½ feet wide. Much of the success attending it is no doubt due to the constant attention which the trees receive during the growing season, and to the fact that the branches are not crowded; therefore, the leaves have sufficient room to properly perform their functions. The favourite Peaches here are Dymond and Grosse Mignonne, and amongst Nectarines Pitmaston Orange.

J. C. C.

FRUIT TREE PROTECTION.

THERE is, perhaps, no question so important to gardeners as this, especially now, as the season of the year is again close at hand when every effort will have to be put forth, and every scheme devised to counteract the operations of that relentless and destructive foe, which has during the last few years made fruit cultivation so precarious, and in unfavourable positions so very unprofitable. In speaking of protection, I do not, of course, refer to the protection of those trees of which our large orchards are composed, as I imagine this to be impracticable to any great extent. With them our only hope seems to be to select in future better positions in which to plant them, and in doing this, past, and especially recent, experience would seem to indicate that a somewhat elevated slope trending towards the east is much less liable to be affected by the destructive influence of the weather than those low-lying, sheltered, sunny nooks or warm western slopes which have previously been selected because they were thought to be the least liable to injury from spring frosts. Such, however, experience has not proved them to be, and as the latter are more liable to injury from strong south-western gales, except, perhaps, in some few positions on the eastern coast, we shall do wisely in future to select

eastern slopes, with few exceptions, for our orchards, as being the best calculated to ensure success. The protection I wish to call attention to now is for such trees as cover our walls, and the lower growing bush, espalier, pyramid, and other forms which occupy our borders and quarters in the kitchen garden and orchard. We all talk largely about protection, but few, or none, of us really attempt to protect one half as much as we ought or might do, and the attempts we do make are often so ill-conceived and indifferently performed as to be inefficient and useless. Some few also believe that protection is attended rather with evil than with good results, but on inquiry into such instances it will invariably be found that either the method has been bad or other circumstances have been present which have tended to counteract the good which would otherwise have resulted from protection if only ordinary judgment and attention had been exercised. To make use of such instances as an argument unfavourable to protection is, to say the least, erroneous and misleading. Recent experience, especially that of the last three years, has taught us a lesson we ought not soon to forget in respect to protection. Why, for instance, were our Apricot and Peach crops fairly good last year, when nearly every other fruit tree failed? Was it not because these generally received ample protection, because they are thought to be more tender, while more hardy fruits were left wholly or partially unprotected during that destructive period, which paralysed almost every exposed flower and fruit? Again, why, three years ago, when Apples and Pears were half killed by spring frosts, did our tender trees escape almost uninjured? Simply because the protection they received averted the evil. In saying this, I do not mean that every fruit tree should have the protection of a wall and a glass covering, but only wish to show the absurdity that still exists in respect to protection; at the same time there can, I think, be no doubt whatever, if we wish to keep pace with our Jersey and Guernsey friends, that cheap, unheated glass structures, such as were recommended by the late Mr. Rivers, should be much more freely adopted than they are. From such a house, only on even a cheaper method of construction, I gathered Cherries last year of sufficient value to pay for its erection thrice over, and I see no reasonable cause why similar houses should not be largely and profitably employed for the growth of every kind of dessert fruit, except the very commonest kinds, such as Gooseberries, Currants, and Raspberries. I will say nothing more now in respect to cheap houses, except that they might also be used with equal advantage and profit for the growth of Black Hamburg Grapes, in the cultivation of which our Channel friends seem to be getting rather the best of us. The protection I particularly wish to direct attention to now is of a more temporary and less expensive kind.

WALL CASES.—Let us now allude to that cheap kind of unheated orchard houses known as wall cases. These may be called first-class protectors, because they are permanent and used chiefly for the protection of the tenderest subjects, such as Peaches, Apricots, and Cherries. They are simply glass copings with the glass continued down to the border instead of hanging woollen blinds in front. These erections are now built so cheaply by any horticultural builder, or they may be in a rougher, yet equally useful, manner so easily constructed by the home carpenter or a handy labourer, that even the humblest amateur need not hesitate to erect them, seeing that they are so simple and so cheap, as to be in the end even less costly than are woollen or canvas blinds. They are so well adapted for the purpose of protection, and ensure a climate so closely resembling that in which the trees naturally grow, that failure seldom—very seldom occurs under them, and when it does happen, the evil can generally be traced to mismanagement rather than the effects of frost. The advantages which such cases afford are not confined to the spring months, for in cold, wet autumns, when the fruit is ripening, they are equally if not more valuable for protecting the fruit from decay, and securing that partial dry-

ness at the roots and in the atmosphere which is necessary to ensure perfect flavour. They are, moreover, so useful for the growth and preservation of low-growing tender vegetables and salads, as well as for the protection of half-hardy plants through the winter and early spring months, that it becomes a matter of surprise and regret that they are not visible on every garden wall. The tenderest fruit tree may be successfully cultivated under them as well as the more hardy kinds; in short, they are, if fully estimated, the most valuable and inexpensive structures in the garden. To gain the full advantage from them they should be about 5 feet or 6 feet wide at the base. The roots of the trees should then be confined to this space and not be allowed to ramble into the outer border. By this method of restricting the roots to the inner border they will at all times enjoy that temperature and those conditions which closely resemble the circumstances under which they grow in their natural climate. There is a double advantage gained by this, because a stiffer and more suitable soil can be used without fear of its becoming wet at any season. Stimulating food can be given or withheld as required; the border can be made of increased depth without fear of its temperature being too low or of its suddenly becoming too dry; in such a case the cultivator may also work at any season or during the worst weather with comparative comfort, and it requires so little attention as to be nearly automatic; moreover, the trees within it are under such perfect control in every respect, as to make fruit cultivation safe, pleasant, and profitable.

Second-class protectors are those which consist simply of a wide coping projecting from the top of the wall, from the front of which is generally suspended, at least during the early spring months, either woollen or cotton blinds. For these wide copings glass is undoubtedly the best material to use, not only because it may be permanently fixed, but it is very little more expensive, admits light, and has a much better appearance than the opaque copings have. The latter, however, are sometimes used in preference, because they are supposed not to radiate heat so freely as glass does, but this slight advantage, if any, is so trifling as not to counterbalance the advantages which glass copings possess. They consist of either wood, slate, stone, or similar materials, and as they will not admit light and must be refixed and taken down when the likelihood of frost is past, there is consequently an annual expense attending their use which is obviated by the use of glass. These wide glass copings are easily arranged by running the ends of the squares into a three-quarter-inch groove ploughed into a 1½-inch board nailed or bolted on to the wall near the top, while the fronts or lower ends of the squares are kept in position by two wire clips fixed to a rail 2 inches deep by 1½ inches thick, which is supported by square uprights, 2 inches by 2 inches, let into the ground at intervals of about 8 feet from each other and of sufficient length to allow of the proper pitch of the glass from the wall. These squares are butted together, and when so arranged they answer the purpose admirably, and such fixtures are so simple and easily constructed, that any labourer can easily make and fix them. To the horizontal rail close under the glass the blinds or nets can be hung, and the upright posts tend to keep them from being blown against the trees, or if it be preferred, a few slight battens or Bean rods can be tacked or tied to these about 2 feet apart, and Yew, Spruce, Laurel, or other evergreen branches can be tied to them as a substitute for blinds. Under such protectors I have for several years succeeded

in growing excellent crops of Apricots and Peaches without fail; in short, they are equally efficient as spring protectors from frost as the wall casings are, but the crops under them cannot be ripened so satisfactorily in unfavourable summers, simply because the wet cannot be excluded, nor is the atmosphere or the roots of the trees so well under command. They are equally serviceable for the protection of Cherries, Pears, or Plums, and no garden wall not covered by the glass casings should be without these useful and safe protectors, which are infinitely cheaper, and give far greater security from bad weather, than canvas roller blinds. I would next direct attention to the protection of those trees in the open garden which are generally grown either as espaliers, pyramids, or low bush trees. We seldom see protection afforded these,

to the ground, and there securing them by short stakes driven into the earth, so as to prevent them being blown against the branches. As they could not be removed from the trees daily, it was thought that to use any material which would not admit light freely would prove nearly or quite as injurious to the blossoms as being fully exposed to the weather; therefore such fabrics were chosen as had somewhat large meshes, and such as were largely composed of wool were thought to be the most preferable, although some cotton ones were tried, especially that kind generally known as Brittan's Netting. In each case the results were thought sufficiently satisfactory to fully compensate for the cost of materials and expense in erection, and the advantages gained were decidedly in favour of those protectors largely composed of wool. As an experiment, and with but little hope of success,

on account of the dense shade caused, one tree (Gansel's Bergamot) was covered with frigi domo; this covering was allowed to remain over the tree from the time the flower-buds began to expand till the fruit was set and began to swell. As may be imagined, after such a lengthened period of dense shade, the foliage became blanched and the young shoots were weak and spindly, and it was thought unreasonable to expect that the young fruit, which I have already stated had set, would continue to swell. Swell it did, however, and eventually proved to be an excellent crop. Great care was taken at this time to admit more light to the tree as gradually as possible by lifting the covering a little higher each day, and only at such times when the sky was overcast and when drying winds did not prevail. The leaves quickly assumed their wonted colour, and only a small percentage of the fruit dropped off. This, as I have stated, was only an experiment, and although it answered satisfactorily, I should scarcely like to venture to recommend it for general adoption; it does, however, tend to show that more and better protection is needed for our exposed fruit trees in order to secure full crops of fruit.

Where opener meshed woollen screens were used so as to admit more light and air than could possibly penetrate through the thick frigi domo, the foliage did not appear to suffer to any great extent by the permanent covering, and a fair crop of fruit was obtained. Of course the first outlay in the purchase of this netting, sufficient to cover a large number of fruit trees, must necessarily be great, but if well taken care of it will last for many years, so that in the end it is not nearly so costly as it at first appears; and if the increased quantity of fruit be taken into consideration, it will be found that the balance of profit from the



Fruit and leaves of *Diospyros Kaki*.

and yet the value of their fruit, either for home consumption or for market, is but little less than that derived from the walls, for although the latter may produce finer and better coloured fruit, it is usually from these trees that the finest flavoured fruit is gathered. Why, then, should not they receive some efficient protection from spring frosts? In some gardens, it is true, we do see an occasional attempt to protect them with evergreen branches, but being situated, as they are, away from warm walls, these branches do not afford that amount of protection against severe frosts and bad weather sufficient to preserve the blossoms from injury. For several years I tried this primitive method, but I cannot say the results were very satisfactory, nor such as to induce me to continue it. I then tried the different kinds of cotton and woollen fabrics, by suspending them a few inches above the trees, and allowing them to hang down the sides of the trees reaching nearly

protected and unprotected trees is largely in favour of the former. I have had some of these woollen screens in use for six years, which, having been carefully stored each year after spring frosts were past, are now in a sound state, although from frequent use they do not afford so efficient a protection as when new. I may say that had I not used them during the last three years, Pears, Cherries, and Plums in the open garden would have been a complete failure. In protecting bush trees the arrangement of the framework on which to strain the nets is somewhat difficult, especially if they are far distant from each other; as in this case each tree must be protected separately, I find the easiest method is to fix a few upright poles in the ground on either side of and to extend about 1 foot higher than the tree. Long battens or Bean rods are then tied horizontally over these, and the nets are then strained over them and tied down within 2 feet of the ground. Where an extra width

is required, an additional piece is quickly joined by placing the two edges together and running a piece of soft fillis through them with the packing needle. Where these trees are situated close to each other, the best plan is to enclose the whole space by stretching a piece wholly along the top as well as on each side; by this means the trees are more effectually screened and less netting is required. In protecting pyramids and espaliers there is not so much framework required; all that is necessary in preparing for the former is to arrange long Bean rods at intervals round the tree, allowing them to converge to a point about 1 foot above the top of the tree, where they should be tied together, and the net, a narrower piece than in the former case, should then be strained round them, beginning at the top and finishing at the base. In protecting espaliers all that is required is to raise a single batten horizontally along the top of and about 1 foot above the tree, supporting it at regular intervals; then strain the net over this and tie it on either side to short stakes driven into the ground about 18 inches from the line of the branches. In this way a great number of trees can be quickly covered, and it must be a severe and unfavourable spring, indeed, when such protection does not ensure a fair crop of fruit.

W. C. T.

THE JAPANESE PERSIMMON.

(DIOSPYROS KAKI.)

A FEW weeks ago Mr. G. F. Wilson exhibited at South Kensington some fine fruits of this Japanese tree produced on plants grown in his orchard house. One of these fruits we illustrate full size. It has much the appearance of a Tomato, particularly of a round smooth variety like the Acme. The colour is similar to that of an Apricot, and the flesh is also like that of Apricots, but more juicy and of pleasanter flavour; indeed, the fruit when fully ripe is quite delicious, and it is a wonder that it is not more grown as a dessert fruit for October, a season when such fruits are so limited in variety. Its flavour is finest when the fruit is just on the point of turning to over-ripeness; after that it becomes in taste like that of a Medlar. The Japanese, however, have a mode of drying the fruits so that they retain their flavour, and in that state are similar to dried Figs, though the flesh is tougher. The largest kind of dried

the fruit room it becomes soft and transparent; it has then a pleasant, sweet, though not very marked, taste. The fruit is very handsome, and is an ornament to the dinner-table." Those who have an orchard house would do well to obtain a plant or two of this tree, as its fruit would be welcome during winter.

THE WARM ORCHARD HOUSE.

IN a house of this kind we generally find Peaches, Nectarines, Strawberries, and Figs forming one happy family, and when well managed the result is as satisfactory as it is interesting. Peaches and Nectarines, being general favourites, occupy the principal part of the house. Figs are best adapted for warm corners, and Strawberries fill up shelves near the glass where they can have an abundance of light and fresh air. The beginning of January is a good time to start the early house, provided it is properly heated and ventilated and the occupants are thoroughly established in their pots, well furnished and ripened, and in every way fit for early excitement. Cleanliness being one of the important factors in forcing, no pains will have been spared in the preparation of the house and occupants. The temperature from first to last, with liberal ventilation and judicious syringing, will be precisely the same as that recommended for the early Peach house, and the same precautionary measures, including frequent fumigation before the flowers open and after the fruit is set, will also apply. Where arrangements admit of a pit being filled with fermenting material over which some of the pots can stand, a steady supply of moisture will favour the expansion of the buds, and the necessity for constant syringing in dull weather will be met by damping the paths and walls only; but where this is inconvenient the trees will do very well, perhaps equally well, arranged on the floor, or, better still, upon bricks placed slightly apart to admit of the free egress of water.

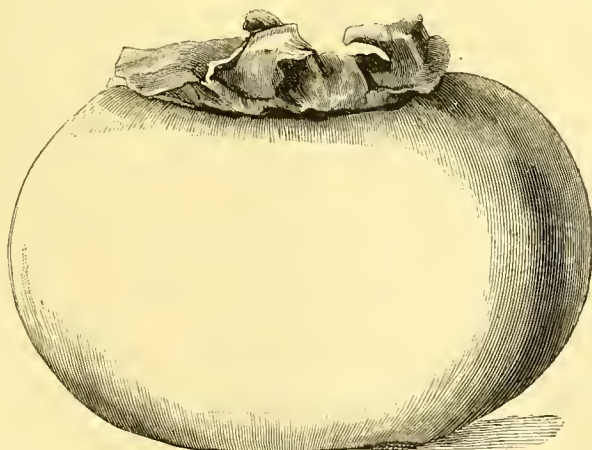
WATERING is a very important matter, as may easily be imagined when we bear in mind that a Peach confined to less than a cubic foot of soil is expected to mature a crop of fruit and produce a supply of wood for another year; moreover, if once allowed to get dry, the chances are strongly in favour of its casting its blossom-buds or fruit. With this danger ahead the watering of all pot

wood bud. Some shoots cast many wood-buds during the first stage; others are not furnished with more than two—one at the point the other at the base; if the point bud is cut off, the shoot is rendered unfruitful, as blossoms are of no use without leaves in advance of them. Strong shoots are generally furnished with triple buds, to which it is safe to prune, as the centre bud invariably produces a growth which in due time is pinched at the fifth or sixth leaf.

SETTING THE FRUIT.—Forced trees should be fertilised when they are in full flower and the pollen is plentiful and ripe for the operation. During this stage the house should be kept at a temperature ranging from 55° to 60° with a free circulation of air, and syringing should be discontinued: a certain degree of atmospheric moisture is, however, necessary, otherwise the petals of the flowers as well as the delicate organs of fructification suffer from aridity before the fruit is properly set. A camel's-hair brush or a rabbit's tail passed lightly over the flowers generally produce the desired effect. When well charged with pollen from free varieties like Royal George and Belle-garde, the operator should move on to shy kinds like Noblesse, Walburton, and other fickle sorts which invariably set best under cross-fertilisation. Some good Peach growers syringe their trees when they are in flower, and I know they always have plenty of fruit, but never having practised this method, I am not prepared to assert that it is good or bad. Others leave their trees to themselves, merely giving the stems a sharp rap to set the pollen in motion; but this is like driving near the edge of a precipice when they have a broad roadway before them; they may come out right or they may not, as I have proved to my own satisfaction. I have also satisfied myself that all cross-fertilised Peaches attain the heaviest weight and produce a smaller percentage of split stones than the same kinds when left to themselves, provided the best of all fertilisers—insects—have not appeared amongst the trees.

DISBUDDING.—If early trees are not overforced, it rarely happens that disbudding precedes the thinning of the fruit. Gross unripe pieces of wood sometimes produce shoots that require pinching or rubbing off to preserve the balance of the sap; but the majority of the growths from the best wood do not get too forward before the young Peaches become perceptible. Disbudding is an operation which should be performed by a person who thoroughly understands what he is doing, as it is by this process that the best trees are marred or made. Strong healthy trees should be disbudded first, and weak ones should be encouraged into free growth before many of the superfluous shoots are removed. In the selection of shoots the best near the base of each piece of fruiting wood and one beyond the fruit must be preserved; the first one forms the blossom-bearing wood of the succeeding year; the second, pinched at the fifth leaf, will draw the sap upwards to the swelling fruit. All intermediate shoots should be gradually rubbed off if they are not likely to be wanted, or they may be pinched to form spurs, particularly where the young Peaches are placed, and a check from entire removal would be inadvisable. In some places intermediate shoots must be left to fill up vacancies in the trees, as every part should be alike well furnished, without being overcrowded, and care should be taken that the base shoots have full exposure to light and air.

THINNING THE FRUIT.—Thinning the fruit should be commenced as soon as the Peaches have thrown off the remains of the decaying flowers, as it can then be seen which of them are taking the lead. If any have set in triples or pairs, they must be reduced to one at each node; then if there is a good set, pendent and small fruits must be removed, always bearing in mind that several of the finest fruit on the upper sides of the shoots and nearest home should be reserved for swelling to maturity. This operation, like disbudding, should be carried on by degrees, a plentiful supply being left to select from when the trees get further advanced, and their strength denotes the number they are likely to be able to carry. The greatest



Fruit of Diospyros Kaki. Grown at Heatherbank, Weybridge (natural size).

Persimmon is called by the Japanese the Hyakume. In Mr. Wilson's orchard house at Heatherbank, Weybridge, this Japanese fruit is grown finer than we have seen it elsewhere in this country. Every year the trees, which are grown in pots, produce crops of delicious fruit. Concerning it Mr. Wilson writes: "Some years ago our plants came from Japan. They are grown in a cold orchard house, and treated like the other trees. The fruit should be gathered when it has become a rich red, but not eaten then, as it is intensely astringent. When kept for some time in

fruit trees should be confided to one trustworthy person, who will water thoroughly when necessary, and never be misled by favourable appearances where the surface is kept constantly moist by the use of the syringe.

PRUNING.—This is generally performed immediately after the fruit is gathered to let in light and air, without which the trees cannot properly form and mature their flower-buds. The final dressing over and shortening back is left till the spring or until after the buds have commenced swelling, as it is necessary to shorten to a good

evil that can overtake the grower is the temptation to leave too many, as it is well known that a small prematurely ripened Peach from a forcing house is not worth eating, and that overcropped trees require a year to recover.

FIGS.—Bushes or pyramids on clean, single stems are best adapted to orchard-house culture, as they are portable, and can be fitted into warm corners where stone fruit trees would not succeed. The pots in which Figs are forced should be well filled with roots, and the wood from which the first crop is to be gathered must be ripe, short-jointed, furnished with good terminal buds, and well set with embryo Figs—the smaller the better, provided the wood is properly matured. The tree being a gross feeder when in growth, it is a good plan to provide a temporary plunging bed, not only to economise watering, but also to counteract red spider and to protect the swelling Figs from the fatal effects of drought. Although the Fig will stand a temperature considerably higher than that of the forcing orchard house, it will not do to place stone fruit trees in jeopardy for the sake of a few trees whose delicious produce is not appreciated by everybody, and as it will accommodate itself to a temperate house, the warmest part will suit it very well. The main points in orchard house culture are, thorough syringing, copious watering, always with water at or a little above the temperature of the house, and attention to pinching the young growths. If pyramids are grown the leaders should be pinched at every 12 inches to induce the formation of side growths. Bushes are usually stopped at the fifth or sixth leaf, and under restricted root space and good feeding they soon make very fruitful bushes, bristling with short stubby bits of spur-like wood well set with terminal buds, and carrying a Fig for every leaf of the preceding autumn. These trees will mature two crops a year, provided they are well managed and not pinched too late in the season, as it is important that they have time to make and ripen a second growth after the last pinching about the end of June.

STRAWBERRIES.—When Strawberries are kept in one place from the beginning to the finish they should be placed close to the glass where they can have plenty of air through the early and ripening stages, and provision of some kind is generally made for feeding the roots which find their way through the apertures in the pots while the fruit is swelling. Some use saucers for the retention of water after it has passed through the soil; but there is moderation in all things, and much as the Strawberry enjoys water, it does not like it in a stagnant form; therefore it is well to allow them to exhaust their supply of liquid at least once in every twenty-four hours. Where saucers are not used the old and excellent mode of laying strips of turf 1 inch thick, Grass side downwards, on the shelves when the plants are housed answers every purpose, as the roots soon find their way into it, and being thoroughly established by the time the fruit is set, they can be fed to the fullest extent. Strawberries should be brought on very quietly, otherwise they produce blind or imperfect flowers, and they are improved by artificial fertilisation. When set, if fine fruit is the object, all the trusses should be well thinned, and the fruit left should be tied or propped up to keep it clear of the pots and damage from the use of stimulants. It is hardly necessary to say the sods of turf should never be allowed to get dry from the day they are placed on the shelves until they are taken away; and it is imperative that the plants be vigorously syringed at all times when they are not in flower or ripening up their fruit. W. COLEMAN.

French Peaches.—I am sorry that I cannot give "M. C." the information which he requires respecting Peach Noire de Montreuil; my acquaintance with it is so superficial, that I cannot say whether it is identical with the Bellegarde or not, but they are, I know, commonly regarded in France as being distinct. Blondeau, a large handsome-fruited kind, bears very freely, and is

considered to be one of the best constituted Peaches in cultivation. It seems likely to become as great a favourite with the Paris growers as the much-esteemed Belle d'Aussac. I believe it to be of good quality, but it is its taking appearance and great yielding property which have determined its position as a market kind. I should say that it would succeed in the open air in this country. Marquise de Brissac I do not know.—BYFLEET.

Old Strawberry plants in pots.—The fact that old Strawberry plants, five years in the same pots, produced fruit that sold for 10s. per pound at the end of May, greatly surprises me; but this is what Mr. J. Cornhill asserts in THE GARDEN (p. 129). We all know that a young Strawberry plant from a runner will cram the pot with roots the same season and bear well the following spring, and I have no doubt, therefore, that five-year-old plants in the same pots all the time will keep the pots "always full of roots," but that the roots of such old plants "are stronger than those made by young ones" is what I do not credit, feed the plants as one may. Considering the facility with which pot Strawberries can be propagated the same year, I must say that I do not see the utility of keeping the old plants for years and watering and caring for them all the year round unless it be just a few to force before Christmas. It pays much better to plant old forced plants out in May and June and get a crop from them in autumn and another very heavy one the following summer.—S. W.

Melon culture.—Of all the commonly grown fruits none, except Grapes, show wider apart results from different modes of culture than Melons. Many keep their plants dwarf and do not aim at strong, vigorous growth; but in good-sized span-roofed houses, say 12 feet high in the centre, with plenty of light and air circulating in them, the stronger the growth the better. The best Melon growing I ever saw was in a house of this kind. Tan had been placed round the pipes for bottom-heat, and upon the tan was laid a ridge of soil—the top spit of a rich meadow off a sub-soil of chalk. A plant was allowed to each rafter. The growth was extremely rapid, and before the plants were half-way up the house fresh soil had to be added, as the roots were protruding in every direction. A quantity of soil had to be added yet again, a great part of the last instalment being removed from an old Mushroom bed. The female flowers were carefully set, and numbers of fruits began to swell quickly without the slightest check being made to the growth. The laterals were allowed to reach a good length before being pinched, and the plants were only beheaded when close to the top ventilators. Some idea may be had of the vigour of these Melons when I say that the stem was nearly double the thickness ordinarily seen, and the crop of good-sized fruit, averaging 3 pounds in weight, was enormous. Four on each side of a plant was by no means uncommon, and one ripened ten fruit, the largest just failing to reach 6 pounds. Even to the end fresh shoots and flowers kept on showing themselves. This experience seems to vibrate against two or three recognised canons of Melon culture, but nevertheless it is a proof that a magnificent yield of fruit can be obtained from what many would have called rank growth. The flavour was excellent, and one fruit was awarded the first prize at the Crystal Palace show. The variety was Victory of Bristol.—M. C.

SHORT NOTES.—FRUIT.

Pear Poire de Lacroix.—This is an accidental seedling which came up a few years ago at Lacroix, the residence of M. Ed. André. It is said to be an excellent kind, ripening in December and January, and very prolific, the parent tree having this year borne 2003 fruits. It will be distributed next year.—J. C. B.

A large Melon.—At Ashton Court, Bristol, last season, a fruit of the Goodwood Melon was cut weighing 24 lbs. 2 ozs. It was, however, neither handsome nor good in flavour, but those on the outlook for large sorts of Melons may make a note of this one. The fruit in question had been grown in a brick pit on a bed of fermenting material, and was ripe at the end of August.—J. C. C.

FLOWER GARDEN.

GARDEN STOCKS.

THE varieties of Stocks as presented to us in any important seed list are so numerous, that only a very intimate knowledge of each one would enable a clear opinion to be given of their merits, but, happily, though the family be large, its members show no very great diversity of habit; indeed, with some the divergencies consist in colour of flowers only; in others of colour and leaf, and in other respects there is much duplication, with only infinitesimal variations. The large-flowered dwarf Ten-week Stock is represented by twenty-four varieties in colours; the Giant Perfection and the large-flowered Wall-leaved Ten-week each have eight varieties; another Wall-leaved form has twelve varieties, and so on endlessly, though it will be found if all be grown side by side that the divergencies are singularly trifling. The German seedsmen have a plan of defining that is doubtless useful in trade and profitable. We in this country cling with exceeding love to our famous old Brompton Stock, the grandest of all the family. This kind when seen in perfection is a giant amongst the pigmies of the summer strains, and forms one of the noblest floral ornaments to be found in gardens. For the past few years mild winters have dealt tenderly with this grand old Stock, and it has somewhat recovered from the hard blows received when really hard winters prevailed. It is safest, however, to entrust this Stock to some sheltered spot where it may, should severe weather set in, receive some needful protection. Market growers find it to thrive well if planted beneath overhanging trees, where the force of the frost and of keen winds is broken. May is the best month to sow seed, and the young plants should be ready to put out in July, so that they may have ample time to get strong before winter checks growth. Really good garden soil suits better than if heavily manured, because it is so desirable to produce solid hard stems, for these not only better withstand frost, but also produce the finest spikes of bloom. These may often be seen ranging from 12 inches to 14 inches in length, the individual blooms being large and double and rich in colour. As a rule, Brompton Stocks produce from 40 to 50 per cent. of doubles, and saving seed requires considerable care and observation, because the selected pods should be from those single flowers which show an abnormal number of petals. The other best known form of Brompton Stock is the giant white, easily distinguished from the scarlet kind by the narrowness of its leaves. Even in a single form this is a grand Stock, but spikes of double flowers are superb, and present striking companions to double scarlet Bromptons. The German growers profess to offer a dozen varieties of the Brompton, but it is very doubtful whether they have the true English form at all.

A very useful and hardy branch of the Stock family is found in the white, scarlet, and purple Queens, which rank amongst our oldest and, perhaps, most widely grown of biennial varieties. These may be seen growing in market gardens in huge breadths, and, curiously enough, some growers favour one colour, some another, and all care as much for the singles as for the doubles, because the former bunch equally well. Any good strain of these Queens will give from 70 to 80 per cent. of doubles naturally, and in this respect, without any merit of culture and little of selection, they rival the German pot-grown strains. The Queens are all very dwarf, bushy, and, when blooming, branching. They furnish good cutting material and bloom well in May. Sometimes old plants may be preserved for two or three years, but nothing is gained by keeping the plants so long. Seed should be sown in the month of May in the open ground, and the plants be got out during the summer. There are some very fine double kinds found under the designation of Cape winter Stocks. These seem to be intermediate between the Brompton and the Queen, but have a bushy, branching habit of growth. In young plants before blooming the leafage is broad like that

of the scarlet Brompton, and the plants are about as tender. These again furnish capital bloom for cutting, and, in common with other kinds, are richly perfumed. The white Cape is a grand Stock, and merits cultivation in all gardens. East Lothian Stocks seem as though they were the produce of a cross between the well-known race of Intermediates and the Queens. Sown in the autumn and grown in pots for house decoration, they are none too robust, though producing flowers of the most beautiful kind and very double; but sown in the spring and planted out in good ground for autumn, they grow very strong and resemble some biennial varieties. East Lothian Stocks are so well known as to need little further reference, for gardeners have not been slow to utilise such beautiful members of a beautiful family of flowers. Intermediate Stocks are grown very largely in private gardens, but probably nowhere in such enormous quantities as around London, where the strain is of the very best. The white and scarlet forms are in most favour, and myriads of plants are utilised for furnishing purposes.

It is the popular Ten-week and pyramidal forms which prove so valuable to us for garden decoration in the summer months. Variety in these seems to be endless, and their usefulness and beauty remarkable. For bedding and massing the pyramidal kinds seem to be best, whilst the branching Ten-week gives capital material for cutting. It is an admirable feature of the giant Ten-week that if carefully cut, it will break again below and later on produce other blooms. Summer Stocks may well be sown at all times under glass, because the spring season is often treacherous and seed may suffer. To ensure a long season, it is well to sow both in April and May, and thus promote a long succession of bloom. Beginning with Intermediates turned out of pots in April, it is easy to have Stocks in the garden for six months or even longer, for the Queens and Giant Bromptons continue the supply through May and June, then come the pyramidal and Ten-week forms, and the spring-sown Lothians will continue to blossom right up to November or later—indeed, sometimes till Christmas. We can hardly wish for a longer season than that.

A. D.

NOTES ON BULBOUS PLANTS.

As an outdoor summer-flowering bulbous plant, none can be more lovely than the charming *Milla biflora*. Here, in Somerset, in rather light and rich soil in a sheltered bed, it grew and flowered last year as well as anyone could desire. I planted the bulbs in April, placing a dozen in a clump about 12 inches in diameter, and setting them about 3 inches under the surface. Owing to the dry summer, we had to keep them well watered, as I noticed without it they did not make much progress. They certainly liked the heat, for they lasted in flower for a month or more. As will, therefore, be seen, its requirements are of the simplest kind. Before frost occurs to reach the bulbs in November, they must be taken up and packed away, either in dry sand or a paper bag. For furnishing choice white flowers in August or September I know of nothing else that can be grown in the open air with so little trouble to equal this *Milla*. Those who are in possession of a sufficient number of bulbs of it should put some in pots early in March and bring them on to flower in cold frames. It is possible that if a portion of those to be planted in the open were not put in until the middle of May, that they would flower later and so come on in succession.

NERINE FOTHERGILLI usually flowers in August, and in order to make effective specimens eight or ten bulbs should be put in a 6-inch pot, and the bulbs should be as near as possible of one size, the largest potted for flowering, the younger ones being put in other pots until they get to a flowering size. As regards soil, I find that they do as well in a mixture of loam and peat as in anything else, but the chief point to attend to is to give them the treatment which they require after they have done flowering, *i.e.*, keep the leaves growing all the winter. This they cannot do in a

cold greenhouse temperature; the proper way to deal with them is to repot them as soon as they go out of flower; they then begin to form new leaves. It is then when they require a slightly increased temperature. This should extend all through the winter until the leaves begin to turn yellow, which will be about the end of April. A position then in any cool plant house will suit them, and when the leaves are quite dead water may be withheld altogether. After resting for about three months they will begin to show signs of starting into growth again, and all bulbs that are strong enough will flower. Water at the roots will now be necessary, and the details here given must be repeated. I find the Guernsey Lily to do well under the same kind of treatment as that here recommended for *N. Fothergilli*.

MONTBRETIA POTTSII does not flower with everybody. With me its behaviour is in many respects similar to that of the *Schizostylis coccinea*, that is, it increases at the roots in the same way, and after a dull, wet autumn it retains its leaves all the winter. A friend of mine is very successful in flowering it in pots, and also low down on a rockery in the open. I have no trouble in getting it to flower if I take care of its leaves and keep them green, *i.e.*, if they chose to remain so all the winter. Sometimes we lift the bulbs in November with a fork, drop them into large pots, and keep them there in a cool Peach house until spring, when they are planted out in the borders. A way which with me has never failed to induce it to flower is to secure some strong offsets with green leaves upon them and put half a dozen of them in a 6-inch pot, keeping the pots in a greenhouse all the winter, where they will continue to grow slowly. Towards the end of April they should be hardened off, and then planted out in a fairly rich and deep piece of ground. As the leaves are somewhat delicate after being kept under glass all winter, a few green branches should be stuck in the ground round them when the wind is very cold. After the middle of May they will take no harm from the weather, unless it should be very dry, and then they must have water as often as they want it. Plants treated in this way will flower in July and August.

EARLY-FLOWERING GLADIOLI are valuable either for warm borders or for growing in pots. The earliest in the open is *byzantinus*, which is also very hardy. It produces large rich purple flowers. The height of the flower-stems varies with the quality of the soil in which they grow. In rich, deep, well-drained positions they may reach a height of 30 inches. In every case a warm dry border should be selected for them. This species does not succeed so well in pots as *G. cardinalis* and *Colvillei albus*. These grow and flower as well in pots as in the open ground; the same treatment serves for both. In warm situations and when planted near a wall these are hardy enough to stand the winter, but they are so impatient of resting that they frequently commence to grow again in autumn, and then if not protected a severe winter will injure them. To save all risk from frost it is best to lift them early in September and spread out the corms on the floor of a dry loft or shed. This is the only satisfactory way of retarding them. I find that whether in the soil or not, however, they commence to start at the beginning of January or soon afterwards; they should therefore be attended to about that time. Those required to flower in pots may have eight corms put in a 6-inch pot and then grown on in a cool greenhouse or pit. Those to be planted out should be potted in $\frac{1}{2}$ -inch pots, six corms in each, and then placed in a cold frame; about the end of April they may be planted out where they are to flower. We find these Gladioli to be wonderfully useful as cut flowers, and they may be cultivated with very little trouble.

BELLADONNA LILIES do not usually flower satisfactorily unless planted close to a warm wall. I have tried them in various aspects, but in none do they succeed so well as against the wall of our stove, which is heated nine months in the year. It is therefore clear that they like warmth. The

hot-water pipes which heat the stove run along inside the wall, and in that way the wall for a great part of the year is warmed; the soil, too, outside in which the Lilies are growing no doubt abstracts a good deal of heat from the wall. Be that as it may, the behaviour of the Lilies on that spot is all we could desire, and they give us no trouble. As they come into flower in September we pot them up for the conservatory. Sometimes they are put back again after they have done flowering if there are any vacant places, but not otherwise. This annual removal of some of the largest bulbs gives room for the younger ones to grow, and therefore we have a constant supply of young bulbs. We have them growing close to the foot of a south wall in another part of the garden, where they do very well, so that no one need despair as to getting them to flower if they can give them the same treatment.

HARDY CYCLAMENS—These are very easily managed bulbous plants, but they do not appear to meet with much favour, a circumstance which I can hardly understand, for our bulbs of the autumn flowerers began to bloom in August and continued to do so for fully three months, and after the flowers were over they were succeeded by a charming carpet of handsome marbled foliage that in itself is worth the little trouble which their growth entails. Even in the early days of February that beautiful spring-flowering variety *C. Coum* was bristling with its bright crimson-purple flowers rising from a bed of ample foliage, and this too at the foot of a warm wall in the open. These Cyclamens are best planted in a narrow border where they will not be overgrown by other things. Any other kind of soil seems to suit them, and when well established no sort of weather seems to hurt them. About once in five years they should be taken up as soon as they go out of flower and the old soil removed and fresh soil substituted. The best varieties for autumn flowering are *græcum*, *macrophyllum*, *hederifolium album*, and *h. rubrum*; for spring flowering the best are *Coum album* and *C. carneum*. These are easily raised from seed, which should be sown as soon as ripe. It is best to raise the plants in a cold frame, and then they may be expected to flower the third year.

AGAPANTHUS UMBELLATUS, although not sufficiently hardy to withstand a severe winter in the open without some protection, is such a grand subject for the mixed border, that it is well worthy of the little extra attention necessary to keep frost from it. I have never known the severest winter to kill it outright, but 12° or 14° of frost are sufficient to injure the leaves, and the plants will not flower the following summer; all the protection, however, that is wanted is to keep the leaves from harm. I have kept them through a rather hard winter by lifting the plants in the autumn and planting them close to the foot of a south wall, and in severe weather putting an old glass light over them and on the glass a thick layer of litter. In the spring they were put back in their old place in the border. Plants so treated will flower in the most satisfactory manner. Having now plenty of room in a cool Peach house, I lift the plants in autumn and drop them into large pots and stand them on the floor of the house until all danger from hard frost is over. When it is desirable to increase the number of plants one of the oldest stools should be divided in spring and the pieces obtained should be planted out in a rich piece of ground in the open; whether in pots or planted out, the large heads of blue flowers of this plant, standing well up as they do on erect stout stems 3 feet or more in height, never fail to arrest attention. J. C. C.

Helleborus lividus.—If "K." turns to Gillet's "Flore Francaise," he will find *H. corsicus* given as a synonym of *lividus*; therefore it is not correct to say that Messrs. Backhouse have used an unpublished name. In the same work (p. 679) the following synonyms are given—*viz.*, *argutifolius* (Viv.), *corsicus* (Wild.), *lividus* (Ait.), and *triphylus* (Lam.). When freshly opened the flowers of this species are light yellowish green,

but I have noticed that as they die off they become more or less tinged with brownish purple; therefore it may be possible that the plate in the *Botanical Magazine* to which Mr. Brockbank alluded in his previous notes had been drawn from a plant when in that condition—i.e., when the flowers were old and slightly coloured. At York this Hellebore is not in the least "tender;" in fact, it is one of the hardiest plants we have, for, even when Laurels were cut down and killed by frost, this fine-foliaged Hellebore was not damaged in the least. It likes a very rich soil, and if mixed with bog earth it grows even more luxuriantly.—R. POTTER, *Holgate, York*.

Himalayan Poppy (*Meconopsis nepalensis*).—How seldom do we see this fine plant grown, even in gardens containing large collections of hardy plants. Our nursery and seedsmen also overlook it, as it is only seen in one or two catalogues, and then without description. As either a rockwork or border plant it is very striking, both when in or out of bloom. When growing it is extremely ornamental and looks almost like a beautiful bronze cushion from 12 inches to 20 inches across. It sends up a flower-stem from 2 feet to 2½ feet high, according to the strength of the plant, and it is furnished with large sulphur-coloured, saucer-shaped flowers from 3 inches to 4 inches across. Being a biennial, it should be sown in spring in a pan and placed in a cool frame. When large enough to handle, the young plants should be pricked off into single pots, grown on during the summer, and planted out in autumn where they are intended to bloom. It is very hardy and will grow well in any good garden soil if well drained.—T. SIMPSON, *Hurworth Grange, Darlington*.

A farmer's garden.—Though the villages immortalised by Shakespeare afford almost inexhaustible material for sketching, those adjoining are almost equally pretty, as, for example, Snitterfield and Wooton Wawen. The view of the fine old church of the latter from a hill on the Alcester Road is one of the prettiest in the whole district. In this village, also, is a farmer's garden. The farmhouse is a quaint, queer old building, with eaved windows and many gables. At the foot, near the roadway, but separated by a low wall, is a 2-foot border, in which only two things are grown, namely, Hellebores and Wallflowers. The display of Christmas Roses is just now wonderful. The plants are wisely left undisturbed. At the extremity of the garden is a muddy pond. Leading down to it is a line of catkins Nut bushes, and beneath them the ground is almost concealed by winter Aconites, Snowdrops, and Hepaticas struggling into flower. It is all very well to compare the Eranthis to Buttercups, but there is nothing prettier just now in our northern wild gardens than it is when mixed with Snowdrops. Against the wall of the house the winter Jasmine has been planted so that it protrudes its flowers from amongst the Ivy.—M. C.

Tussilago fragrans.—This, commonly called the winter Heliotrope, is a good, but unruly plant as regards growth. It seems to want an iron band to confine its roots. No matter what the soil may be, it overruns everything near it in a year or two. I have just made a new plantation of it in a border about 18 inches wide close to a wall, with a gravel path in front of it. Of course we expect soon to see young growths peeping out of the gravel, but a few handfuls of salt sprinkled over them will soon destroy them, and by this means we hope to keep the plants within bounds. Those who only require a few spikes of its fragrant flowers at a time may have them by sinking a large pot down to the rim in any warm border; then fill it with soil, and insert the plants so that they may have time to get strong for next year's flowering. It will be found that the pot effectually confines its roots, or it may be grown in large pots in any odd corner all the summer. It should have a sheltered position during winter. With a few trusses of its flowers and some winter Aconites and Snowdrops I have to-day, by the aid of a bit of greenery, made a very pretty ornament for the table. Therefore, it is clear that even in

the second week of February it is possible to have a few flowers without the assistance of glass.—J. C. C.

Veronica Andersoni.—This Veronica has been flowering with us in open borders all the winter, and still continues to do so, but the flower-spikes get somewhat weaker; even in that condition, however, they are invaluable. They are much liked for household decoration on account of the ample foliage which accompanies them. The plants sustain no harm from being cut; on the contrary, it rather improves their shape. Although this Veronica is not quite hardy, it will bear several degrees of frost, even when in flower. We had several sharpish frosts in the early part of January, yet they did the flowers no harm, and I was surprised to see how well the plants succeeded during the continuous low temperature to which they were subjected during the first three weeks of the new year. We manage this plant in a very simple way. A few cuttings are put in early in spring, and when rooted and hardened off they are planted out in the borders. In autumn a few of them are lifted and placed in pots to make sure of keeping up stock; they are wintered in a cool Peach house and planted out in the spring, and by the autumn they are large plants capable of producing plenty of flowers all the winter if frost is not very severe. After they have once flowered they get too large for our purpose; therefore, in spring they are rooted out and thrown away, and younger and more suitable sized plants take their place.—J. C. C., *Taunton*.

Clove Carnations.—In lifting a quantity of layered plants early in the winter for the purpose of planting out the newly rooted ones, I found, owing to the long continued drought, that not a few of the side shoots had not then pushed down roots. These, taken off just below where the layering incision had previously been made and dibbled out into a frame, have now made excellent roots, and can be planted out at any moment. Such plants, of course, lack the roothold which the autumn-planted ones now have, but they will still make excellent plants, and so far have been well saved. Some of this deficiency of rooting on the part of the layers was, no doubt, due to the excessive dryness of the summer, causing layering to be deferred till rain, which did not come after all, and watering after the layering was done did not make up for time lost. What we want in border or real Clove Carnations is robust habit and readiness to make Grass. Some highly recommended kinds producing beautiful flowers are shy growers and produce shoots sparsely. Such kinds, owing to certain inevitable losses, never become cheap or abundant. A year or two ago, from a batch of seedlings, I found not a few that ran all to bloom and gave very little Grass. Such kinds would almost certainly baffle the ordinary cultivator of Carnations. On the other hand, two seedling plants, specially in addition to flowering richly, gave each some two dozen strong shoots for layering. These are the kinds for garden cultivation, because they will always stand well and give ample increase. The Continental varieties are very floriferous and beautiful, but come so readily from seed that they may be more easily raised in that way than by layers. Our best border kinds give so little seed, that reproduction in that way is most uncertain; hence the great need for kinds that give plenty of Grass, and thus enable the cultivator to maintain a good stock from year to year.—A. D.

Double Galliardia.—No garden need be without this useful border plant, as it may be very readily raised from seed. It should be sown in a warm house early in March, and the plants grown on so as to get them strong by the beginning of June. If planted in good soil they will commence flowering at the end of July, and will continue to do so until late in the autumn. It is useful for furnishing flowers for cutting.—J. C. C.

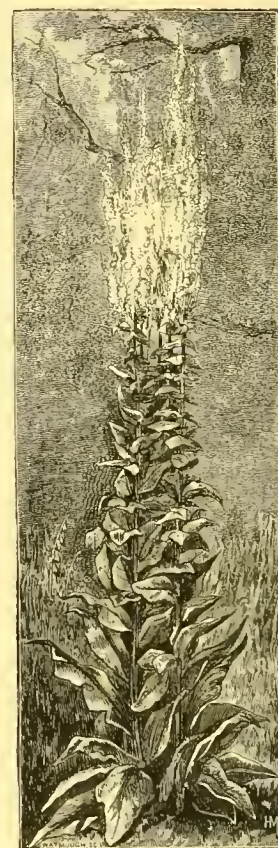
Narcissus nanus fl.-pl.—I gather from your notice of Hartland's Rip Van Winkle that he considers it to be the double form of *N. nanus*. If so, it is not a new discovery. Messrs. Rollisson, of Tooting, offered it in their catalogue for 1877—viz., "Ajax minor, 4s. per doz.; Ajax minor nanus fl.-pl., 6s. per doz.; Ajax minor nanus monstrosus, 4s. per doz." The latter looks very like Rip Van Winkle, and it must have abounded at Tooting, as it is priced cheaper than the other two varieties of *nanus*.—E.

GARDEN FLORA.

PLATE 481.

THE VERBASCUMS OR MULLEINS.

(WITH A COLOURED FIGURE OF *V. PHLOMIOIDES*.)
THE genus *Verbascum* comprises about a hundred or more described species and natural hybrids, and perhaps twice as many names, all representing useful garden plants that will thrive in almost any position. The fact that hybrid forms exist in a wild state partly, if not wholly, explains the difficulty of keeping them true to their typical forms under cultivation, and this applies more especially to those of biennial duration, and that have to be raised from seed yearly. From a garden standpoint this facility of hybridising is an



Verbascum Chaixii.

advantage, as some of our best forms have been thus obtained. Indeed, it is nearly impossible to prevent intercrossing, however far the plants may be apart. Most of the kinds in general cultivation belong to the *phlomoides* group, which consists of tall, robust, and very handsome flowering plants. For shrubberies or for bordering thickets *Verbascums* are almost indispensable, and now that the grouping phase of gardening is receiving some attention, we may soon hope to see colonies of Mulleins such as we now see in the case of wood Hyacinths. Mulleins, Foxgloves, and similar strong growing plants scattered promiscuously about our woods and in the wild garden are desirable; some of the larger forms, too, notably *V. olympicum* and *V. crassifolium*, form when isolated noble specimens. It is, perhaps, needless to add that seeds of the biennial sorts can rarely be depended upon to come true to name; therefore if typical

* Drawn at Munstead in August.



VERBASCUM PHLOMOIDES.

forms be desired it will be necessary every second or third year to procure fresh plants or seeds. The perennial kinds, on the other hand, are less difficult to manage, for although division of the root is not always practicable, they may be readily increased



Verbascum nigrum.

by being placed in heat, and the young shoots struck, as in the case of Dahlias and similar plants.

CHAIX'S MULLEIN (*V. Chaixi*, or *V. vernale*, as it is often called in gardens) is not unlike *V. nigrum*. It is, however, a much stronger plant, with branched stems, and easily recognised. The flowers, though not large, are thickly set on the stems; they are yellow with purplish anthers and very effective. It is a good kind for naturalising in woods, where single specimens attain remarkable dimensions. The oblong bright green leaves form pretty tufts, which even without flowers are desirable. It is a biennial, though I believe perennial in light rich soils. It flowers from the latter end of May to August. It is a native of Southern Europe and difficult to procure true.

V. CRASSIFOLIUM.—This, one of the *Thapsus* set, often seen in cultivation, agrees in many particulars with the form known as *V. thapsiforme*. It grows from 3 feet to 5 feet high, and has unbranched stems. The flowers are yellow, large, and very fine; the leaves, which are decurrent, have crenated margins, and are densely woolly. It is a native of Portugal, where it is found in sandy places. It does not readily hybridise, and therefore may be easily increased from seed.

V. LYCHNITIS.—This is a British plant, and although rare, may still be found in old rubbish heaps and waste places. It is not so attractive as any of the foregoing, the flowers being very small. They are, however, plentiful, and of a darkish cream colour. It does well on airy places on the rockery in large patches, and in deep soils often reaches 3 feet and 4 feet in height; the lower leaves are about half a foot in length, oblong, and tapering into longish petioles. The stems, which are often branched, are thickly set with flowers, and are produced from June to August; hybrids have been raised between this and *Thapsus* and *Blattaria*. There are also two varieties in cultivation, or were two years ago, one with pure white flowers, and also one without petals, the latter being a curiosity.

THE BLACK MULLEIN (*V. nigrum*) is a native plant, and fairly plentiful by waysides in gravelly or chalky soils. Under such circumstances there is some chance of its being had true, but under cultivation it hybridises so readily, that one can never be sure of its coming true from seed. In its typical form, although the flowers are small, it is rather pretty. It has a neat habit, not over strong, and is perennial. It grows from 2 feet to 3 feet in height, and has oblong, cordate based leaves, slightly woolly underneath. The flowers, which are yellow, contrast prettily with the vermilion anthers. It blooms from June to August. A hybrid called semi-nigrum (*nigrum* × *thapsiforme*) is very handsome.

V. OLYMPICUM.—This, one of the most beautiful of all the *Verbasces*, produces flower-stems from 7 feet to 8 feet in height, profusely branched in a pyramidal fashion, and decked with hundreds of large shining yellow flowers. Single specimens of this Mullein isolated on a lawn stand amongst hardy flowers almost unrivalled as regards effect. Unfortunately, it takes a year to flower from the time when the seeds are sown; out of some hundreds of seedlings not one flowered the same year. Moreover, it is not one of the best for withstanding our damp winter seasons, except it be on chalky or well-drained soils. The foliage, owing to its woolly covering, is liable to damp, and therefore where practicable should be protected with a slight covering of loose litter in hard weather. The leaves, which are large, are lanceolate, long, and wavy. The flowers, which all open about the same time, are clear yellow, shaded with dull orange, and the filaments are white. Plants raised from seeds sown in autumn or early spring will flower the year following, and as in the open ground the seedlings are apt to get injured, the seeds should be sown in pots in a cool frame, pricking off the seedlings as soon as they can be handled. It is a native of Asia Minor, &c., and flowers in August and September.

V. PHLOMIDES, represented in the annexed plate, is a tall-growing species, and one which is



Verbascum phoeniceum.

forms are, however, strikingly beautiful plants. *V. phlomoides* grows from 4 feet to 6 feet high; the radical leaves, which are egg-shaped and on petioles, are covered with soft wool; the flowers are fragrant, and are produced in June and July. It is a native of Europe, Turkey, &c. Syn., *montanum* (Grsb.), *macranthum* (Hffmg.), *italicum* (Moric), *nemorosum* (Schrad.), and there are also various hybrids and varieties.

THE PURPLE MULLEIN (*V. phoeniceum*) is a vari-ously-coloured, very ornamental species. It makes a first-rate border plant, being in light rich soils perfectly hardy and of perennial duration. On heavy soils, on the contrary, it is best treated as a biennial. Its rosettes of dark green or purplish leaves, oval and slightly cordate at the base, are very pretty; they are produced close to the crown and lie flat upon the ground. In colour the flowers range from white to purple, the latter and bronze being, however, the most common; they are produced the whole way up the stem, which varies from 1 foot to 2½ feet in height; it flowers from May until August. It is a native of the south and east of Europe, where it is found on the margins of woods and in stony fields, and in the Caucasus and Siberia. Of this there are several hybrids, some of which have received names, such as *versiflorum* (*Thapsus* × *phoeniceum*), *commutatum* (*nigrum* × *phoeniceum*), and *pseudo-phoeniceum* (*Blattaria* × *phoeniceum*). They are little showier than the forms we get from a packet of mixed seeds.

THE RUSTY-FLOWERED MULLEIN (*V. ferrugineum*), said to be a form of the above, is distinct enough under cultivation to justify its having a separate name. Its leaves are much larger than those of the type, wrinkled, covered with long hairs, and doubly crenated; those on the stem have very short stalks and are equally serrated. The flower-stem is taller and stronger than in the type; the blooms open about the same time, but they are of a uniform rusty colour something in the way of those of *Lanthe bugulifolia*. It is easily increased by means of seeds, which ripen freely, or by division of the root, which increases in size yearly. It is a native of the south of Europe, and makes an excellent plant for rockwork.

THE COPPER-COLOURED MULLEIN (*V. cupreum*)—This is another supposed hybrid between *ovalifolium* and *phoeniceum*. It seems to partake of the characters of both, a rather curious circumstance, as both of them seem to be of perennial duration, while *cupreum* other than a biennial is useless. It is well worth a warm spot in the rockery, where its flowers often assume a fine salmon colour. It grows from 2 feet to 3 feet high; the leaves, which are cordate at the base, are wrinkled and woolly underneath. It flowers in July and August.

SHEPHERD'S-CLUB, HAG-TAPER, AND LADY'S FOXGLOVE (*V. Thapsus*).—This, which has numerous synonyms, varieties, and hybrids, is a favourite border plant, its dense spikes of large soft yellow flowers never failing to attract attention. In rich soils its flower-stalks measure 6 feet in height, and are well clothed with silky woollen leaves. It is one of the easiest to hybridise, and can seldom be depended upon. Its flowers are produced in July and August. It is a native of Europe generally, the Caucasus, and India. Syn., *V. Schrederi*, *Linnaei*, *canescens*, *pallidum*; *hyb.*, *V. colinum*, *Thapso-nigrum*, *Lamottei*, *Thapso-floccosum* *Gordonii*, *Thapso-floccosum*.

Among other Mulleins in cultivation, and to which many of the garden hybrids belong, may be mentioned *V. macrurum*, *V. sinuatum* (*V. undulatum*), and to which belong two or three fine hybrids; *V. Boerhaavi* perhaps a hybrid; it is closely allied to *V. phlomoides*; *V. virgatum*, a branched twiggly species, including *V. glabrum* and *V. viscidulum*, *V. pyramidatum*, a free-flowering robust species, with large doll yellow flowers; *V. niveum*, *V. thapsiforme*, which includes *V. cuspidatum*, *V. densiflorum*, and over half a dozen hybrids; *V. ovalifolium*, *V. Blattaria*, *V. blattarioides*, both of which are common in gardens in some form. *V. thapsoides* is a fine robust species.

D. K.

rarely found true after two or three years' cultivation. At the end of that time not one remained true out of four original species in the same bed, most of the hybrids having some of the *phlomoides* blood in them. Many of the hybrid

KITCHEN GARDEN.

NEW TYPES OF CELERY.

It will be strange if America and France furnish almost simultaneously new forms of Celery which shall have the effect of completely revolutionising the culture of this esculent. I did not know of the existence of the White Plume Celery until I saw Mr. Muir's note respecting it in a late number of *THE GARDEN*. Mr. Muir's remarks thereon, coupled with his recommendation of the White Plume, has reminded me that last year I furnished a note to *THE GARDEN* concerning a new type of Celery which has lately figured in a rather prominent manner in the Transactions of the French National Horticultural Society. This Celery was exhibited last spring and gained a first-class certificate, but, not content with the inspection of cut specimens, the society in the following autumn deputed a commission of its members to visit its birthplace and report upon its behaviour under the method of culture pursued by its raiser. The result of this visit was the insertion of a very favourable report in the journal of the French National Society, which closed by saying, "In brief, we recommend very particularly this new Celery both to market gardeners and to private growers, because there is no necessity to earth it up to blanch it, as it is the custom to do in a general way."

As this commission was composed of growers of considerable experience, the favourable opinion of the new Celery thus expressed should have due weight with those who may be thinking that a variety which needs not the gardener's art to render it fit for table can scarcely have much value. But we get more convincing testimony than the above in the fact that for a period of nearly ten years the Parisians have been eating this Celery in considerable quantities. It is a plant of much value; its reputation is established in the Halles Centrales; and what better test of its utility can be desired than this fact affords?

It was in 1875 that M. Chemin, of Issy, a district just outside the Paris fortifications noted for its numerous market gardens, having sown his Celery as usual, discovered amongst the seedlings one or two which presented a remarkable contrast to the rest. These plants had foliage of a yellowish white, and the stronger they grew the more pronounced did this abnormal tinge become. Struck with the circumstance, he set them out by themselves, and allowed them to develop without subjecting them to the special culture usually followed. The result was blanched Celery of good eating quality and fine appearance, not exactly white, but suffused with a yellow tinge, so that it was ultimately christened *Celeri blanc doré* (golden white Celery), or *Celeri Chemin*, after the raiser. In 1877 the first sample of this Celery was brought to the Halles Centrales, but, strange to say, M. Chemin never seems to have thought of deriving any advantage from this "find" by keeping the stock to himself and only letting it out when well known. On the contrary, he appears to have taken pleasure in supplying plants and seed to his immediate neighbours, some of whom were, however, incredulous as to its merits, whilst others were clever enough to see that this strange sport had a great future before it. It seems almost incredible that one who was prompt enough to appreciate the advantages conferred in cultivating this Celery should have let such a golden opportunity slip. He must have regretted having done so, when in 1883, on being persuaded to exhibit specimens before the French Horticultural Society, that body expressed a regret that it had no higher award than a first-class certificate to confer on such a valuable acquisition. Already thousands of sticks of the "*Celeri blanc doré*" are yearly brought to the Paris markets, where it has never failed to obtain a ready sale. Strangely enough, none but those immediately interested in this Celery knew that it was anything out of the common. It was absolutely unknown to the Paris seedsmen until exhibited the year before last, when the Messrs.

Vilmorin immediately secured a stock of seed of it and, I believe, catalogued it last spring.

Thus we have the curious and uncommon circumstance of a vegetable having become a popular market kind before it even appeared in a seedman's list. The only analogous instance occurring to me is that of the *Bonne de Brie* Plum, which coming up as an accidental seedling at Brie, near Paris, some years ago, has become an important source of revenue to growers there for some time past, although totally unknown to the French Pomological Society and to trade growers generally. I should have thought that in some way the *Celeri Chemin* had crossed the Atlantic and reappeared in Europe under a new name, but from Mr. Muir's note I gather that the White Plume has two phases of colouring, the white only appearing in the adult stage; whereas the *Celeri Chemin* is born white, or so near to that colour as it ever comes. The hardness of this new type of Celery will probably be questioned, but M. Chemin states that it suffers less in hard winters than the ordinary kinds. This need not cause much surprise, as earthed-up Celery is deprived of its powers of resistance to cold and wet by the process which blanches it; whereas the new Celery retains the hardened maturity gained from the summer sun and autumn breeze. Perfect immunity from rot is claimed for it, and this point in its favour will probably be willingly conceded.

M. Noblet, who drew up the report for the French National Horticultural Society, states that M. Chemin sows on hotbeds the first week in March, pricking out the young plants in a month from that time also in warmth, and finally transplanting to permanent quarters early in June. Last year seven beds were planted, each one 70 feet long by 20 feet wide, containing about 1900 plants in a bed, all of which were very fine, white, and well hearted. To succeed these were other plantations raised from seed sown at the end of April, pricked out in May, and planted in June. It is stated that this Celery does not attain its full flavour and tenderness until a frost or two have passed over it. There can be but little doubt as to the worth of this new vegetable and the position it must ultimately take in gardens generally. Few vegetables demand the expenditure of time and labour that Celery does; it is expensive to grow, and is therefore too dear to be an article of consumption amongst the working classes in towns, and very few cottagers care to undertake the amount of labour involved by the usual way of growing it. But this now appears likely to be a thing of the past, and Celery will be grown as easily and inexpensively as Cabbages.

Byfleet.

J. CORNHILL.

EARLY CABBAGES.

WHY write about Cabbages? Everyone can grow Cabbages. Just so; and it is because everyone can do what has been done here this season that they ought to do so. There are six-weeks Turnips (and we have pulled very good Turnips here in less than that time from the day of sowing the seed), and we have had six-weeks Cabbages here this season—not six weeks from the time of sowing; we can hardly expect that in our climate; but let me state the facts. We finished digging about an acre of Potatoes on August 6, after which the ground was well manured and dug; it was dusty. On September 5, after a good soaking of rain which fell the day before, we commenced to plant, and in six weeks from that time we had Cabbages fit to cut—good white hearts weighing from half a pound to 1½ pounds each, and ever since then we have been cutting Cabbages in large quantities varying from a quarter to 5½ cwt. at a time. Such quick returns cannot, I know, be obtained from any sort of Cabbage, and the question naturally arises, "What sort did you use?" Well, it was a selection of my own from a packet of seed given to me by a market gardener some years ago. We were looking over the grounds here one day, and came to a plot of Cabbages. He asked me what sort it was, and I told him. He remarked that they would not do for him, an observation at which I was surprised, as I had been thinking what a good and

early crop it was. He said that he had been cutting good Cabbages for weeks, and kindly offered me a little seed, which I was only too pleased to accept. From that day I have continued to select from his sort, and the result is the crop which we have been cutting. I may also say that I find Sutton's Improved Nonpareil a very quick hearting Cabbage. It is rather small, but this is no fault, as it can be planted much closer than larger growing sorts, and for table, small, quickly-grown heads are preferable to larger ones.

Asylum, Brookwood.

R. LLOYD.

BEST PEAS.

"A PEA GROWER" (p. 106) asks me to give my opinion about Culverwell's big Peas. Well, I have tried a good many Peas during the past seven years, and I must say that several of those mentioned by "W. I. M." are no favourites of mine. I have no hesitation in saying that the following Peas of Culverwell will hold their own against all comers for produce and flavour combined, viz.: Telephone, Stratagem, Paragon, Triumph, Giant Marrow, and Prolific Marrow. The latter and Sir F. Milbank I hold to be second to none in flavour. When sent out I had a few sent me to try by Mr. Fowler, of Bedale, and from what I know of it I have no doubt that it will, when better known, be a favourite. We grow no others, with the exception of Veitch's Selected, with me the earliest Pea, William the First, Sutton's Ringleader, and Ne Plus Ultra, and we can eke out a good supply all the season by means of these varieties. "W. I. M." says that cooks do not admire large Peas. My experience is just the reverse. With regard to cultivation, we have recently made a new kitchen garden, so that we can afford to give our Peas plenty of room; to tall sorts we give 8 feet, others 6 feet. We prepare the ground as for Celery, and we always make it a practice to mulch all our Peas. Messrs. Carter say that their Peas can take care of themselves without this preparation, but I have noticed that all Peas are the better for good cultivation.—ED. HALL, *Bolton Hall, Yorkshire.*

I do not consider the two Peas which "J. C. C." has named (p. 134) better than Stratagem or Telephone. British Queen is not equal to Stratagem or Telephone. Veitch's Perfection, good as it is, can only be allowed to be on an equality with Telephone, but not with Stratagem. I do not, however, say a word against either, especially that good old Pea, Veitch's Perfection; but "J. C. C." said that Stratagem and Telephone were not good enough for his people to use, and hence my reasons for asking him to name Peas better than Telephone or Stratagem. There is one Pea that I named that I think is the sweetest with which I am acquainted, namely, House's Perfect Marrow. It has two very good qualities, namely, sweetness and a long bearing period. With me last summer it and Evolution were bearing usable Peas when all others in my garden were ripe.—HENRY MARRIOTT, *Boston, Lincolnshire.*

I have read with some interest "W. I. M.'s" remarks on Peas, and also the criticisms which they have called forth, and I must say, as a somewhat extensive grower of Peas for private use, that I think him right in his estimate of the large-podded varieties which he mentions, namely, Telegraph, Telephone, Stratagem, and Culverwell's Giant Marrow. Pride of the Market I have not grown, so of that sort I cannot give an opinion. I certainly consider the varieties named excellent for exhibition, but there are other points to be considered when one has to supply large quantities of Peas daily, and where quality is also an object. I scarcely think anyone so situated would like to confine himself to any one or even all of the varieties named. Let me give my experience for the past year. We made a good sowing of Veitch's Perfection, Stratagem, Telegraph, and Huntingdonian on the same date and on the same quarter of the garden. They all did well and carried extraordinary crops, but Telegraph and Stratagem, and later on Huntingdonian, became white with mildew, and had to be cleared off the

ground, whilst Veitch's continued green and healthy, and we gathered daily Peas of first-rate quality from it for a full month after the others were cleared away. Amongst earlier sowings, too, Champion of England and Hundredfold stood me in good stead, while the large-podded varieties came in with a rush and were over at once. For late crops I fancy we have nothing yet to equal, much less surpass, the old *Ne Plus Ultra*. We gathered good Peas from a long row of it in 1884 till far into November, commencing from the same row about the end of August. The Peas, too, were quite as large individually as any I have ever seen produced by Telephone, &c., though the pods were not so large. William I. is a useful early Pea, but not much liked here. For early sowing Gem is good. It crops well, and its colour when cooked and flavour are excellent. My opinion is that, good as some of the recent introductions in the way of Peas are, we must still look to some of our old and well-tried varieties to carry us through such a season as the last without a break in the supply.—W. P.

NEW AND GOOD VEGETABLES.

THOSE who cultivate vegetables considered to be the best twenty years ago under the impression that nothing has since been introduced to surpass them are working under great disadvantages. We all know how names of vegetables have been multiplied, but everyone who has given new vegetables a trial can readily assert that many of them possess merits, such as being more prolific, earlier, and superior in table qualities to the old varieties. Amongst kinds deserving of special notice are the following, viz., American Wonder Pea, a dwarf sort better than Blue Peter, Little Gem, or any of that type. It grows 1 foot in height, and is very prolific and good. Laxton's Earliest of All Peas is a good gain in point of earliness, and Wordsley Wonder as a second early and main crop Pea is robust in constitution, very productive, and excellent in quality; Duke of Albany is a main crop variety of the Telegraph type, tall, prolific, and good; Telegraph, Telephone, Stratagem, and Pride of the Market have many equals, although all who have grown them will admit they are good, and a great gain on old sorts; they are, however, not unsurpassable, especially in quality. Culverwell's Giant Marrow is a noble Pea, the best in my opinion of all the tall-growing main crop sorts. Sutton's Latest of All is perhaps the best in the late season; it is of the Omega type, but more prolific and excellent in quality.

RUNNER BEANS are all eclipsed by Girtford Giant, a marvel in size and equally so in productiveness and good quality. Amongst Broad Beans Leviathan is the best as regards size of pod, but for productiveness I prefer the Improved Long Pod, a first-rate type of that well-known section, and compared with which the Windsor varieties are inferior. Of dwarf Kidney Beans, Canadian Wonder stands out prominently as the best for open-air culture, and for forcing Cooling's *Ne Plus Ultra*. Pragnell's Exhibition Beetroot is the handsomest and best Beet with which I am acquainted. Argenteuil Asparagus is a wonderful improvement on the old Giant or Battersea. Amongst Broccoli, Veitch's Self-protecting Autumn variety has outdistanced all others; indeed, nothing better as an autumn Broccoli could be desired. We began cutting it in November and it is not over yet. This is succeeded by Carter's Early Mammoth spring white and Backhouse's winter variety. Then comes Cooling's Matchless and Sutton's Queen, the latest of all. The Aigburth as an exhibition Brussels Sprout and Webb's Matchless as a thoroughly good main crop variety deserve extensive cultivation. Chou de Burghley is a new production, of which its originator may well be proud. It seems to be a mixture of choice Cabbage and good Broccoli. Webb's Emperor is a Cabbage about which one can speak with confidence. As an early sure-hearting kind we have not found anything to equal it. Sutton's All Heart is smaller and a gem. Winningstad was grown by us half-a-dozen years ago as Redbrae's; it is a capital Cabbage, belonging to the larger sort class. In

Cauliflowers we begin and end the season with Veitch's varieties, the best and earliest of all being their new Extra Early, and the last the Autumn Giant. Webb's Mammoth and Sutton's King fill up the middle part of the season well. In Carrots the French Horn is earliest, but it is very short. Early Nantes is surpassed by Biddle's stump-rooted variety; I have, however, found none to surpass James's Intermediate as a main crop Carrot. The best red Celery with us has been Biddle's Defiance, and amongst whitesorts the Sandringham. The new American White Plume variety, if it succeeds everywhere, as it has done here, will be regarded as a most valuable addition to Celeries. Of long Cucumbers the best is Tender and True, and amongst shorter ones the Cardiff Castle, a capital all-the-year-round variety. The broad-leaved Batavian Endive leaves nothing more to be desired in that class. Leeks have been added to, but so far we have not found the Musselburgh surpassed in hardness or good flavour. Lettuces are improving, Veitch's Perfect Gem is a fine Cabbage sort, and so are Webb's Summerhill and Sutton's Marvel. Wheeler's Kingsholm is a fine addition to tall growing sorts.

Amongst Onions, as a main crop variety we have found none to equal Improved Banbury. The Giant Zittan is very handsome, but a poor keeper. Walker's Exhibition is a capital variety for that purpose. Gilbert's Universal Savoy is sure to take a high position amongst this class of winter greens; it hearts well and is extra good in flavour. Amongst Tomatoes, Hackwood Park Prolific and Trentham Fillbasket are good kinds. Early Turnips, too, are vastly improved compared with old sorts. The Extra Early Milan should be grown everywhere. This enumeration by no means exhausts the list of new vegetables which we have tried lately, but those named have been proved beyond doubt to be improvements on kinds previously grown. J. MUIR.

DARKNESS FOR MUSHROOMS NOT NEEDED.

MR. HENSHAW, of New Brighton, Staten Island, is considered to be the most successful grower of Mushrooms in the vicinity of New York. His method is the easiest and simplest with which I am acquainted, and yet always attended by bounteous results. He does not attempt to raise Mushrooms between the end of May and November, as high temperature and insect enemies are against raising a crop worth attention at that season, but he works for a continuous crop between December and May. The Mushroom house is a lean-to wooden shed, 50 feet long by 8 feet wide, and built alongside a warm greenhouse. In the roof are three windows or sashes, 2 feet by 5 feet, for ventilation and the admission of light. Except against direct sunshine, no attempt is made to darken these windows, and Mr. Henshaw assured me that darkness is not at all necessary to success. A 4-inch hot-water pipe from the greenhouse runs around inside and some 3 feet above the floor, and by this an equable temperature can be maintained. The floor is a common earthen one, level and as hard as the road. Mr. Henshaw prefers an earthen floor to any other, and insists that it is more natural, and that the beds do better on it than they do on wood, brick, or cement floors.

THE MANURE FOR THE BEDS is common stable manure where straw has been used for bedding. It is not necessary that it be quite fresh. When received the roughest of the straw is shaken out, but no attempt is made to rid the manure of all the straw; on the contrary, Mr. Henshaw prefers a good deal of straw in it, and claims that in strawy manure the spawn spreads better than it does in horse droppings only or in droppings and loam mixed. The manure is thrown into a roomy shed to preserve it from the drying influence of sun and wind or being wetted by rain, piled in a loose heap, and turned over every day or two to sweeten and to prevent it from burning. In three or four weeks' time it is generally subdued enough to be in good condition to introduce to the Mushroom house in the form of a bed. On examining Mr. Henshaw's beds, I observed how

very gritty the manure was, as if it contained a deal of sawdust. "So it does," he said, "but that does not hurt it in the least. I get part of the manure from the coal and wood yard stables, where they use a considerable amount of sawdust in bedding." The beds (or rather bed) are made upon the floor, beginning at the far end of the house; the whole floor is covered, no room being left for a pathway. In spawning, earthing and watering, and gathering the crop, the men walk on the top of the bed, taking care not to step on the bunches of Mushrooms; hence no walk is necessary. Three beds are made in a season; that is, the first bed made occupies one-third of the house, six weeks later another bed or addition to the first one is made, and five or six weeks later the third or last bed is made, and the house is full. In making the bed the manure is introduced, spread evenly over the space and some 4 inches deep, and then trampled down as firmly as possible. Successive layers are laid over that and trampled as before till the bed is about 15 inches thick. If the manure has been in proper condition and packed firmly, there is not much danger of its burning. In a few days the manure will be likely to heat to 120° or 125°, and in a few days more to decline considerably; as soon as the heat descends to 98° the bed is spawned.

SPAWN.—Mr. Henshaw uses English brick spawn, retailed in New York at ten cents a pound. He does not like the French spawn. In spawning, he breaks the bricks into pieces the size of a hen's egg, and inserts them in the surface of the bed 9 inches apart and 4 inches deep, fills up the holes and packs as firmly as before. From spawning till bearing time is usually six weeks. He also uses what he calls "flake spawn." This he gets by breaking the brick spawn into 2-inch square pieces and mixing them in a small pile of gently fermenting manure, leaving them there for about three weeks. By that time they are a mass of spawn and in proper condition for using in the beds. When flake spawn is used the spawn begins spreading in the bed at once, and a crop of Mushrooms is secured two or three weeks in advance of what would be the case were ordinary brick spawn used. As soon as the spawn has begun to run the bed is in proper condition to earth over. He does not use fine or loose earth, as most growers do, but fresh sod from a pasture turned grass side down. The sods are about 2 inches thick, brown, loamy, and packed up close against each other. He does not use saltpetre in the soil, as the French gardeners do.

WATERING.—When the surface of the bed gets dry he waters it with tepid water. Also to encourage a moist atmosphere he sprinkles the walls and pipes. When the beds begin to deteriorate he waters them liberally with tepid weak manure water, and prefers for this purpose the diluted drainings of the manure pile.—W. F., in *Rural New Yorker*.

Fungi as food.—In Russia nearly all kinds are not eaten indiscriminately; as much care is taken there as here, but they eat a great many which we reject, and which are not found in this country. When fresh they cook even pretty much as we do; they also pickle them. The eatable kinds are found chiefly in woods. There is an excellent and common variety which grows under Birch trees. It does not open, is dark brown, and is about the size of a Walnut. The poorer classes do not use our Mushroom (*Agaricus campestris*); they regard it as unclean, springing as it does from the manure of animals. The salting and pickling theory may get people into trouble.—J. G. C.

Saving Broccoli seeds.—"M. C." (p. 92) very properly explains the difficulty experienced in securing Broccoli seed true to name, not that I have much to complain of respecting that matter, but experience has taught me that when I get hold of a good variety it is best to keep it by saving my own seed. I am fully aware that it is not desirable for a gardener to attempt saving seeds of a variety of subjects; if he did, he would soon find his stock to degenerate, but the saving of one

or two good things is quite another matter. In regard to Broccoli as a hardy midseason sort, I have always found Frogmore Protecting reliable, and some years ago, finding I had a pure stock of it, I selected a few plants for seedling. From these I obtained about half a pound of seed, and from that I have for the past five years raised my stock. I have, too, sufficient seed to last for five years longer, as by keeping it dry I have no fear that it will not vegetate equal to new seed. This being the case, I think we might do more in the way of saving seeds than is generally done. I intend to adopt the same plan with Model, for I am of the same opinion as "M. C.," that it is the most valuable of all the late sorts. In colour the heads are nearly as white as those of a Cauliflower.—J. C. C.

TEMPERATURE AND RAINFALL.

A writer in THE GARDEN remarked lately that, although the temperature of last year had been above the average, still various kinds of fruit had not coloured so highly as the same kinds in the same situations had done in former years. It is quite true that the average temperature of 1884 was above the average, and, at this station at least, it was also in excess of each of the twenty-five years which preceded it, but, at the same time, its record of bright sunshine, as ascertained at various stations, appears to fall under that of several of the years preceding it, whose average temperature fell under that of 1884. Therefore, as there can be no doubt as to bright sunshine being essential to high colouring as well as to flavouring of all kinds of fruit, the deficiency of which your correspondent complains may possibly be ascribed to the comparative paucity of bright sunshine. It must, however, at the same time be admitted that various varieties of fruit, other conditions being favourable, are found to colour well under partial shade, more particularly if such shade be that of their own foliage. Taking the last twenty-six years as a basis for calculation, the average mean temperature of the year in this locality is shown to be 48°5', while the mean temperature of the year 1884 is two degrees above the average, or 50°9', and also slightly in excess of each of the twenty-five years which precede it. The approximation to it is that of the year 1859, which was 50°2', while the lowest mean annual temperature was that of 1879, which was only 45°7'. The highest maximum temperature experienced at this station during the last twenty-six years was 93°, on July 22, 1868; the next to that was 91°, on August 11, 1884, and the temperature during that year never fell lower than 24°, and this depression occurred on March 21 and November 24. The greatest depression of temperature during the last twenty-six years was 3° below zero, on December 24, 1860, while on January 7, 1861, the mercury fell to zero, and again on January 1, 1867. The average annual rainfall here is found to be close upon 26 inches or 25·85 inches, while the average number of days in the year on which rain or snow fell is 156. The greatest annual rainfall recorded here during the last twenty-six years is that of 1872, when it was 34·64 inches, and there were 200 rainy days. Next to that comes 1860, with a rainfall of 33·2 inches, and 188 days on which rain, or snow fell. The smallest annual rainfall is that of 1864, the rainfall of which was only 16·44 inches on 89 days. Next to that comes 1884, with a rainfall of 17·41 inches or 8·44 inches under the average, and this fell during 133 days. Taking the various months for the last twenty-six years, the month which furnishes the greatest amount of rainfall is shown to be July, while April furnishes the smallest amount, or, placing the months in accordance with the amounts of rainfall they have furnished, they stand thus:—

July ..	68·05 inches	August ..	58·08 inches
October ..	67·15 "	May ..	48·67 "
September ..	64·39 "	January ..	46·76 "
November ..	63·12 "	February ..	46·62 "
December ..	61·68 "	March ..	44·08 "
June ..	58·18 "	April ..	42·38 "

The following table shows for each month in 1884 the rainfall and the highest and lowest

temperatures, together with the mean or average temperature of each month:—

Months.	Rainfall inches	Wet days	Max temp deg.	Min temp deg.	Mean temp.
January	1·73	13	56	30	45·0
February	0·45	10	53	26	40·5
March	0·99	8	68	24	45·5
April	0·74	13	68	26	47·5
May	0·85	9	80	33	56·5
June	0·83	8	81	40	61·0
July	2·45	15	87	43	64·5
August	1·18	10	91	40	64·0
September	2·30	12	79	36	57·5
October	2·17	8	63	30	47·5
November	1·48	11	59	24	42·0
December	2·24	16	53	25	39·5
Total for the year..	17·41	133	—	—	50·9

Bury St. Edmunds.

P. GRIEVE.

GARDEN DESTROYERS.

ENGLISH OAK PHYLLOXERA.

(P. PUNCTATA.)

THIS insect, which not uncommonly infests the leaves of Oak trees in the south of England, is very nearly related to that well-known and much-dreaded scourge in vineyards on the Continent, the Phylloxera vastatrix, but fortunately our Oaks



1, part of Oak leaf attacked by *P. punctata*; 2, foundress surrounded by her eggs (mag.); 3, eggs (much magnified); 4, grub of small fly just hatched attacking a Phylloxera (magnified); 5, winged female (magnified); 6, pupa (magnified); 7, foundress (magnified).

do not suffer at its hands, or rather mouths, to anything like the extent that Vines do when attacked by their Phylloxera; this is chiefly owing to the species under consideration attacking the leaves only, and not the roots as well; whereas the Vine Phylloxera attacks both, but more particularly the roots. One would like to be able to speak of this insect as the Phylloxera of the Oak, but unfortunately, in one's way, there is a species found on the Continent, but not in this country

called *P. Quercus*, so that by rights that species is the Oak Phylloxera. Mr. Buckton, in his "Monograph of British Aphides," remarks: "It may be well said that of all pestiferous aphidian genera, Phylloxera is the most destructive; fortunately in this country we have felt no great injury from the only known indigenous species." That our Oaks might suffer very considerably from the attacks of this insect were they to become very abundant, is, I think, very certain. I noticed a well-grown Oak last September whose leaves were changing colour and falling at least a fortnight or three weeks before its neighbours, which had, I have no doubt (though there were no insects on the leaves, owing to their dryness), from the peculiar appearance of the leaves, been attacked by this insect. This tree must have had its vitality considerably impaired to lose its leaves so much sooner than its neighbours. And though other causes might have helped to operate to this end, yet the remarkable way in which the leaves were changing colour, in spots which gradually spread over the leaf in the spaces between the veins till they joined, led me to regard the Phylloxera as the cause. It seems impossible to suggest any means for eradicating this insect. No insecticide can be used with much effect on an ordinary Oak tree, although in the cases of single trees or small clumps, something might be done with a garden engine or Hop washing machine, and using a wash composed of 5 gallons water, 1 lb. of soft soap, and some tobacco water, or 2 ounces of soft soap and 2 ounces of flowers of sulphur boiled in one gallon of water. These insects, I believe, usually only infest the lower parts of a tree or low bushes. Where practicable the infested leaves should be picked off, and this would be well worth while doing if only a few leaves were attacked in order to prevent the pest spreading. This insect has fortunately several insect enemies; the grubs of certain small flies devour the insects and the eggs. Fig. 4 shows a very voracious grub of some small fly, which, though only just hatched (in fact, it was not entirely free from the egg-shell), had captured and was devouring a full grown Phylloxera. I was examining a leaf attacked by this insect, when I came upon this astonishing example of juvenile precocity, and at once took the young monster's portrait, and it probably suffers, as most of the aphides do, from the attacks of parasitic ichneumons.

This Phylloxera attacks the undersides of the leaves, and lives on their juices in the same manner as all the aphides do, by piercing the skin and sucking out the fluids through a longish proboscis. The first time I met with these insects was on a low-growing scrubby Oak tree, and I noticed a peculiar spotted discoloration of the upper sides of the leaves. On turning them over I was surprised to find the undersides covered with small spots consisting of a number of minute dots, which on closer examination resolved themselves into the insect surrounded by its eggs. The females deposit their eggs in a very remarkable manner (fig. 2). Having taken up their position, they proceed to lay their eggs in a circular ring round them; within this ring they form another, and again frequently a third, when they are left occupying nearly the whole of the middle of the inmost ring. Their eggs (fig. 3) are oval and greenish in colour; soon after they are laid they appear somewhat wrinkled; this is caused by the rapid development of the insect within. The young larvæ when first hatched very much resembles the young of other aphides, but they soon assume a distinctive character, and the rudiments of wings may be seen. After moulting four times the insect becomes a pupa (fig. 6), and eventually the winged insects (fig. 5) are produced. In this generation there are no males. The females lay eggs, and again the transformations are gone through, and other very similar winged females only are produced. From the eggs laid by these are developed wingless individuals, which deposit a few large eggs, from which the perfect insects of both sexes issue without undergoing any transformations. The females each lay one large egg, from which is hatched the female first alluded to, who surrounds herself with eggs, and

so this very extraordinary series of generations is completed. The males and females are wingless and have no mouths. The foundress, or queen mother, who surrounds herself with eggs, is scarcely one-sixteenth or an inch in length, and is of a flask-like form, with short legs and antennæ, the latter consisting of only three joints; her colour is a pale transparent yellow, irregularly and sparingly spotted with red; the body terminates in a retractile ovipositor, with which the insect can easily place her eggs in any position she may desire. The eggs (fig. 3) are very minute, oval, and of a pale greenish yellow colour. The pupæ (fig. 6) are about one-sixteenth of an inch in length, and are of a brownish yellow colour. The winged female (fig. 5) is of about the same length as the pupa, and measures rather more than one-eighth of an inch across the expanded wings. The head and thorax are brown, the latter being very large in proportion to the insect. The body is greenish. The upper wings are large, white, and rounded at their tips; the lower pair are small and narrow.

It may be as well here, perhaps, to allude to the Phylloxera of the Vine—*P. vastatrix*—as it is now doing considerable mischief in some vineries in this country. Vines are so little grown in the open air in England, that the insect has not much chance of spreading if due care be taken not to introduce Vines from an infected locality into a vinery, and there ought to be little difficulty in "stamping out" this pest. Any Vine leaves which are covered with small galls about one-eighth of an inch in diameter should be picked off and burnt. If the roots are attacked, I should recommend the destruction of the Vine and the careful clearing out of any earth which may possibly contain any of the Phylloxera. In the autumn eggs are laid by the true females after pairing with the males. From these eggs in May or June only females are hatched, who are known as foundresses or queen mothers. These are frequently winged in warm countries, and they attack the leaves and puncture them in such a manner that they grow round them, forming a kind of gall about one-eighth of an inch in diameter; sometimes a leaf may be covered with two or more of these galls, within which the females lay their eggs and then die. The young are hatched in July, and at once descend to the ground and begin feeding on the roots. After four or five generations of this subterranean form, some are developed into pupæ, come to the surface, and become winged insects. In colder countries, such as the greater part of the Continent, the foundresses are not winged, but they go direct to the roots and lay their eggs there after passing through the same number of generations as those descended from a gall-making foundress. They, like them, are developed into winged aphides, which fly away to other Vines and deposit their eggs, from which are produced the true males and females; these are wingless and without any means of obtaining nourishment. The females each deposit a single egg in some crack or crevice of the bark; from these are produced foundresses. The Phylloxera of the Vine is very much like *P. punctata* in general appearance, but differs in many particulars. G S S.

Aphelandra aurantiaca.—To be seen to the best advantage this plant should be grown in quantity, and when in flower arranged in large groups amongst fine-foliaged plants, or where its richly coloured flowers would gain by contrast with their surroundings. A much-admired arrangement in the stove at Kew has been formed by placing about a score of plants of *A. aurantiaca*, each bearing a good spike of orange-red flowers on a small stage, the background of which is covered with *Asparagus plumosus*, *Cissus porphyrophyllus*, and *Paullinia thalictrifolia*, interlacing with each other. A few small white-flowered plants are placed here and there amongst the *Aphelandras*. The difference between the latter when thus arranged and when seen on a shelf or against the woodwork on a stage is much greater than one would imagine. One often sees charming plants robbed of much of their beauty through

being placed in an unfavourable light or in the near neighbourhood of other plants with which they do not harmonise. There is a great deal more in arrangement than many imagine.—B

INDOOR GARDEN.

PROPAGATING DOUBLE PRIMULAS.

It is a fact that there are comparatively few who are masters of the art of propagating double Primulas, and it seems strange that, whilst some strike them with the greatest ease, others find great difficulty in getting them to make roots. The most successful propagator of double Primulas I ever knew was one who grew specimens of such dimensions as probably do not exist in England at the present time. They were in 12-inch pots, in which they remained to my certain knowledge four years without repotting; nevertheless they retained the whole time the vigour and floriferousness of a more youthful state. The amount of flower which they furnished throughout the winter was far in excess of what small plants occupying the same space could have supplied. Only great care and much cultural skill can keep such large specimens in good health, and I would not advise intending growers of this useful flower to go in for large plants. In a general way 6-inch pots are quite large enough. The individual above alluded to used to put in the cuttings from the middle of April till the end of May, quite ninety-five per cent. of which made roots. Each one was inserted in a small pot in fine, sandy peat, and here I may remark that nothing but peat was used for these double Primulas, every portion of it being robbed through a very fine sieve, so that, although the compost was absolutely free from lumpy particles, it retained the major portion of its fibre. This was probably one reason for the plants doing so well, as the tender fibrous roots found no difficulty in taking complete possession of the compost, which, owing to its naturally antiseptic nature and the large amount of silver sand employed, remained in a free, sweet condition.

After insertion the cuttings were "watered in," and then, when all moisture had dried off the foliage, they were placed under handlights on an ash bed, which was warmed by means of an iron trough, in which water from the boiler circulated, so that a constant moist bottom-heat was secured. The greatest care was taken in the watering, every cutting that needed it being taken out for the purpose; the glasses were removed for an hour or two every morning, turning them upside down to allow them to dry, and at nights a little air was left on, and sometimes on dull mild days. As soon as any were seen to be rooted, they were removed from the handlight, and in a few days to a rather cooler and more airy house, being shifted on as soon as the pots became fairly filled with roots. In this way successional batches of plants were coming on, the earliest of which began to bloom at the commencement of the winter, and the latest gave a good supply of flowers through the spring. The old plants seemed to bloom more or less freely the year round.

As showing how difficult it is to lay down fixed rules in any gardening matter, I may mention that a very successful propagator of double Primulas in Germany went to work in a very different way. He first set his cuttings on the front shelf of a warm house, and they nearly all made roots. He used to say that too much fuss was made about striking double Primulas. "Put them in a house where they get sufficient warmth, and if they do not damp they will be sure to make roots, and they will not damp if they are not smothered up under close handlights." That was the principle that guided him in Primula propagation, and the good results obtained were a sufficient test of its soundness. I used to succeed very well when the pots were plunged in a tan bed in the genial atmosphere of a propagating house. One important point is to get strong cuttings; those taken from weakly plants seldom do well.

J. CORNHILL.

ACACIA VERTICILLATA.

SOME years ago, when hard-wooded plants were more in favour than at present, Australian Acacias were represented in British gardens much more numerous than we find them now-a-days. A goodly number of the Acacias then in cultivation were, however, only suitable for large conservatories, in which, when planted out, they could have sufficient space for proper development, as, for instance, in the temperate house at Kew. Thus treated, almost every one of the hundreds of



Spray of *Acacia verticillata*.

Acacias represented in Australia well deserved the room devoted to it; but for pot cultivation, with the exception of the climbing or slender growing species, such as *A. Riceana*, which may be treated as a rafter plant, the number of really useful garden Acacias of which we know anything does not exceed half a dozen. These are *A. armata*, one of the oldest and best of all Acacias, with a constitution like that of a Bramble, and a most accommodating habit; *A. Drummondii*, a graceful and handsome plant, but not always happy under cultivation; *A. obliqua*, a kind with orbicular leaves and globose heads of deep yellow flowers; *A. lineata*, a narrow-leaved shrubby kind with globular flower-heads; *A. pubescens*, and *A. dealbata*. The first four species are dwarf, compact growers, and when properly managed form pretty little specimens and flower well planted in 4-inch pots. About London these four Acacias are commonly grown by market growers and managed in the same way as winter Heaths are treated. *A. pubescens* and *A. dealbata* are fine-foliaged plants, and as such are often used for table and indoor decoration and for sub-tropical out-of-door arrangements in summer. They grow freely from seeds, and in a few months form shapely little plants with erect stems and handsome Fern-like leaves. *A. verticillata*, a flowering branch of which is shown in the accompanying woodcut, belongs to the same set as *A. Riceana*, *A. pulchella*, *A. longifolia*, &c., which do not flower well in a small state, but which when grown on into large bushes are exceedingly handsome. This may be effected in pots, but in large conservatories better results are obtained, and labour is saved by planting them out in beds or borders. At the present time the temperate house at Kew is made beautiful by the large bushes of different species of *Acacia* now in flower in it. To anyone who has seen the Kew Acacias the advantage of planting out over pot culture is apparent. *A. verticillata* has pale yellow flowers, which are produced in February and March. B.

Dumpy Hyacinths.—I have more than the usual number of dumpy Hyacinths this season, for what reason I know not. To all appearance the bulbs were equal in size and weight to those of previous years; between those forced into

flower early and those which have come on in a cool temperature there has been no difference. The flower-spikes do not rise more than 4 inches or 5 inches above the pot, and at their tops is a confused mass of flowers all in a heap. This dumpiness is possibly caused by the bulbs being insufficiently ripened.—J. C. C.

BEGONIAS FOR SUMMER AND AUTUMN.

THE latter part of summer is usually a time when there is a lack of subjects for greenhouse decoration that remain for a reasonable period in good condition, and that at the same time prove sufficiently distinct to merit recognition when there is a bounteous supply of flowers outside. Plants that succeed in the open air may be recommended for treatment inside if procurable out of season, but at a time when they are flowering naturally outside a repetition of similar subjects in the conservatory seems at least inappropriate and as much as possible to be avoided. There are many summer-flowering greenhouse plants that will not succeed outside, and if rather a large proportion of these is grown in preference to those which are hardier or more plentiful, an additional interest will be secured and the representatives of each department will be all the more enjoyable because in their proper place. It would be difficult to select a more popular or useful class of indoor plants to meet the requirements just indicated at the season named than Begonias. Reference is more particularly directed to the tuberous-rooted section, which can scarcely be said to succeed with certainty outside in all seasons and localities, and to a few species and beautiful hybrids that are tolerably well known, but not too widely cultivated. A mistake generally made with Begonias for summer use is the postponement of inserting cuttings or sowing seeds until late in spring. One of the main points is to get them in as early as it is possible to obtain growing cuttings, and keep the flower-buds removed until good plants are formed; then allow all the points to flower together. Where tuberous-rooted seedlings are to be raised no further delay should be allowed in sowing the seed if this is not already done. Roots from one to three years old are very much better than young seedlings, but a few raised annually help to increase the stock and replace those which get too old to be effective. Begonia seeds are amongst the smallest known, and they require careful attention to raise them successfully. Well-drained pots or pans of light soil should be prepared, watered, and allowed to dry a little. The seed should then be evenly distributed over the surface and covered with the least amount of soil, passed through a very fine sieve, or a pane of glass may be laid over the top of each pot, and kept shaded in a warm house until the seedlings appear. They should be pricked off when large enough to handle to prevent damping, which usually soon begins if the young plants are in any way crowded.

TUBERS will now require to be started by being shaken out of the old soil, potted in smaller pots, and placed in a little warmth. Any young shoots that are to spare from good varieties when beginning to grow form the best of cuttings, as it is always necessary for these to have a growing eye at the base from the first. *B. weltonensis* is one of the oldest and best hybrids for general decoration in summer and autumn. Young shoots from the base of old plants form the best cuttings, and the earlier they can be inserted the better. Old tops of the previous year's growth are useless, and should be thrown away. If propagation be deferred until late in spring, the chances are that, although good sized plants may be obtained, there will be a scarcity of flowers. *B. Knowsleyana* is an exceedingly useful variety with white flowers that are produced in the greatest profusion on early-struck plants, but they are not nearly so attractive when propagated late. If cuttings are inserted in small pots singly and grown on in a moderate temperature, fine bushy specimens may be secured to flower in 6-inch or 7-inch pots at the latter part of summer. *B.*

Knowsleyana is non-tuberous; the best cuttings are young shoots from a stock that has been previously cut back. Growing plants should be occasionally pinched at the point back to a joint containing a growth-bud, and this will at the same time prevent them from flowering until fully established. Equally attractive and of free-growing floriferous habit is *B. ascotensis*. If I remember rightly, a few years ago this was brought prominently into notice. It succeeds admirably in France in the open air, but with us it has never been satisfactory under outside treatment, as although the plants grow in favoured spots, the flowers are extremely poor and very inferior to those produced under glass. I recommend inserting three cuttings in each 2½-inch pot, keep them in a close frame until rooted, and then grow them on without check as one plant until they are in 9-inch pots. Treated in this way, specimens 3 feet high may be secured that will bear a profusion of rosy pink flowers throughout the summer and autumn. *B. semperflorens* and its varieties are easily raised from seed or cuttings which require a warm, shady position when growing. When in flower they may be placed in the greenhouse. *B. Dregi* is a pretty dwarf species with small white flowers. It has a fleshy root-stock and annual succulent stems, which form good cuttings when starting in spring. Its habit is very compact. *B. Evansiana* is a handsome tuberous-rooted species, which has flesh-coloured flowers. It grows to a height of 2 feet or 3 feet. It has reddish leaves and petioles, which tend to increase the attractiveness of the plant when in flower. Another well-known species that blooms almost continuously when planted out in a warm greenhouse is *B. fuchsoides*. It is rather singular that this plant never seems to succeed in pots. Occasionally a well-flowered specimen of it may be seen, but why all other Begonias grow and bloom in pots as well or better than they do anywhere, and this one does not, is at least somewhat strange. It is one of those subjects that seem specially fitted for planting out and training up a pillar in the conservatory, where it will attain a height of 12 feet or more if there is room. Its only cultural requirements are an occasional tying in of the branches rather loosely and plenty of water, with the slight shade usually afforded flowering plants in summer. In winter but little water should be given it, only just sufficient to keep the soil a little moist.

VARIETIES OF THE *B. REX* TYPE are admirable for planting amongst Ferns, and in any shady place in the greenhouse or cool fernery where plenty of moisture can be given to them. They seem to succeed here better than in more heat, and although grown principally for their ornamental leaves, their flowers are by no means unattractive. Greenhouse Begonias are nearly all of a vigorous-growing habit and require plenty of pot room, good soil, and copious supplies of water, particularly when growing, as they should be from this time until after midsummer. The foregoing is a selection recommended for their general good qualities and floriferous habit at a certain season, which has been already indicated.

J. G. K.

Daffodils for forcing.—Perhaps a few notes on the forcing of Scilly-grown bulbs may be interesting. They are a great gain in point of earliness. "C. R. S. D." questions if this is a desideratum, "Everyone to his taste," must be the answer. I would rather have a pure white *Polyanthus Narcissus* on my study table than the largest bouquet of *Chrysanthemums*. The bulbs which we potted, if put alongside those of the *Hollanders*, would not be the victors in regard to appearance. But the number of flowers on the bunch was as large on the average as any I have seen. Frequently there were thirteen flowers of *Jaune Saprême* in one cluster, and when the sheath was torn away, so that they could spread out, anything more pleasing in a small glass would be well-nigh impossible. This variety was the strongest and the most floriferous; others of the *Tazetta* family that were noteworthy were the *Scilly White*, *Queen*, *Victoria*, *Gloriosus*, *Grand*

Soleil, and *Lord Canning*. The *Orange Phoenix* also forces well. But my favourite amongst all that have flowered as yet is *La Favorite*. The cup is a bright canary and the perianth pure white. It is a most distinct, chaste, and delicate flower. When it becomes cheaper it will be extremely popular.—M. C.

5321.—**Scilla taurica.**—Allow me to inform "Ruby" that I had half a dozen bulbs of this *Squill* last autumn from the New Plant & Bulb Co., at Colchester, five of which are now very prettily in flower in a pot in my greenhouse. It is a true *Squill*, of rather a deeper shade of blue than *S. bifolia*, which it resembles in shape, but I think produces more flowers on the head than that well-known variety, one of my stems having as many as eleven flowers. It has also conspicuous anthers of a reddish brown colour, which form a pleasing contrast to the deep blue flower.—W. E. G.

Senecio Ghiesbreghtii.—This Mexican Composite is annually one of the most stately and attractive of greenhouse plants, which it generally is when in flower about this season, and it is also well worthy of culture for its use in sub-tropical gardening in summer, its leaves being deep green, nearly 18 inches in length, and about half as much in breadth. Its flowers, which are orange-yellow, are produced in large terminal heads about a foot across. After the first flowering three or four side growths are produced, but these seldom are so strong as the first central shoot. They, however, make good cuttings, and if rooted in a close frame in summer form fine-foliaged plants for decoration the following winter, but they must not be expected to flower the first year. If allowed to grow as a single stem and can be induced to bloom when about 3 feet high, the best results are attained, as at that height they are seen to the greatest advantage. Propagation may also be effected by root or stem cuttings. This plant is far too seldom seen. It is of easy culture, thriving in any rich loamy soil if well supplied with water. It succeeds in a cool house or placed outside in summer, and only requires to be kept from frost in winter until the flower-heads are seen, when removal to a slightly warmer position in the greenhouse hastens their growth and insures full development.—BETA.

EUCCHARIS DISEASE AND ITS TREATMENT

"J. S. W." asks, "Is this disease a fiction, or is there really a disease of the destructive nature so frequently heard of?" I am sorry to say I have suffered severely from it during the past two years. I commenced about six years ago with eighteen fine bulbs; with them I made up two specimen plants, putting nine bulbs in each pot (soil old loam and cow manure, with a liberal admixture of coarse sand) and placed them on a mild bottom-heat, giving during the growing season once a week weak guano water, and there they did remarkably well, throwing up fine spikes of bloom three times during the year, standing in the midst of luxuriant foliage—the admiration of all who saw them. After two years I divided them and made up four specimens, giving the same soil and treatment and meeting with similar success; at the same time I worked on the small bulbs by very liberal treatment, and at the end of four years I found myself in possession of six fine plants giving bloom nearly the year round. Now, two years ago last November I had two of the finest plants in bloom. My employers were told that they would stand well in the conservatory during their blooming period; to this I strongly objected, but in it they were placed. Again in the following February two more were also in flower and they had also to go in it, and so on until all the plants had passed through the conservatory; but I should say, previous to going in it they were taken and placed on the stage in the stove, and from there to an intermediate house; in each they passed some days so as to harden them and enable them to stand the temperature of the conservatory, which was kept as near as possible at 50°. After flowering they were brought back to their old quarters by degrees. But from that day they

got weaker and weaker, no matter what was done for them. I therefore decided to take them out and repot them. I found in each pot fine large bulbs and fairly well rooted, but on the roots I observed some rusty spots, which struck me as being not quite right. I therefore washed them well in clear warm water before potting them again, which done, I repotted them in old fibrous loam and old cow manure, with a liberal admixture of very coarse sand and fine charcoal, and replaced them on a mild bottom-heat, giving a moderate watering with tepid water. In the course of four or five weeks they commenced to throw up their flower-spikes as numerous as ever, but a considerable deal weaker, and the flowers were very small compared with the former ones and with scarcely a leaf on them.

After flowering I gave them a short rest, giving no water. I again tried to start them, but to no purpose; they only sent up here and there a leaf, and bearing on them the same rusty marks which I had previously noticed on the roots when I examined them on the first occasion and when I had them washed. I had in the meantime obtained a fresh lot of bulbs, which I had placed somewhat near the sick ones, and, to my surprise, I soon noticed signs of their going back also. I watched them closely and had them removed to another part of the house, but the rusty spots soon appeared on their leaves, and they quickly followed in the wake of the older ones.

Now, what to do I did not know. I had tried everything I could think of to promote healthy growth. I at last determined to shake them out once more and have another examination. On doing this, I found the roots, bulbs, and leaf-stems (leaves there were none) covered with the same rusty spots that I had observed on the roots previously. I was now satisfied that these spots were the cause of my failures. The question then was, what would arrest these spots, which had eaten some depth into the bulbs, and not destroy the bulbs outright. I resolved to wash them in warm water to clear all the soil off and make a close examination. After doing so, I made up the following mixture: Fir-tree oil, one-eighth of a pint to a gallon of warm rain water, adding about a pint of Tobacco water. Then I thoroughly washed roots, leaf-stems, and bulbs in it, using a scrubbing brush to the latter. I allowed them to lie on a bench about an hour before potting them this time. I used the following soil, viz.: loam, peat, and leaf-mould in equal parts, adding coarse sand freely. I placed three bulbs closely in a pot and put them back to their old quarters, giving a moderate watering with tepid water. One by one they quickly commenced to push up their leaves, and out of the whole I have but four showing any signs of weakness, and these I have removed. The rest are growing vigorously, and promise soon to be as fine as ever. I attribute the mischief to their being placed in the conservatory. I am convinced that the plan followed by "J. S. W." of growing them constantly in a warm stove is the only safe one, and one from which I will, if possible, never depart. I have seen them years ago grown on the cool resting system, but they did not long remain in health; in fact, in some places they died out entirely. I am also satisfied that the disease here stated is highly contagious. "J. S. W." will, I think, freely admit that Eucharis disease has been no fiction with me. P. W.

SHORT NOTES.—INDOOR.

Primula obconica.—This is a valuable acquisition, being easy to cultivate and nearly always in flower. A moist, shady house suits it exactly. In habit it closely resembles *P. cortusoides*. It produces umbels of beautiful pale lilac flowers, which when fading become nearly white. —J. C. C.

Hoya carnosa.—"W. J. T." says he has a plant of this Hoya in his greenhouse, in which the thermometer has been as low as 40°. We have at the present time two large plants in the conservatory, one on a wire balloon trellis and one trained to the wall between the front lights; it covers about 9 feet of trellis work, and flowered well last season; in fact, it has one flower open now, although the thermometer has been as low as the freezing point. —W. G., *Daylesford Hill, Chipping Norton.*

TREES AND SHRUBS.

LEBANON CEDARS IN ENGLAND.

IN *Woods and Forests* for October last (p. 667) I notice the remarks of "W. G." in discussing the merits of the Cedar of Lebanon, and his keen appreciation of its charm and grandeur at Pains Hill, Warwick Castle, and elsewhere. Of these grand old monarchs, which would of course be attractive anywhere, it may be said that both at Pains Hill and Warwick it so happens that in each case there is a main group, and also that each of these occupies positions peculiarly favourable to general effect. At Pains Hill the special trees, some five or six in number, stand well apart on a piece of fairly high table-land, forming a spacious open lawn near the old mansion. The trees at Warwick, apparently a somewhat younger group, grow close up, and cover the west end of the castle, standing on a steep grassy slope open to the pleasure ground on the west and overhanging the Avon on the south. The view of these vigorously healthy trees, seen from the pleasure ground, backed up by the castle with its round and ancient towers, is very effective; but the view as seen from the bridge, with the great flat table-like branches of the Cedars overhanging the river, together with the water-mill, forming part of the castle building and rising directly out of the stream, presents a feature of picturesque beauty exceedingly rare. It is also worthy of notice that here there is a remarkable group of some five or six Larch trees, growing on the same steep southerly bank close to the Avon. In speaking of an ordinary group of Larch trees one is apt to think of a set of tall branchless upright stems, with a greater or less tuft of small branches at the top. The Larches in this case cannot, however, be justly so described, for they are, or recently were, in perfect health and apparently coeval with the neighbouring group of Cedars. The outside trees of the group, standing, as they do, well apart, are furnished with branches from the ground upwards, their huge limbs here and there resting on the ground. It must, nevertheless, be admitted that handsome though it be when fully developed, the Larch, whether in youth or in age, can never compare with the Cedar, either in stateliness of growth or picturesqueness of aspect. Yet such a group of Larches as the one in question—a mountain-loving tree thus thriving in a stifling southern valley—is an object of greater rarity than would be a like number of Cedars in a similar situation. Looked at as a tree, a rugged Cedar maimed and slightly past its best will always be regarded as a king amongst trees. Entertaining, therefore, this high opinion of the Lebanon Cedar as an ornamental tree, I confess to experiencing a little startled interest in the following quotation: "Where are the Cedars that planters now-a-days mean to bequeath to generations yet to come? One may travel throughout the length and breadth of these islands and meet with very few young Cedars of Lebanon."

In consequence of this expressed apprehension regarding this Cedar, and partly also with a view to refresh my own memory, it occurred to me that the inquiry being one of some public interest, it might throw some light on the debatable question if, within the scope of my own individual operations, I made inquiry in quarters where I had been formerly employed as to the outcome of the advice which I had myself often given—that is, the desirableness of making much freer use of this Cedar as an ornamental tree, by planting it in groups of greater or less extent with occasional single trees in parks and woodlands as well as in grounds nearer home.

In thus frequently pressing my plea on behalf of the Lebanon Cedar, I cannot say that I never piped to deaf ears, or that my advice and influence always carried with it convincing power and ready acquiescence. I am, nevertheless, thankful to have been the humble instrument of introducing into a few widely different localities, as the following statements will show, no inconsiderable

number of this magnificent tree, which in future years will greatly enhance the grandeur and beauty of the scenery of which they will form a part. As the result of my enquiry, though a very limited one, I have been kindly favoured with the following replies, and, bearing in mind that this is but one amongst many efforts of a similar kind carried on by those who, like myself, have long been occupied in the very pleasant operation of tree planting, it does, therefore, seem to me, looking at the matter as a whole, that there is but small risk of failure either of heirs or claimants to the kingly honours of the present generation of Cedars. I may remark here that I have throughout in speaking of this Cedar disregarded the botanical distinction between the Lebanon and the Atlantic, accepting both as alike good. To the following correspondence I have added such remarks as may help to convey some notion of the variable conditions of soil and climate in which the Cedars in question are growing, and with a view also of drawing attention to the causes which have led to full success in some cases and comparative failure in others.

In the following list is enumerated the twelve places at which I have made recent inquiries respecting the Cedars I have planted, and the number of trees planted at each place:—

	No.
1 The Heath	24
2 Eynsham Hall	120
3 Possingworth	210
4 Brambletye	50
5 Impney	12
6 Wadhurst Park	150
7 Canford Manor	15
8 Hasselbury	10
9 Rousdon	50
10 Harrow Weald Park	24
11 Park Place	236
12 Ragley Hall	100
	1216

Appended are extracts from letters I have received on the subject:—

"The Heath, Leighton Buzzard.

"We have here twenty-four Cedars of Lebanon planted in 1865. The tallest is now 32 feet, and the average height of the others is about 25 feet. —WILLIAM MARSDON, gardener."

The natural subsoil consists of what is known here as the Bedford sand, covered with a varying depth of peat and a surface growth of heather.

"Eynsham Hall, near Witney, Oxon.

"Enclosed are replies to the queries you put regarding the Cedars planted here under your direction. There are 120 on the estate planted in the year 1867. The tallest is about 34 feet, and girths at 3 feet from the ground 3 feet 3 inches. The average height is about 30 feet, and average girth at 3 feet from the ground is 2 feet 8 inches. All the plants are looking well and in vigorous growth, especially around the lake and in the pinetum near the north lodge. The soil is good, moderately sheltered, and surrounded by wooded heights. —J. MASON."

"Possingworth Manor, Cross-in-Hand.

"On the Waldron Drive there are fifty-nine Cedars; the tallest is 36 feet, and girths at 5 feet from the ground 3 feet 6 inches. The average height of the rest is 33 feet. The above were planted in 1865. On the public road from the Uckfield Lodge to the Cross-in-Hand Lodge there are eighty Cedars of the average height of 26 feet, and on the same road, but less thriving, owing to the shade of some old Beech trees, there are twenty-six more. In continuation right and left of the same road, extending from the Cross-in-Hand Lodge and upwards through Baker's Common, there are forty-five more Cedars of the average height of 20 feet. These three latter lots were planted in 1869, making in all 210. —ALEX. REID, gardener."

Possingworth occupies an elevated site, open to the south and south-west, but well sheltered on the north and east by extensive Fir woods with mixed plantations of younger growth on the west. The subsoil of the higher portions of the park where the Cedars are growing varies in parts from a good sound loam to the less fertile Sussex sand-

stone gravel, covered with a peaty soil of unequal depth.

"Brambletye, East Grinstead."

"The number of Cedars planted was fifty, consisting of *Cedrus atlantica*. Some have not succeeded and others have got over-grown. Those that were not crowded have done fairly well. Ten of the tallest are from 25 feet to 30 feet, and the largest girth near the ground is 3 feet.—SAML. JENKS, gardener."

Brambletye is situated on an elevated southern spur of one of the Sussex hills, and much exposed to the south and west. The Cedars were planted in 1868.

"Impney, Droitwich."

"There were twelve Cedars planted here in 1875. The four tallest are now 16 feet in height, and as much across the branches. The rest are from 6 feet and upwards. The latter were planted in very unfavourable situations, and all the plants were small.—RICHD. PARKER, gardener."

"Wadhurst Park, Hanchurst."

"The number of Cedars planted here in 1876 was 150. Part of these are *C. atlantica*. In the matter of growth I do not see much difference between the two kinds. The tallest is now 19 feet with a girth stem 1 foot from the ground of 19 inches. The average height of the rest is 16 feet.—G. BUDD, Gardener."

The situation is an elevated ridge on one of the Sussex hills and much exposed. The soil in fairly good and was deeply trenched.

"Canford Manor, Wimborne."

"The Cedars planted in 1875 by your directions on the hill have done very well, but so far they do not make much show, as they have not yet had time to grow to any great size. All evergreen trees are sure to do well in this place, as the soil is so much in their favour. I think the number of Cedars planted was about 150; average height about 15 feet.—WIMBORNE."

The hill in question is not very elevated; the soil is good, and the surroundings well wooded.

"Hassobury, Bishop's Stortford."

"As regards the Cedars here, you will remember the year they were planted (1876); they have certainly done very well. There are twelve of the average height of 28 feet, and the girth at 1 foot from the ground is 3 feet 6 inches, with a branch extension of 20 feet. In the park there are eighty-five of the average height of 27 feet, and the girth near the ground averages about 30 inches. The tallest tree is 29 feet."

The situation of Hassobury is of moderate elevation and the soil a deep gravelly loam.

"Rousdon, Lyme Regis."

"There are about twenty Cedars right and left of the approach road from the north lodge, ranging from 6 feet to 13 feet in height, and from 10 inches to 21 inches in girth. The best Cedars are those which get most shelter; where they are exposed they have failed. There are a good few about the place.—J. OLLERHEAD, Gardener."

I believe fifty was the actual number planted, and the period of planting was 1875. The Rousdon mansion occupies a position in the park about three-quarters of a mile from the shore and about half a mile from the edge of a precipitous sea cliff 500 feet above the sea level. It will, therefore, be no surprise that at this elevation and in parts of the park still higher certain of the Cedars less specially protected from the fierce sea-side winds should have seriously failed. Few trees are good sea-side trees, and least of all the Cedar of Lebanon in a young state.

"Harrow Weald Park, Stanmore."

"I have been looking over my small property and counted about twenty-four Cedars, which were planted twelve or fourteen years ago, half of Cedar of Lebanon and half Atlas Cedar. The largest is now about 25 feet high and 17 feet through the lower branches, and 33 inches in girth. These were planted in a light gravelly loam. Those which were planted in our stiff clay have not grown so rapidly, and are not higher than 16 feet to 18 feet, but are strong healthy trees. As regards commercial value,

I never heard of English Cedar being appreciated, and a couple of specimen logs from Ireland proved to be light and porous, more like Poplar or Horse Chestnut. There are, however, two sorts imported which are of considerable value. One is the hard pencil Cedar from Florida, which never grows to any size without being defective or rotten at the heart. A few logs will scent a whole warehouse, and from this cause botanists have no doubt termed it "odorata." The other sort (probably the virginiana) grows in Honduras, Mexico, and Cuba,

The situation of Park Place is elevated, overlooking the river Thames on the west, and abundantly wooded. The subsoil is chalk, covered with a variable depth of strong loam. The more recent planting of the 226 Cedars has been continued at intervals over a series of twelve or fifteen years, and extends over an area of several hundred acres of park and pleasure ground. On this ancient site, once the residence of Frederick, Prince of Wales, there are a considerable number of Cedars of various ages, from 50 to 100 years



An old Tamarisk in the desert.

and is of a much softer texture and of a faint reddish tint. The logs are chiefly 12 inches to 18 inches in the square, and generally fairly sound. It is used chiefly in the manufacture of cigar boxes, sometimes for furniture, and also for rowing and wager boats, being from ten to twenty per cent. lighter than Mahogany. The hot countries named seem to produce better Cedar wood than is grown in our cold latitude.—ALEXANDER SIM."

"Park Place, near Henley-on-Thames."

"I have just completed the list of Cedars planted here during the time Mr. Noble has been at Park Place, and the exact number is 226. There are two dozen more to be planted.—GEORGE STANTON, Gardener."

old, with a few magnificent examples of still greater age.

"Ragley Hall, Alcester."

"Respecting the Cedars, I believe there were 100 planted on Deerings Hill—that is the place you mention.* Out of this number there are seventy existing, but they do not exceed 9 feet in height. The Larch and Spruce in the same plantation are now 12 feet to 20 feet in height. There were many more planted, but they make small progress. Planted in 1876.—CHARLES SLADE, Gardener."

Looking at the favourable surroundings of Ragley, this is a disappointing report, for if suc-

* A new gardener has come since.

less might anywhere have been reckoned upon one would have said, "Surely this is the place." The mansion is situated on the apex of a green knoll, or rather hill, surrounded by broad acres of rich pasture and woodland, where both trees and Grass seem to luxuriate in more than ordinary health and vigour, and Deering's Hill forms part of this land of promise. Seeing there is no apparent natural cause to account for this unsatisfactory growth of the Cedar, it is very likely, if carefully sought for, to be found amongst the many similar causes which ordinary skill and care are supposed to be competent to meet. No cause, so far as I know, is so certainly fatal to successful planting as (1) the planting of small ill-rooted plants, (2) exposing the roots of plants to frosty winds, and (3) neglecting to thin and remove the shelter plants as the Cedars or other special plants grow up and require additional room. To expose plantations of young Cedars or similar plants to either of the above causes will never fail to prove fatal to a large percentage of young trees, besides leaving those that survive weakened in constitution and their future progress greatly retarded.

In the case of Nos. 1 and 2 a very insidious snare is a persistent attendant on these two operations, not always alike fatal, but with the greatest care always more or less present; that is when work of this kind is undertaken, the young plants are ordered from some near or distant nursery ground. The roots may, or may not, escape the common peril of exposure to frost and dry frosty winds while being lifted and sent home. In due time, however, all will be well and carefully planted, and whether any or all have escaped or fatally suffered from the above causes, no evidence either for or against this possible result will attract notice at present, for during the cold damp days of winter all recently planted evergreen trees like Cedars, whether already seriously injured by frost or not, generally maintain a green and life-like aspect up to the return of the warm growing days of April and May, when Nature will no longer connive at the deception. It is at this critical period, and not often before, that the mischievous effects of exposing the bare roots of the young and tender plants during transit and planting time becomes so fatally manifest, and followed of course by the usual and natural consequences, that one by one a greater or less percentage of the frost-bitten plants wither and die. The exact value and direct connection between cause and effect in cases like the above are problems, the true solution of which are not always willingly faced by those immediately concerned, and rather than admit that the causes and the effects are alike preventable by ordinary precautions, I have myself listened to the owner stoutly maintaining that the cause of failure was wholly due to the soil and climate of that particular locality.

Thinking it might add some additional interest to know what was being done amongst nurserymen in this matter, I made inquiry, and Messrs. Waterer, of the American Nursery, Bagshot, say: "We have searched back twenty years, and find that during that time we have sold 2500 Cedars from 2½ feet to 5 feet and upwards." Looking at the output of this one nursery, and then reckoning up the vast number of considerable establishments of the same kind scattered over the three kingdoms, all rearing and selling a greater or less number of the Cedar of Lebanon, it would seem that a good time is coming, and that the admirers of this special tree need not hang their harps on the Willow any longer. ROBERT MARNOCK.

The Tamarisk.—The Tamarisk as we see it in this country, slender and elegant, never attains a size much beyond that of an ordinary shrub, but in countries warmer, drier, and more favourable to its growth it acquires large dimensions. In the hot plains of Barbary and arid parts of North Africa the common French Tamarisk forms an important portion of the scanty vegetation, and aged examples of it are often highly picturesque, and being evergreen afford grateful shade. Fifty feet is the common height of old trees of this Tamarisk when favourably situated in these

warm regions; whereas in this country it rarely exceeds 20 feet or 25 feet. The value of the Tamarisk as a seaside shrub is well known, and the profusion of pinkish flowers in autumn, associated with charming bright green leaves, renders it highly ornamental.

Variegated Snowberry.—Although this is not a particularly striking plant, I find that its fine twiggy growth is liked in a cut state. It has a very light appearance when skilfully set up, and in many respects is quite distinct from that of any other deciduous shrub. The leaves, which are small, are margined with a light golden variegation. The plant grows in the form of a low bush, rarely exceeding 4 feet in height. It should be planted in a sunny position.—J. C. C.

Lonicera and Chamæcerasus.—Having heard a shrub called Chamæcerasus much praised as a winter flowerer, I ordered a plant from a well-known and most trustworthy nurseryman. I received a beautiful plant, which has flowered, and which proves to be *Lonicera fragrantissima*. This was astonishing, for I had never before had to complain of plants from that source, but I supposed that a mistake had for once been made. It was still more astonishing to hear to-day that Chamæcerasus is a synonym for *Lonicera*. So I write this to warn all who, like myself, have abundance of *Lonicera* not to purchase Chamæcerasus. Where did the name Chamæcerasus come from? It is not in the "Genera Plantarum."—G. H. WOLLASTON, Clifton.

* * * Chamæcerasus is an obsolete generic name, first applied by Medicus to *Lonicera tatarica*. The name is still retained by some botanists as a sub-genus of *Lonicera*, the species comprising which include *L. tatarica*, *L. Standishi*, *L. fragrantissima*, and others. As it does not occur in the "Genera Plantarum," it may be regarded as of no value, even as a sub-genus, and we think that in gardens and nurseries it certainly ought to be suppressed.—Ed.

Choisya ternata.—In Messrs. Veitch's nursery at Exeter this plant grows in the open quarters most luxuriantly. I saw large bushes of it there 3 feet or more in height and as many yards in circumference with foliage of the darkest green. A notable feature of plants of it out-of-doors is that they are constantly sending up young shoots from the crown, rendering them thick and bushy, while all pot-grown plants of it that I have seen are very poor compared with those whose roots are not so much confined. Seeing how fragrant the flowers of this *Choisya* are, I think it deserves to be tried more generally out-of-doors than it hitherto has been. We have not many evergreen plants of such handsome growth and foliage that smell so sweetly, and that are so well suited for furnishing cut flowers, and what further enhances its value is the fact that the blossoms are nearly white and produced very freely on the points of the young shoots. No doubt when covering low warm walls it would stand in all the home and western counties with but little protection. Half-ripened shoots of it strike readily towards the end of the summer. As to soil, it is in no way particular, provided it is fairly rich. If grown in a poor soil, no doubt the growth would be weak and the foliage a greenish yellow instead of dark green.—J. C. C.

Desodars as ornamental trees.—It seems to me that those who have lived to see trees of this Cedar planted forty years ago grow up must have long felt a certain amount of disappointment at their behaviour. They are rarely to be found in a flourishing condition after they have attained a height of 30 feet. There may be a few instances, perhaps, where the soil is thoroughly good and deep and the position sheltered in which they are satisfactory, but, as generally found, they have a lean, neglected sort of appearance, which clearly indicates that the planter did not make a happy selection when he chose the Deodar for planting in all kinds of soils and situations. At the selection, however, one can hardly feel surprised, seeing how promising the trees are in a young state. In many cases they keep well

furnished until they reach a height of 20 feet, but soon after that the main branches become thin and straggling, and the wind twists them out of their proper position; the result is then an undue exposure of the bole—more than is good for the tree. Another noteworthy feature belonging to these unsatisfactory specimens is the thinness of the topmost branches. These are in many cases so few in number as to be out of all proportion to those near the bottom, and especially disproportionate to what the same tree was in its young state. Plants raised from seed are not, however, always fixed in character, and this may be the case with the Deodar, for one may occasionally meet with a specimen perfect in outline from top to bottom, and if this character could always be secured there would be little cause for complaint.—J. C. C.

THE GENUS LILIUM.

If M. de Hoop's "Table Alphabétique" of Lilies is scientific nomenclature, then I think we had better have English names pure and simple, because an English muddle would be better than a polyglot muddle like this, which reproduces all the obsolete names of pre-Linnean authors, all the vernacular Japanese and Indian names that could be scraped together, and all the forgotten and useless synonyms which can be found in horticultural catalogues. The author does not appear to have been aware of the existence of my monograph until he had almost finished his list, and in consequence has repeated all the old mistakes and confusions which Mr. Baker and I had tried to clear up, and has failed to refer to many of the most important facts which I had brought forward without a single original observation of his own. As my book has been repeatedly noticed in both Belgian and French horticultural and botanical journals, there can be no excuse for this, and more than one copy must have been in Ghent during the time he was writing. I am not aware that any really new species of Lilies have been discovered since 1880, though M. Boissier, in the fifth vol. of "Flora Orientalis," has included some which I considered doubtful species. These, however, are not mentioned by M. de Hoop. I must, therefore, repeat that the work is absolutely valueless for either botanical or horticultural purposes.—H. J. ELWES.

— I was glad to see such an exhaustive list of Lily names and synonyms as that given in last week's GARDEN. It will prove invaluable to amateurs who grow collections of these showy flowers, and bulb dealers must also find it useful; indeed, such a list arranged alphabetically has long been a desideratum. Now that our Lily correspondents are so cosmopolitan, some such list was a downright necessity, for I find that the specific names of Liliaceae which English botanists pronounce to be correct are quite different on the Continent and in America, where Lily culture is almost as advanced as in England. The great fault of all the authoritative works on Lilies published of late years in this country is the want of some such alphabetical arrangement of names. Take, for instance, Mr. Baker's Linnean monograph, and one has to wade through a jumbled list of synonyms printed in small type, tedious in the extreme to follow. Again, take Dr. Wallace's "Notes on Lilies," and one has to turn to three or four different pages before one can be satisfied about some particular name. To many Mr. Elwes' monograph is out of the question, seeing that the price is prohibitive, and even in that reputedly exhaustive work one cannot find such vernacular names as M. de Hoop has given in his carefully compiled list. It is an important gain to have an alphabetical list of native Japanese names, as bulbs are often—indeed, I may say generally—imported from Japan bearing only native names. The third name, for instance, in M. de Hoop's list is Akasim-juri, which, I am told, is the Japanese name for the little *L. Parthenocion*, and is synonymous with *Juri-lis*, the Virgin's Lily. Now, had I received this name with an imported bulb, I should have had to wait until it flowered before I could have named it unless I knew it by the bulb.

These synonyms given for the multitudinous list of garden varieties of popular species will also be found to be valuable; for what Barr, of London, would call by one name, Krelage, of Haarlem, would call by another. Valuable, however, as M. de Hoop's list is, I do not mean to say that it is absolutely perfect. There is much that the translator might have suppressed, and he might have rendered it more intelligible had he not abbreviated the authors' names and likewise those of their books. But take it as it is, I look upon it as the most complete list of Lily names in the English language, and the compiler, translator, and, as I have said, THE GARDEN have all rendered signal service to Lily growers in thus giving them such a handy reference list. Might I suggest its publication in pamphlet form?—
AMATEUR.

WORK DONE IN WEEK ENDING FEB. 24, 1885.

FEBRUARY 18.

THE first really sunny day this year, and of which we took advantage to hasten on our forcing by closing up early vinery, early Peach house, and the fruiting Pine stove whilst the sun was in full power, syringing being done to walls and floors at the same time. Our rule in Peach forcing is to proceed slowly till the fruit has set; afterwards we close up on sunny days, just the same as are the vineries, but the artificial night temperature we keep from 8° to 10° degrees lower than the vineries. I mention the closing up of Peach houses in full sunshine because the practice is by no means general; but having now adopted the practice for several years with the best results, I can confidently recommend it as a preventive of fruit failing to swell when about the size of Peas; and, strange as it may seem, as a preventive of green fly also, for the shoots grow so rapidly that they outrun the fly, or if it does get a footing the shoots and fruits so rapidly attain strength, that fumigation may be done with safety before the fly gets the mastery. Figs are subjected to just the same treatment throughout their earlier stages of growth, and these are syringed overhead quite up to the ripening stage. Top dressed Peaches in pots with fresh loam, wood ashes, and cow manure; they are half plunged in the border of second Peach house and placed in position where the permanent trees do not cover the trellis. Repotted part of Gardenias and top-dressed others. We grow them in a heated pit, the pots being plunged in leaves, and there is a slight bottom heat from a pipe that runs through for heating adjoining Pine pits, and as they continue flowering for at least eight months out of the twelve it may safely be said that the treatment is suitable. Present temperature is 60° by night to 70° by day. Outside work has been opening drains at side of walks, the heavy rains having pointed out the weak places. Turning gravel on walks, putting on a sprinkling of fine gravel, and rolling them till firm. Shrub pruning and trenching.

FEBRUARY 19.

Another splendid day; got in soil for a new Vine border. It is entirely an inside one; either all in or all out, is my rule; half-and-half I do not tolerate on the principle of "once bit twice shy," and though it is some twelve years since I was bitten by the "shanking," to extinction of fruit, it is not forgotten or the state of the border either, one part—out—being slush, the inside being pure dust. From that time I have repudiated orthodoxy in Vine border forming, and heterodoxy—out or in entirely—has answered thoroughly, and my preference of the two will be seen by saying that we have five vineries with the borders inside and three with outside ones. Put in cuttings of Pelargonium Henri Jacoby. This is one of the best dark crimson bedders we have, and I am told that it is equally valuable for winter decoration of the conservatory. Put in more cuttings of Dahlias, Lobelias, and Marguerites; completed potting and plunging of Gardenias; planted out Caulidowers. Completed the dressing of gravel walks in kitchen garden, and began to

cut the remainder of Grass verges on pleasure ground. The ground getting drier, made another attempt to finish division and replanting of herbaceous plants.

FEBRUARY 20.

A change in the weather for the worse; dull and cold; 8° of frost and a biting north-easterly wind caused us to change our work entirely, shrub pruning and trenching being again in the ascendant; cleaned up prunings, made up rubbish heap fires, sifted leaf soil, and carting out manure, and renewing the linings to vegetable frames being other outside duties to-day. Disbudded early Peaches the second time. There is a little green fly which heavy syringing will dislodge, or at any rate check till the trees are sufficiently advanced to be fumigated with safety. Tied out and stopped back shoots of early Vines and disbudded early Muscats. Strawberries are ripening off, and have more air given them, and the atmospheric moisture reduced. Those swelling are given manure water at alternate waterings, and there being traces of spider, not unusual at this early season, owing to excessive fire-heat, the plants are well syringed once a day. Potted off a few of the earlier struck Chrysanthemums. The others are placed in a cold pit till they are better rooted. Watered with warm water the inside border of an intermediate vinery of mixed varieties of Grapes, Mrs. Pearson, Madresfield Court, Golden Queen, White Tokay, Gros Maroc, Alicante, White Nice, and Gros Colmar being amongst the number. The heat is now turned on, and the night temperature will be 55°, with a rise of 10° or 15° by day, and the Vines will be well syringed at 9 a.m. and at 2 p.m. The border is thickly mulched with long stable litter, and the fumes arising therefrom are detrimental to insect life, and I think beneficial to the Vines, as I have observed a marked difference in the vigour and colour of foliage where the atmosphere has been thus charged with ammonia from that of Vines not so treated. It must not, however, be understood that I consider this essential, or indeed desirable, except within reasonable limits, and by no means should it be used when the Vines are coming into flower, or when the fruit is ripening; but at all other stages of growth, if used with discretion, it will prove beneficial.

FEBRUARY 21.

Another sharp frost in the early morning, but otherwise a brilliant day, being first-rate for forcing operations, though ventilation had to be done very carefully owing to the prevalence of a biting wind. Picked off the surplus blossoms from Strawberries; gathered first ripe fruit; put other plants in their place—Pine stove self—and drafted others from pits into Strawberry house. Cleaned gravel and stone-work in plant stove, and re-arranged plants, and shifted bedding plants—Fuchsias, Abutilons, &c.—out of early vineries to other and cooler houses. Coleus, Iresine, and Alternantheras, not minding shade and liking plenty of heat, have been arranged to look their best in place of the plants shifted. Watered Pines, Fig house, and early Peach house border with warm water. Cleaning up and washing out of all houses, and clearing away rubbishy mats and litter of every description from the frame ground. Work out of doors has been much the same as yesterday; also pruned a large plant of Wistaria sinensis and nailed and tied the same. Put more Seakale into force, also Asparagus; earthed up Potatoes in frames; cleared away some more Broccoli stumps and bent leaves over the beds ready for use to protect them from frost. Part of the ground cropped with Celery being required to be got ready for other crops, it has been lifted with balls of earth attached and heeled in under a north wall. We have found this an excellent plan to prevent early spring seeding, and consequently a good way of retarding with a view of continuing the supply for the longest period.

FEBRUARY 23.

Very much milder, though dull. Washed lights and all wood-work of Lady Downes' vinery and top-dressed the borders. The old mulching and

loose top-soil being first raked and swept off. The new soil consists of good yellow loam with a sprinkling of bones, Beeson's manure, wood ashes, and chalk, broken small. A mulching of long litter over the whole keeps the soil in a moist condition, looks neat, and, what is a great consideration to us, plants can be stood on it without soil adhering to the pots or the drainage getting stopped up. Ever since the Grapes were cut and bottled the lights have been off the house, so that the borders have had the benefit of the late heavy rains, but now that they are sufficiently wet the lights will be put on, but the house will be kept cool as possible for another three or four weeks. Untied Lapageria alba from trellis; thrips has punished it somewhat, and to get rid of the pest, the entire plant has been well sponged with a strong solution of Gishurst and retied to trellis. It is planted out, the soil being peat and loam in equal parts. The drainage being good, it is given abundance of water, and occasionally clear manure water, and that it relishes the food given is shown by the free and long-continued time of flowering. Made another start at herbaceous borders, planted a few and trenched ground for others. Preparing stations for planting a few Conifers, the new varieties added being Abies concolor, which may be described as a rich glaucous coloured Abies lasiocarpa or Lowi, as it is sometimes called. Abies polita is another new kind to us, and this I describe as an erect-branching type of Abies Morinda. The golden Lawson Cypress and the golden variegated Thuja borealis and Retinospora filifera are other additions that are being made to our collection. The soil of our pinetum being peaty loam, deep trenching and rotted leaf-soil, as manure, is all the preparation required. Edging turf verges, rolling walks and part of new laid turf.

FEBRUARY 24.

Mild and sunny; a busy day. Completed planting of herbaceous perennials, and mulched borders with Cocoa fibre refuse; planted a few Conifers, and prepared ground for others. Began to move shrubs to their summer quarters that have done duty in the parterre flower beds during the winter. They are planted in the reserve garden in lines of colour, with here and there as standard plants to break the otherwise formal or even surface. In this way we get a very pretty summer effect with plants that are specially intended for winter furnishing. Planted out another batch of Melons and sowed more; also Cucumbers for frame planting. Potted from the cutting bed in propagating pit sundry kinds of soft-wooded bedding plants and put other cuttings in. Sowed seeds of single Dahlias, variegated Maize, and Ricinus; the latter are sown singly in 3-inch pots, as they do not bear transplantation from the seed pans without serious injury. Looked over Grapes, cut out bad berries, and aired the house by turning on heat and throwing door and ventilators wide open. Put in the forcing pit a few more Roses, Spiraeas, Lily of the Valley, Pinks, and Deutzias. Strawberry plants that have fruited have been put in a cold frame; they are preserved with a view of planting them out in the open garden, where they will fruit freely in early autumn. HANTS.

FRUITS UNDER GLASS.

PEACHES—A temperature ranging from 45° to 50° at night and from 50° to 56° by day, with a chink of air and moderate syringing, must still be kept up in the succession house; but before the first flower opens the house should be moderately fumigated, not less than twice, to destroy every vestige of green fly that may happen to be in it.

MELONS.—On the 7th we turned out a dozen Victory of Bath Melon plants for fruiting over the path in a Pine stove. The situation being inconvenient for plunging large pots, a continuous trough 12 inches in width and the same in depth, placed in the plunging material and close to the pipes has been furnished with mounds or hills 2 feet from point to point. One plant occupies each hill, the apex of which is level with the top of the trough. Heat and moisture being abundant the roots will soon find their way through the soil,

when the remainder of the trough will be filled up with compost consisting of rather stiff calcareous loam and old lime rubble, in a somewhat dry state to admit of its being firmly rammed without becoming adhesive. Each plant trained to a stick, will travel 3 feet to the trellis, all laterals being pinched at the first leaf as growth proceeds. They will then be trained horizontally over the path, well out of head way, where, after being stopped, they will show and set plenty of fruit in a part of the house that could not in any other way be utilised. The pit on the north side of the passage being devoted to winter Cucumbers, the slight shade from the leafy stems of the Melons will be beneficial rather than otherwise in protecting the tender fruit from scalding after the house has been syringed on bright mornings. In due course the winter Cucumbers give way to a batch of Eastnor Castle Melons in pots, and the early Victory of Bath plants are succeeded by a set of Read's Scarlet Flesh and Blenheim Orange, two varieties which revel in the great heat, and invariably attain their best flavour when ripened up in the brightest part of the house. If there is any truth in the adage that example is better than precept, the above remarks may be of use to some who, having limited space, wish to make the most of it. Where Melon houses exist, and several properly arranged compartments can be devoted to plants in different stages of growth, the cultivator is not called upon to tax his ingenuity, as he has all the elements and materials at his command. On the other hand he does not experience one of the gardener's greatest pleasures—that of contending with and overcoming difficulties.

PINES.—*Early fruiters.*—If the small section selected in January for giving an early supply of fruit do not show signs of growth, they will most likely have started into fruit under the treatment recommended in a preceding paper. Such being the case it will neither be wise nor necessary to increase the bottom heat, as there exists but little doubt that a temperature ranging from 80° to 85° is quite high enough for the roots of plants after they have started into fruit, particularly at this early date, when daylight is more than counterbalanced by darkness, and fire-heat plays such an important part in keeping up the air temperature of the house. If, as was suggested, the plants, were plunged lightly and the bottom heat remains steady, the plunging material may be placed a little closer to the pots to obviate the necessity for frequent waterings, an operation which requires great care and judgment, as may be easily imagined, when we consider the nature of the plant and the conditions under which it is grown. Atmospheric moisture must, however, be freely produced by damping the floors and walls, and by syringing the surface of the bed, provided this can be done without filling the axils of the leaves with water, a condition which will most likely induce the production of a great number of suckers to the detriment of the fruit. Let the temperature of the house range about 70° at night, and run down the blinds, where they are provided, to economise fire-heat; raise it to 80° by day with a chink of air, and close in time to insure a few degrees more from solar heat, with a corresponding amount of moisture.

PINES.—*Fruiting plants.*—The general stock, including Queens, Cayennes, and other kinds from which the early fruiters were selected, may now be examined, top-dressed, and re-arranged preparatory to starting into growth or fruit, as the case may be; but as many of them will make a growth before they throw up, the beds may be turned, if very dry, or, better still, made firm and level without disturbance, new tan or leaves being added to the surface as the work of replunging is proceeded with. By adopting this mode of procedure the danger of over-heating will be reduced to a minimum, as the application of water to the roots, and perhaps to the bed also, combined with solar influence, which may now be looked for, will most likely secure a bottom-heat quite equal to the requirements of pot-bound plants.

Water must be given gradually and sparingly at first, and under syringing and atmospheric

moisture will, as a matter of course, be regulated by the state of the weather and the amount of dry fire-heat required to keep up the proper degree of warmth, which should be steadily raised to 70° at night and 80° by day. Overhead syringing is not advisable until after the fruit is up and out of flower, as it tends to the production of deformed fruit with large crowns and a number of suckers—at all times objectionable, as the strongest Queens should not be allowed to carry more than two.

Successions.—These will now be in a fit state for a general turn over. Pots, crocks, and compost being ready for use, see that the balls of the plants are properly watered, as no after watering will correct a ball that is dry when it is transferred to a larger pot. Divest the balls of old crocks and inert soil, loosen the coiling roots, and pot firmly in the different sizes decided upon. Cleanse the pits, renovate the beds, and replunge to the rims. Avoid over-crowding, as these plants will have a long and active season before them. Defer watering until the roots have taken to the soil, but dew the plants lightly and damp the walls on fine days to secure a moderate degree of atmospheric moisture.

PLUMS.—These, like Cherries, can be grown in pots or planted out in inside borders, and form such beautiful objects when in flower that it is surprising they are not more frequently met with as decorative trees in the conservatory, independently of their great value when they add their handsome and delicious fruit to the dessert. None but the choice kinds, including the Gages, Jefferson, Kirke's, and Golden Drop, should have a place under glass, and it is astonishing how quickly they grow into fruitful trees, so fruitful, indeed, that the blossom buds soon require annual thinning to prevent them from becoming crowded. Where a Plum house does not exist, these and Cherries can be grown together until the Cherries begin to change colour, when the latter require a drier atmosphere than is good for the Plums; hence the importance of keeping each kind together, or, better still, having the house divided with a glass partition, otherwise atmospheric moisture alone will cause the ripening Cherries to crack. Pyramidal trees of all the best kinds can now be obtained well furnished with flower-buds, either established in pots or from the open ground, at a very cheap rate, and with the exception of Golden Drop, they can be forced and cleared out of the house in time for the introduction of Lilies, and a host of things that are improved by protection from heavy rain and autumn frosts. Where that finest of all Plums, Golden Drop, is appreciated, I would suggest planting good trees in confined borders and training them under a trellis 12 inches from the glass, a position in which the fruit can be protected from birds and insects until it becomes a sweetmeat-possessing quality rarely, if ever, met with in fruit from open walls.

Forcing.—When the uninitiated are told a thing is forced, they at once arrive at the conclusion that it has been brought to perfection in a hot-house considerably warmer than the external atmosphere; but this is not the case with any of the stone fruits grown in this country, particularly the Plum and the Cherry. All they require is the maintenance of a temperature equal to the mean of our early spring and summer, the periods at which these fruits set, swell, and ripen their fruit out-of-doors. Therefore, if we wish to start the Plum in January, we take 40° as the minimum and 50° as the maximum through the early stages. We give a continuous supply of air, and never have recourse to fire heat when these temperatures can be maintained without it. We syringe up to the time of flowering, when a dry bracing atmosphere is essential to fertilisation: resume syringing when the fruit is set, and shut up for a short time on fine afternoons to raise the temperature to 60°. Trees under glass require liberal supplies of water, otherwise they cast their fruit, and they derive great benefit from good mulchings and the use of stimulents after the stoning process is over.

Insects.—The Plum being subject to aphis, red spider, and a small grub, which rolls himself up in the young leaves, great care should be devoted to winter cleansing of the trees and houses with soap and water, or a solution of Gishurst, 4 ounces to the gallon of water. After the trees are started into growth the appearance of the first green fly should be the signal for smoking, and although they may appear quite free, the house should be well fumigated just before they come into flower, for if fly once gets into the blossoms, it is all over with the crop. The grub springs into existence just when he is least wanted, that is, immediately after the Plums are set, and if not speedily removed all the most promising fruits are destroyed. His whereabouts is easily discovered in the curled-up leaves, and the most effectual mode of destruction is careful hand-picking from time to time, until the fruit is past danger. Plums in flower should have a constant circulation of air, and they should be fertilised on fine days. The season being late, trees may still be potted and plunged out of doors to get established for next year's forcing. W. COLEMAN.

Eastnor Castle, Ledbury.

PARKS & PUBLIC GARDENS.

OPEN SPACES IN PARLIAMENT.

THE Bills of each session of Parliament make a sensible inroad on the open land of the country. Those of last year, in the form in which they were passed, authorised the absorption of 140 acres, and those of this session, if passed as they now stand, would add at least as much. The leading offender this year, it is sad to say, is a corporation. The Corporation of Huntingdon have introduced a measure which is simply an Enclosure Bill. There are at Huntingdon several tracts of common land, among others the Views Common, the Mill Common, and the Spring Common. The soil of these commons is vested in the Corporation, and the freemen of the borough and their widows are entitled to the common rights. The Bill candidly states that the commons have become valuable for building purposes, and proceeds to make provision for the extinguishment of all rights of common. It then empowers the Corporation to lay the commons out as building ground, and to sell or lease any part for building purposes. The proceeds of leases and sales are in the main to be invested, and the income to be divided annually among the enrolled freemen of the borough. No provision is made for the dedication to the public of any part of the commons for purposes of recreation.

Another undertaking which involves the appropriation of no less than 55 acres of common and waste land is the proposal to construct deep-water docks at West Kirby, on the coast of Cheshire. It may be that the scheme cannot be carried out except at the sacrifice of common land; but the principle has often been laid down that in such a case other land should be bought by the promoters of the undertaking and given to the public in exchange for the common lands absorbed. This is eminently a case in which the Commons Preservation Society may do good service by making inquiry on the spot, and ascertaining in what way the public interests may best be protected. Another industrial undertaking of a similar nature—the well-known Manchester Ship Canal—this year threatens 43 acres of common land. The scheme of this year differs from that of preceding sessions in its treatment of the estuary of the Mersey, and it is apparently owing to this variation that certain commons near the Mersey which were not previously touched are this year scheduled to the Bill. It may safely be laid down that no commons within reach of Liverpool and its crowded suburbs should be lost to the public, and the promoters of so gigantic a scheme as the Ship Canal will not, we may assume, hesitate to give the public an equivalent in other land for the open spaces which they think it necessary to take.

By the side of the schemes to which we have referred, the Railway Bills of this year are small offenders; only two commons in the neighbourhood of London are affected—Duppas Hill at Croydon, and Haven Green at Ealing. The Croydon Direct Railway Bill proposes to acquire an acre and a quarter of Duppas Hill, and the Ealing, Harrow, and Edgware Railway will pass under Haven Green, which will be cut open for the purpose of constructing the line. The Croydon Corporation, if not too deeply interested in the projected railway, should be trusted to protect the only recreation ground which Croydon possesses; while the Ealing District Board, which has charge of Haven Green, may be expected to see that the proposed line either alters its course so as to avoid the green or is carried under it in a tunnel. Among the Railway Bills, however, the most objectionable is that of the London, Tilbury, and Southend Railway Company. This company, for the purpose of extending its Whitechapel goods-station, proposes to acquire two disused burial-grounds. Only last session Mr. Holland succeeded in passing an Act forbidding building on any burial-ground which had been closed against burials by an Order in Council; and under Mr. Walter James's Act of 1881, local authorities are empowered to take charge of such spots and preserve the same as town gardens. The present Bill, therefore, deliberately disregards the expressed wishes of Parliament. Nowhere is every foot of open space more valuable than in the crowded districts of Whitechapel, and it is to be hoped that Parliament will show its sense of the outrageous character of the company's proposal by refusing to read the Bill a second time unless the clause relating to the burial-grounds is expunged.

It is more pleasant to turn to Bills which are designed to protect open spaces. Several corporations are honourably distinguished this session by the promotion of such Bills. The Corporation of Hastings proposes to acquire and preserve for purposes of recreation the east and west hills, between which the town lies, and one of which is crowned with the ruins of Hastings Castle. The Southport Corporation, which recently fought so good a fight for the possession of the foreshore, proposes to form a new park on land belonging to the town; and the Hartlepool Corporation asks for power to enlarge a recreation ground and construct a sea promenade round Hartlepool headland. The Corporation of Bradford seeks to acquire a disused burial-ground, to be devoted to what are designated, in somewhat ambiguous terms, "public purposes." It might with advantage be ascertained, in this case, whether any other purpose besides that of recreation is contemplated. Nearer home, the Metropolitan Board joins with the Vestry of Islington in purchasing the Highbury Fields at an expense of £60,000. The Board also takes power to acquire by way of gift certain lands belonging to Dulwich College, to effect an exchange for the benefit of Plumstead Common, and to enter into an arrangement with the Grocers' Company for the admission of the public at stated times to two acres of land, part of Hackney Downs, which were forcibly enclosed by the company about eight years ago and thrown into the playground of their school.

GARDENERS' BENEVOLENT INSTITUTION.

PERMIT me to remind Mr. Clayton that I estimate this institution as I would do a garden, not by what is put into it, but by what is got out of it, and it must be borne in mind that the institution exists for purely benevolent purposes—professedly so, at least. Let me, however, take Mr. Clayton's figures and put it from them in an equally unfavourable, if not a worse, light. He puts the receipts down at £4725, including the balance carried forward from last year, which should be deducted, leaving £4345. The expenses are £672, or roundly speaking about 15 per cent. of the gross income. Of the £672, about £350 goes to the secretary as salary, travelling and petty expenses, or over 7 per cent. of the gross receipts, the greater portion of which is derived from interest on funds invested in stock, that I presume involves no harder duty on

the secretary's part than the occasional signing of his name, unless the treasurer relieves him of even that duty. Take away this, leaving only the annual income, and the comparison is of course worse still. What surprises one is that men like Mr. Clayton should be found defending such proceedings.—J. S. W.

—I agree with the editorial remark (p. 77) that "the proportion which cost of management bears to pensions in a benevolent institution is a legitimate subject for comment," but the comment ought to be made fairly. The debtor and creditor sides (p. 77) have not been set fairly before the readers of THE GARDEN, and this I will venture to do. The cost of the annual dinner is put at £74 2s. 8d. The annual dinner is a necessary expense attendant on every London charity, but in the case of this institution the expenditure of from £60 to £70 on an annual dinner has been the direct means of adding an annual amount of from £450 to £800 to the reserve fund. In 1880, when the Duke of Connaught presided, the dinner cost £91 and the receipts were £1281, and that year £1400 were added to the reserve fund, which invested in consols brings in an annual income of £42. I have alluded to the direct results of an annual expenditure of about £70, but the indirect results are beneficial to the best interests of the charity. The next item is the secretary's salary—£160. How does "J. S. W." know that the duties are light? The committee know that they are not light, and they also know that £160 a year is not sufficient remuneration. That amount is paid for the whole of the secretary's time given to the work of the charity; no commission has ever been charged for collecting, nor for office rent, gas, or firing. The honorarium comes next, but it ought not to be charged here, as that belongs to the pension augmentation fund account.

The next item is £100 19s. 9d. This "J. S. W." puts as if nearly the whole of that amount was for travelling expenses. It stands thus in the financial statement: "Postages, travelling expenses, and sundry petty expenses, £100 19s. 9d. The amount for travelling expenses is less than £25, and was paid for two journeys to Liverpool, three to Manchester, one to Bristol, one to Bath, one to Worcester, two to Sheffield, and other minor journeys near London. The journeys are taken at the request of the committee, and the expenditure on this head, like that of every other branch, is carefully scrutinised by the committee. What is the result of this annual expenditure of £25? The first year in which the secretary commenced to travel was in 1877. In 1876 the annual subscriptions were £722, and the reserve fund £11,000. There has been from that time a steady increase in the annual subscriptions, and also additions to the reserve fund, amounting in December, 1884, to £15,950, and the annual subscriptions to £1189. As is well known, a special effort was made to increase the reserve fund to £20,000 last year, and the result of this effort is that the pensions will be increased, the reserve fund having reached the "eminently satisfactory" figure of £21,000. "J. S. W." and "A. D." lay great stress upon the amount spent in disbursing the pensions; £10 pays for that. The money is spent in obtaining funds to disburse. If your correspondents suppose that funds will flow in by the secretary merely sitting in the office and writing letters, they are greatly mistaken. The amount of £88 2s. as honorarium to the secretary belongs to the Pension Augmentation Fund. The expenses on that fund are just 10 per cent., and it cannot be managed for less; but as it will cease this year, nothing more need be said on that point. The percentage of the secretary's salary on the gross receipts of last year was 6 per cent., and the other expenses about 13 per cent. "J. S. W." would lead people to believe that the expenses were from 50 to 75 per cent.

I have not yet alluded to the item of printing; it is certainly a large amount; but it is easier to complain of the expense than to say how it is to be decreased. The Friendly Societies Act, under which the institution is enrolled, in order

that it should be free from taxation, says that the accounts and report of the committee shall be printed and every member entitled to a copy. The committee resolved to embody these with the rules, list of members, &c., and a copy is sent to every member yearly. This, of course, entails a large expense, but it promotes the interests of the charity, and the expense is partly met by the amount received for advertisements, which last year reached the sum of £53 11s.—J. DOUGLAS, *Great Gearies, Iford.*

Rock plants in flower.—It may appear to be a little out of season to talk about rock plants in flower now, yet the rockery at Chiswick has little patches of colour about it, even at this dull time of the year, which render it attractive. There are some charming and effective clumps of Hepaticas, single blue, single mauve, and trilobed cerulea. The pretty little yellow-flowered *Crocus susianus* is also in good condition just now. *Saxifraga ligulata*, with its large heads of rose-coloured blossoms and fine foliage, arrests one's attention; and *Sempervivum tectorum*, with its dull yellow flowers, is likewise worthy of note.

QUESTIONS.

5324.—**Pear tree buds dropping.**—I should be glad if any of your correspondents could enlighten me as to the cause of several of my pyramid Pear trees dropping their bloom buds. I can never see any birds at them, and yet the buds lie under the trees by hundreds; I may add that the ground in which the trees are planted is of a very retentive character with a bad sub-soil.—T. P.

5325.—**Shropshire Winesour Plum.**—Will some one kindly answer the following questions? I am anxious to get some information about this Plum—in particular as to the name of the raiser, and when it was raised and sent out; also if it is perfectly hardy throughout England; if the tree is a good bearer, and what the fruit is most valuable for. Be it understood this sort is not the Shropshire Damsoc or Yorkshire Winesour. These I know very well. I have made several inquiries about Shropshire Winesour here, (Chester), but in vain.—CHESTER.

LATE NOTES.

Rhododendron campylocarpum.—In reply to the enquiry of "Constat Reader" in THE GARDEN of February 7, allow us to say that we shall be able to supply a small plant of this *Rhododendron* in about a month's time.—R. VEITCH, *Exeter.*

Leptospermums.—You have done us good service (p. 145) by calling attention to these graceful foliaged shrubs for seaside planting. In Devonshire I saw some very large plants of *L. baccatum* fully exposed to the sea breeze. *Ceanothus azureus* also grows into a wide-spreading, free-flowering shrub similarly situated.—M. C.

Costly Orchids.—At Messrs. Protheroe & Morris's Sale Rooms, Cheapside, yesterday a plant of *Cyclopogon cristata* alba was, after a keen competition, knocked down to Mr. William Bull, of Chelsea, for £131. The plant had seven flower-spikes, the blooms being snowy white without the least shade or tint. Several others also fetched high prices.

Chimonanthus fragrans.—As this sweet-scented shrub seems to be seldom seen bearing seed, it may be interesting to know that a plant of it here, on a wall facing the south, ripened a quantity of seed. Last autumn I sowed it when ripe and have now two dozen plants 3 inches high. I gave a few of the seeds away, and I think from the greater part of them plants have been raised.—Wm. MACKIE, *Mythe Castle, Tewkesbury.*

Hybridising Daffodils.—I wish to correct an error in your statement in THE GARDEN (p. 145), that I was the author of the chapter on hybridising in Mr. Barr's book on Daffodils. The heading of the chapter is an extract from a private letter written by me to Mr. Barr, and was inserted without my knowledge. The sentence immediately following the extract shows that Mr. Backhouse and others supplied the valuable remarks on hybridising.—A. RAWSON.

Prolific Mushroom spawn.—Through Messrs. Veitch we have received some marvellous masses of *Mu h.* rooms produced in the gardens at Petworth from spawn which seems to possess extraordinary productivity. Mr. Breese, the gardener at Petworth, says—"The spawn is certainly most prolific—too much so, indeed, for I do not care for Mushrooms to spring up in such large clumps, although I have had some excellent beds this season." One of the clumps sent consisted of twenty large Mushrooms, accompanied by a multitude of "hutsions." Another cluster of budding spawn was a solid mass of buttons.

Names of plants.—*Collins Bros.*—Apparently *Narcissus triandrus pulchellus*.—A. D. Webster.—Cannot possibly name it without seeing the leaf.—A. K.—*Helleborus lividus* (syn. *coriscus*); Heath is *Erica codonodes*.—Dr. P.—We will endeavour to ascertain the name of the *Anagallis*.

No. 694. SATURDAY, March 7, 1885. Vol. XXVII.

"This is an Art
Which does mend Nature: change it rather: but
THE ART ITSELF IS NATURE."—Shakespeare.

NOTES.

Fashionable flowers.—What a pity it is that any one class of flowers should become fashionable, just as if all flowers were not always beautiful in their own way, and far above the mere chattering patronage of any particular set of admirers. Of all personal ornaments flowers are the most precious—far too valuable and everlasting to be spoken of in the same breath with the productions of either the jeweller or the milliner, and yet we are told that Orchids are the fashionable bridal bouquets, because some one or two daughters of millionaires carry them. Very often nothing less graceful or more inappropriate could be chosen. The idea with many seems to be simply to find the most rare and unique species of natural flowers, independent of beauty; if they cost much and are rare, that is quite sufficient. The over-strained effort always betrays itself, and Orchids never yet were more highly valued by people of refined taste than were the wild Violet or the hedge Rose. No Chaucer, no Herrick, no Wordsworth has sung of the Orchids as they have sung of Daisies, of Daffodils, or of the modest Snowdrop, but they have often been exhibited as the flaunting decorations of those who have no higher appreciation of them than that they were costly, and so to some extent the ensign of wealth rather than of beauty. It is a significant fact that just at present the highest and best cultured people are growing hardy flowers in preference to Orchids.

In Guernsey.—Camellias of all kinds blossom here finely in the open air; the shrubs grow very large, and bear thousands of flowers. I have a couple in front of my house just bursting into blossom, with hundreds of buds on them, and to-day I saw abundance of beautiful red ones in full blossom at a friend's place. The plants are more hardy than the common Laurel or Laurustinus, and almost, I might add, the evergreen Oak, when once they are well established, but at first they suffer from the easterly winds. The evergreen Eonymus is the most hardy shrub we have, resisting even the sea breeze. I do not remember ever having seen *Agapanthus umbellatus* bear seed in Ireland, but there it grows and blossoms freely all the year round and sometimes ripens seed. No doubt Guernsey is a garden land and a paradise for vegetation from Japan, South Africa, and other temperate countries. Its soil and climate seem especially suitable for bulb growth, and, as we know, even the *Chrysanthemum* seeds there freely.

Useful beauty.—Of all the things of beauty the poorest may call their own, perhaps, after all, the fragile blossoms are the most useful, because most real. Dr. Parker tells us that "A flower is useful, though it does not grow fruit. Gladly I proclaim the usefulness of beauty. A flower has many a time opened the very heavens to my aching heart. It has spoken to me of purity, and simplicity, and frailty, and mortality, and dependence. Was it useless because it gave me neither corn nor wine? Truly not. It did its work, and no angel could do more!" No doubt this is true gospel, and especially is it true of the many beautiful hardy flowers—the Iris, the Lilies, or the Bellflowers, which every cottager, even the humblest tiller of the ground, may have beside his door. The poorest thatched cottage may be a picture with Roses and Woodbine in leafy June, and a handful of Pansies or white Lilies or purple Violets from such a tiny garden may be as fine and acceptable in their way as

those grown in gardens of more pretension. Hardy flowers like these are not for a class or an age, but for all time.

Rare plants really are those but little known in our gardens, but for any one of us to assert that a plant is rare often means only that it is rare so far as we ourselves know. The phrase itself is too often misleading. I always thought that *Narcissus minimus* was rare, but it is abundant in some old gardens; so also of *N. cernuus*, both single and double. This is so with many other plants reputed to be rare, and I am every day more fully convinced that rarity amongst cultivated plants is far more often a personal expression of opinion than an actual fact. *Leucojum carpathicum*, for example, was never rare within recent years. It exists by the thousand, but most people had confused it with, and grew it under the name of, *L. vernum*, of which plant it is a mere variety at the best. Our knowledge of plants now-a-days is deeper and wider than ever it was before, and you have only to assert that such a plant has gone out of cultivation, or that it is extremely rare, and up jumps the information that it is really abundant somewhere, perhaps close around you. I have often found that to imagine a plant was a rarity proved nothing more than my own ignorance.

VERONICA.

PLANTS IN FLOWER:

Leucojum carpathicum.—I send herewith a set of flowers of *Leucojum carpathicum*, the twin-flowered variety of the Spring Snowflake, and which is now in great beauty. The bulbs were obtained from the gardens of an old castle in Northumberland, where it was found growing in great abundance last spring. I find it does not always come with two flowers; frequently there is but one flower to the scape, and this has occurred here with bulbs which we noted last year as having two flowers. Probably the transplanting of the bulbs has had to do with this, as *Leucojum vernum* seldom flowers well the year after its removal. You will note that I send examples in the last stage of growth, as the flowers blow the moment they appear above the soil.—WM. BROCKBANK, *Brookhurst, Didsbury.*

*** This *Leucojum* we consider is really only a twin-flowered form of the common *L. vernum*. Indeed, it is doubtful if it can be regarded as a distinct variety at all, seeing that *L. vernum* will often bear two flowers on a spike. For instance, we saw a few days ago a large imported batch of *L. vernum* collected into one locality in Messrs. Paul's herbaceous plant nursery at Broxbourne. Among these one could pick out twin-flowered plants, and also forms having green tipped sepals and yellow tipped sepals. That the twin-flowered form of *L. vernum* may be commonest in the Carpathian districts may be, but it does not seem to be proved satisfactorily that this character is correlated with others as well marked which would justify the varietal name. If the Carpathian form invariably produced twin flowers from each spathe and the ordinary kind only one, then the distinction would hold good. Whether these Snowflakes are distinct from each other or not is of little moment to those who like to have beautiful flowers apart from their names, for both are beautiful alike in form and colour.—ED.

Iris fimbriata.—This Chinese Iris possesses so much delicate beauty of colour and is so elegant in form, that it may be placed among the plants that a good garden cannot do without. It is old and tolerably well known, but it is not known half enough. No better plant could be found for a cool conservatory. It is one of the easiest plants to grow and flower well, thriving indeed better under neglect than attention. If starved and pot-bound and irregularly watered it seems to thrive better than when too much trouble is taken with it. The flowers are certainly fugitive, but they are produced so abundantly, that this drawback is counter-balanced. Some huge plants of it in the Cactus house at Kew in full flower show well its beauty.

Varieties of netted Iris.—I send you a few varieties of *Iris reticulata* and seedlings from it. *Krelagei* is pretty well over, or I could have sent several shades of that variety. *I. reticulata coerulea* is a particularly pretty blue; *reticulata major* is large, and 4 inches taller than the type. The *atro-purpurea* variety is shorter than the type, while *coerulea* is about the same height as its parent. At the present time a good bed, consisting of about 1200 *I. reticulata*, may be seen here, and a great many varieties in other parts of the garden. There will also be some other things, such as Tulips from Afghanistan, Persia, and other places in flower or coming into bloom shortly.—CHARLES G. NELSON, *Holme Lodge, Godalming.*

*** A lovely series indeed. We always considered Captain Nelson's collection richer in varieties of *I. reticulata* than that of any other with which we are acquainted, and here we have a further proof of that fact. The variety *major* is very distinct, being fully a third larger than usual. *Coerulea* is the most distinct of all in colour, being of a clear blue-purple. The *atro-purpurea* is apparently midway between *Krelagei* and the type in colour, but the "falls" are almost a black.—ED.

Salvia boliviensis.—There is at present in the greenhouse (No. 4) at Kew a large specimen of this uncommon *Salvia*, which attracts the attention of everyone on account of its brilliancy. It is a tall-growing kind, producing massive spikes of flowers of the most vivid scarlet imaginable. The blooms are small, but being so numerous they make a grand show. Seeing what an effective plant this is, is it not a wonder that it is so little known? New it is not, for we saw it here ten years ago, but never so fine as the plant under notice. It may be a better grower, the variety being distinct and named *verticillata*. Perhaps some of our readers may be able to give additional information respecting this fine plant.

Daphne Blagayana.—This fragrant little alpine shrub claims attention at this season in the rock garden, where it is just unfolding its dense clusters of ivory-white flowers, the spicy fragrance of which is quite equal, if not stronger, than that of *D. indica*, the common *Daphne* of greenhouses. *D. Blagayana* is a comparatively new plant introduced some few years ago from the Styrian Alps. It is very dwarf in growth, and the branches are somewhat straggly. Each flower cluster is encircled by a collar-like row of deep green leaves, which set off its beauty admirably. We saw it in grand condition a few days ago in Messrs. Paul's nursery at Cheshunt, where it thrives admirably on a low rockery.

Cineraria Mald of Kent.—We saw this variety a few days since at Messrs. Bunyard's nursery at Maidstone, and thought it the loveliest white *Cineraria* we had ever seen. The flowers are much above the average size, the florets broad and overlapping, so as to form a finely shaped flower. The florets are pure white, which, in contrast with their black centres, are most striking. More than this, they are sweet-scented—quite an acquisition in a *Cineraria*. Messrs. Bunyard think so highly of this variety, that they have propagated it from cuttings in order to preserve its purity. The habit of growth is good, being dwarf, compact, and vigorous; in short, it leaves little to be desired.

Clematis indivisa.—This lovely New Zealand climbing shrub now adorns the roof of one of the greenhouses in the Cheshunt Nurseries in a beautiful way, the drooping slender shoots being laden with myriads of white starry flowers in clusters. No other greenhouse climber is capable of producing such a beautiful sight at this season, yet for all that it is a comparatively unknown plant. For adorning the roof of an unheated greenhouse there is certainly no prettier climber, and the fact that its evergreen foliage is handsome enhances its value. Messrs. Paul have both the original and the variety *lobata* in flower, the latter being at once distinguished by the lobed leaflets, and its flowers, moreover, are a little

larger and whiter, and the centre of a pinker tinge. This Clematis was introduced about forty years ago from New Zealand. It was found plentifully by Allan Cunningham on the margins of woods skirting the shores of the Bay of Islands on the Hokeanga River. There it festoons the trees and shrubs with its panicles of snowy blossoms and dense foliage in a lovely manner.

Browallia Jamesoni.—Some large specimens of this showy winter-flowering shrub trained parasol fashion are just now among the brightest and most effective plants in the Swanley Nurseries, each plant being profusely laden with clusters of orange-red flowers. These are borne on slender branches, and as these droop gracefully on all sides of the plant they have a pretty effect. Messrs. Cannell have done good in reintroducing such a valuable plant to us, and we consider it indispensable in all first-rate gardens. It was figured in THE GARDEN for July 5 last year, and also goes by the name of Streptosolen.

Lachenalia Nelsoni.—Mr. Ware sends us spikes of this variety, to show its superiority over the common kinds of Lachenalia. It is unquestionably the finest of all the yellow-flowered kinds, and can only be matched in showiness by such as *L. quadricolor* and *L. pendula*. We are pleased to note that considerable attention is now being paid to Lachenalias, which everyone must admit are most important garden plants.

Primula Annie Hillyer.—In the Maidstone Nurseries a good collection of double Primulas is grown, the Annie Hillyer variety being considered one of the best; the flowers are very double and of a deep blush-pink, the colour so much in demand for making small wreaths, bouquets, &c. This variety Messrs. Bunyard state surpasses all the others they have grown as regards a vigorous constitution and floriferousness, and the fine batch of it certainly bears out all they say of it.

Hardy plants in bloom on March 1 at Harworth Grange, near Darlington—

<i>Anemone blanda</i>	<i>Helleborus niger</i>
<i>Aubrieta græca</i>	<i>Jasminum nudiflorum</i>
<i>Barbocodium verum</i>	<i>Leucocoryn verum</i>
<i>Cyclamen Cornu verum</i>	<i>Polygala Chamæbuxus purpurea</i>
<i>Crocus, various</i>	<i>Primula cashmeriana</i>
<i>Draba cuspidata</i>	<i>Polyanthuses</i>
<i>Daphne Mezereum</i>	<i>Primroses</i>
<i>Erica carnea alba</i>	<i>Saxifraga Burseriana</i>
<i>Erantia hyemalis</i>	<i>S. major</i>
<i>Gentiana aculeata</i>	<i>oppositifolia maxima</i>
<i>Hepatica angulosa</i>	<i>Snowdrops, single & double</i>
<i>triloba rubra fl. pl.</i>	<i>Intercati</i>
<i>Helleborus atrorubens</i>	<i>Violet The Czar</i>
<i>colchicus</i>	

—T. SIMPSON.

NOTES FROM SWANLEY.

No matter at what season one visits the "Home for Flowers" at Swanley, whether in the dead of winter or height of summer, one is sure to be treated to a rare sight of some kind of flower just in the height of perfection. Throughout the winter Pelargoniums have kept the several houses filled with them, all aglow with brilliant tints, and now when the Pelargoniums become flowerless and run to leaf brightness is imparted to the houses by Chinese Primulas, Cyclamens, and Cinerarias. The Primulas were on the wane when we saw them about a week or ten days ago, as the work of artificially fertilising the flowers, in order to be sure of the best strains of seeds, is done every day when the sun is shining. About a month ago these Primula houses must have been indeed a sight worth seeing, thousands of plants of one sort being grown to perfection, as all who have seen the Swanley plants at South Kensington may testify. On seeing the Messrs. Cannell's collection at home one imagines how and in what direction the Primulas can possibly be further improved; size and symmetry of flower have been secured, constitution and floriferousness leaves nothing to be desired, and the only way that seems open to further progress is in the direction of colour. Compared to what they were even a few years ago, there is at present a great diversity of tints in Primulas; snowy whites, fiery crimsons (almost scarlet), and slaty purples (almost blue), delicate pinks, and every intermediate gradation between these colours has been obtained, and now we may reasonably look forward to yellows, as we saw at

Cannell's a variety the flowers of which possessed an extravagant development of the yellow eye, almost overlying all the white. By following up the tendency to produce blues and purples, we shall no doubt have a blue race emanating from such as Swanley Blue and Holborn Gem, and a real scarlet as bright as a soldier's coat is not despaired of. In going over the Swanley collection we noted the following as being, we considered, the finest. Naturally enough the best sorts in their respective colours are those known here as the "Swanleys." Thus Swanley Red, White Rose, Purple Pink are looked upon as unbeaten as yet, and no doubt this is correct, for they are all very beautiful, and possess all the characteristics that constitute a first-rate Primula. Among new claimants for public favour are Prince of Wales, undoubtedly the richest and most brilliant carmine-tinted flower yet raised. It is, however, only in its infantile stage, and has not been subjected to a course of treatment with Swanley manure. Swanley Blue, as we have said, is not really a blue tint, though it is the nearest approach to it that has been raised. Some hundreds of finely-flowered plants arranged *en masse* is an imposing sight, quite different from that produced by the rest. Seeing it under glass, with the flowers against a bright transmitted light, produced a very different impression of its beauty than when seen in the subdued light of the South Kensington conservatory. There it looks leaden and unattractive; at home it is a bright mauve-purple and very effective. There are two strains of it, one being much superior to the other. Princess Beatrice, a deep lilac, with silvery edges, is a lovely sort, but many probably would prefer that named Princess of Wales, of a delicate clear pink, the embodiment of loveliness. Queen of Stripes is a pretty sort, the white flowers being speckled and striped with carmine. Swanley Giant is a giant indeed, eclipsing all in respect to size; some would say it was coarse. Queen of Whites reigns supreme among the Fern-leaved whites, but no rival has yet been found to The Queen, a sort raised a few years ago and duly honoured at South Kensington. This is distinct from all the rest, the flowers being fully a third the ordinary size, with crimped, not flat flowers. These are white, with just a suggestion of pink enough to give it a bluish tint, which is always so much admired. Its luxuriant foliage adds much to the effect. The chief aim here is to get strains that are free seeders, otherwise they are comparatively of no value. A free seeding sort is worth ten times more than a shy seeder, though the latter may surpass it in other respects.

CINERARIAS just now claim most attention, as hundreds of plants are fast expanding their broad clusters of bloom, and a sharp look-out is kept for new breaks among the batches of seedlings flowering for the first time. In Cinerarias Mr. Cannell is running Mr. James very close as regards quality, particularly in respect to size and evenness of flower; the colours perhaps are not so varied as Mr. James has succeeded in getting. To attempt to describe the subtle tints of Cinerarias would be folly, and as everybody knows how diverse they are, we need only allude to a few of the *crème de la crème* which are thought so much of here, that they are propagated by cuttings—such, for instance, as Marched Past, a characteristic name for one which would be difficult to surpass. It is a deep maroon-crimson, with the florets like velvet. Victory, deep magenta; Wonderful, indigo-purple; W. Cullingford, magenta white centre; Best Blue; W. E. Gladstone, magenta, large white centre; Princess of Wales, white, magenta edged; Dr. Mullah, and J. B. Alston. These are the pick of the select sorts, and, as may be imagined, are all very beautiful, quite worthy of being propagated by cuttings, inasmuch as so seldom can one get such perfect sorts from chance seedlings.

CYCLAMENS are still in great beauty, and may be seen by thousands, the flowering plants alone filling one of the 100-foot long houses. We were not surprised to see them here so fine, remembering the remark that Mr. Cannell made to us some

three or four years ago to the effect that he was about to commence Cyclamen culture on a large scale in order to prove the truth of the assertion that good Cyclamens could not be grown to perfection elsewhere than in the western suburbs of London, seeing that the finest results have been produced in those districts. That he has abundantly refuted the assertion is well shown by the vast collection of large plants, which are as fine as we have ever seen grown at Ealing, Isleworth, and Twickenham; indeed, some superb plants in 9-inch pots, each carrying a great sheaf of blossoms, would be difficult to match anywhere. The deep coloured sorts, too, are grandly grown. The remarkable point is that all are quite young seedlings, not more than one or two seasons old. Other classes of flowers, such as Pelargoniums, winter Begonias, Bouvardias, and the like, are as noteworthy as the classes we have mentioned.

VEGETATION ON THE ZAMBESI.

THIS magnificent river, which is said to drain some 600,000 square miles of the African continent, was almost unknown prior to the memorable expedition of Dr. Livingstone in 1858-1864, an expedition undertaken partly for scientific purposes, but chiefly for the purpose of exerting on the minds of the natives a moral influence by kindness, and by teaching them to make experiments in agriculture and explaining to them the more simple arts. The result of this expedition is told in Livingstone's interesting book, "The Zambesi," which is a thrilling narrative of feats of daring and acts of great kindness, as well as being full of interesting and instructive facts for the information of the naturalist. The accompanying view represents the strange forms of vegetation which characterise the banks of the lower Zambesi, immense impenetrable forests being formed where the river is broadest, or where it separates out into several wide rushing streams. Such a stream is the Kongone, the first twenty miles of which are enclosed in Mangrove jungle; some of the trees are ornamented with Orchilla weed, which appears never to have been gathered. Huge Ferns, Palms, and occasionally the wild Date peer out in the forest, which consists of different species of Mangroves, the bunches of bright yellow, though scarcely edible fruit, contrasting prettily with the graceful green leaves. In some spots the Miliola, an umbrageous Hibiscus, with large yellow flowers, grows in masses along the bank. Its bark is made into cordage, and is especially valuable for the manufacture of ropes attached to harpoons for killing the hippopotamus. The Pandanus or Screw Pine also appears, and on coming out of the Kongone into the Zambesi many are so tall as in the distance to remind us very much of the steeples of our native land. The whole of this part of Africa, extending many miles in breadth and length, was found to be especially fertile. The scene here represented is such as one can easily associate with huge lumbering hippopotami and crocodiles, leopards and such like beasts. The Screw Pines, likened by Livingstone to church steeples, are as gigantic in their proportions as the true Pines of the New World, whilst the thick drapery reminds us of nothing so much as Hop-laden poles in Kent. We can never hope to imitate Nature in such magnificence as is shown in this picture; yet even in her grandest tropical displays Nature shows us in what true beauty really consists. Substitute an old dilapidated Poplar for the Screw Pine and Traveller's Joy, or Ampelopsis or Hopp for the climber which drapes the Pine, and we have a picture quite as effective in an English landscape or garden as this which charmed Dr. Livingstone in the wilds of Tropical Africa. It is beyond the skill of the cleverest to utilise tropical plants in English gardening so as to exactly reproduce tropical scenery such as we see here, but the lesson is not in that direction; it is rather for us to do with our own plants and trees, of which Nature has given us a large and varied selection, what we see and admire in representations of tropical vegetation. To do this is to accomplish what is best in horticulture. B.

CHRYSANTHEMUMS IN AMERICA.

To say that the "flower of autumn" has a great future before it is but to repeat one of the most palpable truisms of our time, for the wonderful evolutionary power observable everywhere in gardens, as in Nature, is especially active at present in the case of this favourite flower. English cultivators have done more perhaps than any others in developing its floral beauty, but they have, of late years at least, been quite behind in the rearing of new seedling varieties. Perhaps to some extent our climate may be one reason for this; and yet, what country of its size has such an extensive and variable glasshouse climate? and can it be possible that the cultivators who have wrought such cultural hybridising miracles will remain content with having as a rule failed in obtaining seed from the Chrysanthemum? In his Chrysanthemum book Mr. Burbidge tells us that seed certainly has been obtained in England, and that some of the earliest seedlings and hybrids originated there! If so, how is it that what was possible to our forefathers is impossible to us now? But we shall take heart, since I see that Mr. Laxton, amongst others, has taken our favourite flower in hand, and all of us must believe in "Veronica's" axiom that "in the garden nothing is impossible." One fact is, however, established beyond any doubt, viz., that the Chrysanthemum is quite amenable to culture, both in this country, in France, in the Channel Islands, and in America, as a common half-hardy annual. Good imported seed is easily obtained from seedsmen, but as a matter of fact, seed of the best can only be obtained by English growers saving it from their own plants until a good race or strain has been secured. I am one of those who believe that the Chrysanthemum is as yet only in its infancy. We have up to the present been content to accept whatever the Continental raisers cared to send us from year to year. Certainly we must not forget Mr. Teesdale's Daisy-flowered kinds, and I hope growers will try to obtain seeds from these crossed with pollen of the double forms. But I am forgetful of my text, from which I intended to draw attention to the sudden, but substantial, impetus given us by the New York florists in the production of new forms of our winter queen. A noted amateur in New York has been so good as to send me the following account of American progress in this direction, which will, I am sure, be of interest to our home florists:—

"Dr. Walcott has priority over myself in the raising of seedling Chrysanthemums, and probably (I make this statement on my own supposition only) he has been raising them for at least seven years. My first attempt at raising seedlings began in 1882, and if my seedlings of 1883 were a surprise, those of 1884 were still more so. I have some entirely new forms, and it would seem we shall soon have to add half a dozen new sections if they are to be kept separate. I will mention four of distinct character that have already appeared. One has rigid tubular petals for three-quarters their

length; then they break out into deeply incised lobes, the flowers being about 3 inches over and double; the light strikes entirely through among tubes, thus giving a very distinct effect. Another has semi-double flowers, petals long and loose, and so deeply divided as to be in mere shreds, the disc having a few of these same shreds attached. Another one has petals first tubular, then very flat, and then divided or fringed at the ends. This is single yellow with the outer rays bronze. The fourth is a very thick double flower, white, about

and another crop of petals appears, making a poor Fair Maid of Guernsey-like flower. This is of no commercial value. But what does all this infinite variety mean? Where are we being led to? What may we expect next? Where shall we stop?

"That Chrysanthemums can be cross-fertilised I have the most satisfactory proof, the most positive crosses coming from the ray or petal florets. To effect this I simply take a pair of scissors and cut away the petals as soon as the flower begins to open low enough down to expose the stigma; this wants care and some practice, and it requires some little experience to know when to apply the pollen. In 1883 I was very anxious to get some other coloured Gloire de Rayonnante. With this end in view, I set alone two plants in small pots of that variety, each having one flower; these I subjected to the shearing process, and when fit I applied pollen from yellow and white varieties. From these two flowers and from ray florets I had thirty seedlings. One of these is President Cleveland, one Golden Gloire de Rayonnante. I have a fine white one, a deep orange, and a deep pink for next year (some four or five did not flower); these are all of the same early flowering habit and have foliage almost identical with that of Gloire de Rayonnante. From Comte de Germiny, crossed with Viceroy of Egypt, came Sam Henshaw; this was from petal stigmas; others of this cross did not flower. These are all manipulated or artificial crosses.

"Now, I want to talk about the single and semi-double forms. Among these are some truly beautiful varieties. There are but few persons who cannot admire these when seen in perfection. I would be pleased to send you some of these; they are very different from the double forms in general expression—more prolific in flower, and for decorative purposes equal to double kinds. I send you a list of names, and refer you particularly to Mrs. Gubbins, Mrs. Robertson, Jas. Y. Murkland, Mr. W. A. Harris of last year, and to Mrs. Le Mont (this is truly a gem; such colouring, such heads of flower, and such handsome foliage I have not seen); then the Virgin; and last, Sadie Martinot. I see that my old friend 'R. D.' says these American seedlings are coarse. Well, maybe they are not smoothed in a mould, or set off by compasses; nevertheless, if I had him here next November I could persuade him to admire them, I know. As to raising seed, I have been singularly fortunate the past season—I mean in getting a quantity. I had the assistance of an in-

dustrious insect like the Aster fly to do the pollination of the rank and file; the result is I have saved a fair amount of good seed. This fly helped me materially; without its aid it would have been necessary to have gone over the plants each day with a brush or feather. The house has to be kept dry at all times when saving seed as a matter of course. The only objection I had to this fly was that sometimes in spite of me he would find out where I had hidden some plants that I wanted to cross carefully with my own hands. It is a good many years since Sam. Broome sent to me from



Screw Pines (Pandanus), overhung with climbers, on the banks of the Zambesi River.

the size of Mdle. Marthé; so much are the petals divided, that they look like mere threads, yet rigid and lasting. If it was not for the petals being so much divided, this would be really a single flower. Dr. Walcott has sent me some fourteen or more of his seedlings of 1883, and there are two distinct forms among them. One has a row of small guard florets, the centre filled full of flat petals (not florets) like small Hollyhocks. I call this Merrimac. The other has a row of white petals sparsely disposed with a cone-like scaly centre; after the ray petals have been out for three weeks the cone divides

INDOOR GARDEN.

GARDENIAS AND THEIR CULTURE.

London fifty Chrysanthemums, two of a kind, with his book. This was in 1855 or 1856. How I cared for them. The Broome book I knew by heart—simply a case of love at first sight, which has stuck to me through a life of much variation. The impetus given to Chrysanthemums in the United States belongs to Mr. John Thorpe, who has talked and written, and, I need not tell you, aided very practically in their general distribution. The struggle for the front here in floriculture is as great as in Great Britain, though, perhaps, conducted on a different line. The country is more crude and more unkempt, and then we have to pay high wages, and even then we cannot get the same actual experience in our men. Competition is great, and so things are done rather roughly. But I can see we are progressing. We have among us a more appreciative class of patrons than we had even a few years ago, so that we shall soon get a substantial foothold on the right path.

"I will give you just one instance of what a run or boom was three years last November. Mr. Thorpe exhibited a few plants, some fifty or so in ordinary 6-inch pots, of Chrysanthemums. They were admired by a few only here and there at first; then someone had the temerity to say they were beautiful, and by degrees considerable interest was awakened, and when the spark was once kindled, it burnt and spread like lightning. We sold ourselves over 80,000 plants from Jan. 1 to July 1, 1884, and, at the least calculation, there must have been 500,000 sold in the United States, even if not immediately around New York. There seems to be something in the demand, too, more than a fashionable flash-in-the-pan craze, and I expect the Chrysanthemum will have a place with Hyacinths and Tulips, but, of course, at the other end of the year.

"Chrysanthemum shows are being started in every large city with good results, and this year we have already promise of five or six more taking place.

"In a note from 'R. D.' in THE GARDEN (Jan. 10, p. 33) I notice he seems to doubt whether Chrysanthemums will flower the first year from seed. Of Chrysanthemum seed sown here by myself between February 1 and April 15 95 per cent. flowered. Seed sown May 6 by a gentleman at Baltimore flowered most satisfactorily; indeed they are the most easily managed plants to grow from seed I know, provided the seed is got up in a temperature of not more than 55° Fahr. I plant my seedlings outside in the open ground as soon as safe from frost, say in May, and we dig them up soon after the middle of September and carry them into the greenhouse; some are in pots, and some are placed in earth on the ground, and others are set on benches.

"There is one thing, I think, should be done very soon, and that is to determine to what particular race or section some varieties belong. With me *Comte de Germiny* and *grandiflorum* are as truly incurred as *Lord Wolsley*, and often more so than *Emily Dale* if the latter is not dressed. Again, *striatum perfectum* and *Sarnia* are as smooth in outline as either *Christine* or *King of Crimsons*, yet the first is Japanese and the other Chinese."

I am sorry to find that there is a falling off in the Channel Islands seedlings—I mean as to their numbers—during the last year or two, but it is to be hoped that such successful raisers as Major Carey and Mr. J. Downton (the raiser of *Elaine*, a real princess amongst flowers) will not rest on their well-won laurels. I am hopeful of making a pilgrimage, however, to the land of the Guernsey Lily, and shall look up the seedling question as far as possible. FLEUR D'OR.

Eucharis grandiflora.—Some people when resting this plant keep it quite cool, and then bring it into a hot room at 80° to 90°. Thus treated the roots often get killed, and the soil becomes sour and sodden about the bulbs. In a 12-inch pan we have a plant that is flowering now for the fourth time within twelve months. It has five spikes, each with from four to six flowers, and it has never been out of the stove. —WM. MACKIE, *Tewkesbury*.

THE *Gardenia* is one of those fine old stove plants the cultivation of which has undergone quite a revolution within a recent period. *Gardenias* which we at one time used to see were stunted and comparatively flowerless, owing probably to the fact that they are very liable to be overrun with insect pests, but under improved cultivation, better insecticides, and more suitable glass structures, the *Gardenia* culture of the present day bears no comparison with that of past times. *Gardenias* in all positions are effective, and their blooms when cut for personal adornment or for bouquets, wreaths, and crosses, as well as for vases for table and house decoration, are unequalled. Individual blooms realised the sum of 5s. each during January and part of February in Covent Garden Market this season. As regards cultivation, the best results are obtainable from plants planted out in a suitably prepared border, with means of applying a high temperature during the growing season; this latter, combined with plenty of moisture both for root and branch, constitutes the chief element of success. My practice has, however, been principally confined to plants in pots.

PROPAGATION.—*Gardenias* may be propagated at almost any season, and they are by no means difficult to strike if the half-ripened wood is used or soft shoots taken off with heels. They should be inserted singly in small pots filled with peat and sand, or leaf-soil and sand. When plunged in a propagating pit, or in any place where a general bottom-heat can be maintained, they readily emit roots. August or September is a good time to put in cuttings, which make thrifty little plants the following season. After the cuttings are rooted shift them into larger pots, using a compost consisting of loam three parts, one of peat, and one of leaf-soil, with a sprinkle of bone-meal and a dash of sand. Mix all well together and press the mixture firmly into the pots which should be well drained. If practicable, after potting, plunge them again. Syringe them freely overhead, but water rather sparingly at the roots until they begin to root into the new soil. Pinch at every pair of leaves made so as to insure even, well-balanced bushes. Six-inch pots will be a useful size in which to bloom them the first season. When filled with roots they should be regularly supplied with liquid manure (cow manure and soot), particularly while the buds are swelling and expanding. An occasional top-dressing with artificial manure will also benefit them. Let them have abundance of moisture both at root and branch, particularly when growing in a high temperature; discontinue pinching after July—*i.e.*, if they are required to flower early.

THE TIME OF FLOWERING under ordinary stove treatment is during the months of March, April, and May, but with a considerable quantity of plants and some forethought as regards their preparation, together with suitable accommodation, *Gardenias* can be had in bloom for several months. Cultivators differ in opinion as to the best time at which to repot old plants; some prefer to perform that operation immediately before the buds are set, as the plants at that time generally unfold a quantity of leaves; the roots, too, are then feeling their way in search of food, and readily take to the new soil. Others prefer to repot when the plants break after being cut back. I have tried both methods, and find one to suit almost as well as the other. When potting old plants, avoid the barbarous treatment of probing the ball with a sharp-pointed stick, with the view of loosening the roots. Remove the crocks carefully and any loose soil from the top of the ball, and give a liberal shift, as *Gardenias* are gross rooters. Pot firmly and grow them on as in the case of young plants. Afford them a little shade from intense sunshine, but expose them to the air as the plants progress as much as possible, in order to harden and solidify the wood. When old plants get too large to be kept in good health in 12-inch pots, discard them, particularly if room be a desideratum. The best results are obtained from young ones. I have

under my charge at the present time a large quantity of plants, the treatment of which is somewhat different from that here recommended. They are the produce of cuttings rooted in August, 1883, and potted on as required, until I got them into 6-inch pots in May, 1884. They have been grown in a temperature of from 60° to 75°, and pinched, watered, and syringed as recommended. I was obliged to transfer them last August to a structure the temperature of which fell on cold nights to 50°; during favourable weather, however, it got up to 70° and 75° in the daytime. All the sun and light available fell directly on them while in the structure just named. They were removed a few weeks ago to the quarters which they previously occupied, and in which they enjoy a temperature of from 65° to 75°, and they are now carrying on an average two dozen buds each, some of which have already expanded.

THE VARIETIES are *florida* and *Fortunei* (intermedia), the latter the best as regards quality of bloom, but the latter is not so abundantly produced as in the case of *florida*. *G. Fortunei* must be carefully pinched during the earlier stages of its existence, in order to insure a dense bush. Our plants were potted in good yellow fibry loam, with a third of well-decomposed hotbed manure, a sprinkle of Clay's fertiliser, and a dash of sand. After the buds were set the plants were liberally supplied with cow manure and soot water, and they also received an occasional top-dressing with Clay's manure, more particularly since they began to swell and expand their buds. The shoots produced from the base of the buds are pinched out as they appear. The plants are in luxuriant health—dense bushes with an abundance of glossy deep green foliage. Mealy bug must never be allowed to nestle around the base of the buds; if so, they will drop off. Syringe occasionally with petroleum oil in the proportion of a wineglassful to about two gallons of water, taking care to keep it well agitated during the operation. I have at one time or another renovated three or four different collections of old *Gardenias* where it was thought better to keep them than throw them away. The treatment which I gave them was, as near as possible, that here described, and I have always had good results. D. SHEAHAN.

LILY OF THE VALLEY.

THE Lily of the Valley is one of the few British plants which we grow in pots for the adornment of our conservatories and greenhouses during the winter and spring months. It is found in several of our English counties, but perhaps in largest numbers in woods in Gloucestershire. The fine specimens of it which are seen in our greenhouses are, however, the produce of roots annually imported from Holland. The demand for both clumps and single crowns of this Lily is now very great, and well it may be, for its culture for our markets, as well as for private gardens, has more than trebled within these last few years. The clumps imported from Holland and other countries are, as a rule, large enough to fill a 6-inch pot, and single crowns may be grown in pots. They should be potted as soon as received, or packed together in small boxes, running some fine soil between the crowns, and placing them in a warm temperature when required to produce their flowers. If grown in large quantities for market produce, they should be planted in propagating cases in a forcing house, shutting the lights of the case close and shading until the plants throw up their flower-spikes, which will be long, and the bell-like flowers pure white, without any tinge of green. They will then be ready to be gathered and tied into bunches for market. Both single crowns and clumps should be potted in rich sandy loam, using a portion of rotten stable manure, about three parts of the former to one of the latter, and adding a good sprinkling of sharp sand to keep the compost open. Into this compost the plants will soon root and produce fine flowers. Water the soil through a rosed watering pot; when the soil is well settled, place the pots close together upon a bed of ashes, or some solid material that will keep worms from getting into them.

Cover them to the depth of 6 inches or 9 inches with the same material, or, if at hand, Cocoa-nut fibre may be used. If thought desirable, the single crowns may be laid in rows and covered with ashes or fibre, from which they may be potted up as required. When needed for forcing, they should be placed in a temperature ranging from 50° to 55°. If in pots, place one the same size upon the rim of the pot in which the plants are growing, and place a bit of crock or thin piece of slate over the hole in the bottom of the inverted pot, to exclude light until the plants commence to make growth and show their bloom-spikes. After they show flower the heat may be increased to 60°, but if the time of flowering is not particularly the object in view, a lower temperature will be preferable, as in that case the lower temperature of the greenhouse (about 45°) will not hurt them. When grown in a medium temperature, too, the flowers will last in good condition for two and sometimes three weeks—much longer than when subjected to great heat. After flowering they should be transferred to a cool pit to encourage leaf growth, which will be greatly benefited by frequent applications of either liquid or artificial manure, and which will also cause the buds to plump up. During summer plunge the pots up to their rims in ashes to keep the roots cool, and choose for them a shady position. They should receive copious waterings until they ripen their foliage in the autumn. They will require a shift into the next sized pot during November, treating them as has just been recommended; they will then be ready for forcing the following spring. Under careful treatment the same plants may be successfully forced for several seasons.

W. CHRISTISON.

PLANTS SUITABLE FOR BASKETS.

MANY kinds of plants are well adapted for growing in baskets, and have a graceful appearance when suspended from the roofs of conservatories, stoves, corridors, or other available positions. Such baskets are best made of galvanised wire, commonly known as 5 size. By using this wire they last a long time, and have a neat appearance prior to being covered thoroughly with the plants. They should be made in different sizes, 1 foot 6 inches in diameter and 9 inches deep being a useful size. They can be made by any handy man. A coat of paint is useful—in fact, necessary—to prevent the stems of some plants being injured through coming in contact with the galvanised wires.

LACHENALIA PENDULA is specially suited for baskets; its pendent foliage and flower-spikes, its orange, red, and yellow blossoms, and beautifully mottled-green leaves render it one of the most useful of basket plants. Presuming the plants to have been previously grown in pots, and to have had their annual rest, as soon as they commence to grow again they should be taken out of the pots, all the old soil should be shaken off the roots, and then they may be placed in the baskets. Proceed by placing some Moss (common green Moss, such as that which grows in woods, answers well) in the bottom; over this put some soil, consisting of loam, peat, and leaf-mould in about equal parts. To these add some bone dust, charcoal, and silver sand; place thereon a layer of the bulbs about 2 inches apart, with the points protruding through the bottom of the basket, and proceed with layers of Moss, soil, and bulbs until the basket is filled; cover the top with Moss, give a good watering to settle all in their places, and hang the basket up in any cool house, where its contents will soon start freely into growth. When the flower-spikes are showing, weak liquid manure, copiously supplied, will prove beneficial. During March, April, and May they will bloom profusely. After blooming, water should be gradually withheld until the foliage turns yellow and falls off. They will then require no more water till they again commence to grow. During the resting period they can be stored away in any shed free from frost.

DOUBLE TUBEROUS BEGONIAS are well suited for growing in baskets; in fact I think they show

to more advantage in baskets suspended from the roof of a conservatory or greenhouse than they do when grown in pots in the usual way. Their habit generally is drooping; therefore, in a basket the flowers show themselves off to the best advantage. Presuming these likewise have been grown in pots previously, as soon as they begin to grow in spring they should be placed in the basket, using soil composed principally of good turfy loam; with this mix a good sprinkling of charcoal, half-inch bones, and bone dust, with some sand added. First line the baskets all round with Moss, which serves the double purpose of preventing the soil from being washed out and covering the wires. Water should be sparingly given until the plant is growing freely, when copious supplies will be needed during the summer, alternated with weak liquid manure. The branches will soon extend long enough to hang down to be tied close into the basket, or they may hang in a natural manner, as the cultivator may desire. A cold greenhouse during summer suits them better than being coddled up in a plant stove.

ACHIMENES.—This class of plant is particularly well adapted for baskets, owing to its long pendulous habit when allowed to grow at will. When the corms have had their annual rest, they should be taken out of the soil in which they had previously grown, placed in pans thickly, and given a little bottom heat if available, when they will soon commence to grow. As soon as shoots 2 inches long are made they are ready to transfer to the baskets. Proceed, as in the case of the *Lachenalias*, to place them in rows, using the same kind of soil as for the *Lachenalias*. The colours can be mixed at will, or one variety only can be used in each basket. This the cultivator can please himself about. Place the baskets, when filled, in a plant stove, ainery at work, or anywhere where a temperature averaging 65° is maintained, giving them plenty of light, but shading from sunshine. In this position the plants will grow rapidly. When coming into bloom they may be placed in a house a few degrees cooler, but they must not be placed in a position where they will be in a direct draught—say between two open ventilators. When grown thus they will continue to bloom several months, and will be much admired in the conservatory or greenhouse, and may occasionally be taken into the dwelling-house and suspended from the roof of the hall or any other convenient place.

ABUTILON MEGAPOTAMICUM VARIEGATUM almost anyone may grow in a basket, as it requires scarcely any heat. Procure a strong plant or several small ones, place them with the shoots protruding through the wires, or, if a large plant, the shoots will hang down and conceal the wires. The basket should be covered inside as usual with green Moss, as on this the golden variegated foliage and orange-red flowers show themselves off to better advantage than otherwise. This plant must not suffer for want of water during summer, and it must be well syringed overhead occasionally with clean water. This will assist in keeping down insects with which it is sometimes infested, notably red spider and thrips.

ADIANTUM FARLEYENSE flourishes particularly well in a basket; its pendulous habit fits it well for the purpose. The soil used should be rough loam principally, and a little old mortar and charcoal to keep the whole open. Water should be carefully supplied when first placed in the basket; afterwards a free supply should be given. A temperature of from 60° to 70° suits it well during the growing season.

IVY-LEAF GERANIUMS are easy plants to grow, and suitable for baskets in any cool greenhouse, requiring very little attention beyond freely watering during summer, and carefully in winter. Both single and double kinds bloom freely.

FUCHSIAS also are easily grown, and do well in baskets; choose those kinds which grow freely and have a naturally drooping habit; water freely at the root and overhead during summer.

E. MOLYNEUX.

Freesias.—I am growing these in a cold house, and with a good promise of their succeed-

ing well. The bulbs were potted in light soil in August last and placed in a cold frame, and in November were moved to a north house where I grow *Auriculas*. They have been frozen hard on several occasions, but it does not appear to have injured them. It is no doubt a great advantage to give them some heat, but if one has not the convenience the next best must be done. There are about nine bulbs in a good-sized well-drained pot and they have come away strong and well, the sunshine now being enjoyed encouraging their development, and I am full of hope of a good head of bloom. Are we not in danger of creating something akin to a dislike for certain hardy subjects by associating them with culture in heat? The *Auricula*, when grown for exhibition purposes, is largely made a greenhouse plant, and by placing the plants in artificial heat a fine development of pip and truss is doubtless thereby obtained which is put down to the credit of the cultivator. Our forefathers did not so cultivate their *Auriculas*, and it is obvious that a grower for exhibition who cannot apply artificial heat to his plants is placed at a great disadvantage when he has to contend with a cultivator who can bring on his in a greenhouse.—R. D.

LINUM TRIGYNUM PLANTED OUT.

THE merits of this plant are well known; yet, strange to say, one seldom sees it thoroughly well grown. The small attenuated specimens often to be found amongst a miscellaneous collection of warmhouse plants in no way render a true idea of the value of this fine winter flowering subject, for this yellow Flax, well grown, forms a dense mass of lustrous foliage, and good specimens carry from twelve to twenty fine heads of flower. In this condition it is very ornamental, and may be employed with admirable effect, either in the conservatory or amongst fine-leaved plants in stoves or intermediate houses, the bright yellow blooms contrasting finely with *Marantas*, *Ferns*, *Palms*, and similar plants. Whoever would wish to see *Linum trigynum* at its best—in full perfection of leafage and bloom—must plant it out where the roots can enjoy a free run in suitable soil, where nourishment and moisture never fail, and where light and air are freely admitted to ensure perfect maturation. Accorded these conditions, this Flax, in the course of two or three years' careful culture, develops into a good-sized bush, assumes, in fact, a sub-shrubby habit; and if pains have been taken to keep it free from the attacks of its one great enemy, red spider, it will be clothed with foliage almost to the soil, and when in bloom will form a very striking object indeed. Red spider is less to be dreaded where planting out is resorted to than in pots, as this pest cannot so well fasten upon leaves that are well nourished and full of sap as on such as, through want of food, are more or less flimsy in texture, and therefore not only keenly feel the attacks of insects, but, curiously enough, are most liable to be assailed by them. We may, therefore, conclude that, whether planting out or pot culture is practised, a very generous diet is absolutely necessary to keep this plant in health and vigour. Many think that *Linum trigynum* delights in a close warm atmosphere throughout the summer, and therefore keep it growing all the season in a stove amongst such heat-loving subjects as will not bear anything approaching a brisk circulation of air around them. This is a mistake. The great point is to give the plants a good start in early spring, growing them freely, but strongly, which will be the case if they are near the glass, get but little shade, and get a tolerably free admission of air when the outside air is not too keen. I once had good proof that this *Linum* will thrive well under quite cool treatment, as, looking through the conservatory of a small private garden some years ago in, I think, the latter end of November, I was quite surprised to see two large specimens in a fine blaze of bloom growing in a border. The house was a light one, not very high, and only shaded from hot sun; and here, in company with *Camellias*—growing, in fact, in the same soil with them—was one of this Flax in such luxuriance and amplitude of foliage, perfection and profusion

of bloom, as I had never seen it exhibit before. The person in charge told me that it was pruned in April, and, the house being kept rather close whilst the Camellias were making growth, it came along with them, apparently enjoying the treatment which they received. Later on, when it was a question of ripening their wood, much air and full light was of course admitted to them—advantages which were equally favourable to the Linum, and by which it profited to the extent of thoroughly maturing a strong growth, thereby enabling it to produce later on many flowers of high quality. I am convinced that such a course of exposure in early autumn is indispensable if one would see this Flax to its greatest advantage as a winter-blooming subject. For pot culture I prefer plants grown on from cuttings struck in March. They may be grown in a warm house until the middle of June, after which they are most at home in cold frames until mid-September. Fibrous loam, some leaf soil, and a little rotten manure form a good compost. J. C. C.

GARDEN TOPICS.

Iron v. wood for hothouses.—I notice that this subject has cropped up again, and it would appear that iron structures are growing in favour. Gardeners have hitherto had objections to iron for certain descriptions of hothouses, but modern construction has greatly modified these objections. By some of the methods of glazing adopted now the iron is completely covered in, thus preventing that alternate expansion and contraction of the framework that is the cause of so much breakage in the glass, and also that excessive condensation and drip so common in iron houses of ordinary shape. For cool houses and conservatories iron is, perhaps, better than wood, provided it is kept painted, but for fruit houses, and especially houses for early forcing, or wherever high temperatures have to be maintained during cold weather, iron is undoubtedly objectionable, unless, as I have said, it is all inside; otherwise the drip and radiation are excessive and most injurious to the inmates, as only those know who have had much to do with such houses.

Protective power of glass.—Much misapprehension exists on this subject, some asserting that a glass coping alone will exclude many degrees of frost. A sheet of glass will of itself hardly conserve any heat. A glass jar of air or water will, in short, become just as cold as the air which surrounds it, but the same jar inverted on the surface of the soil will exclude a certain amount of cold, because of the heat that arises from the earth and is conserved. Thus the air is undoubtedly warmer under a cloche, as the plants under it show, but a cloche covers much ground in proportion to its size, and hence its protective power is increased. Large glass structures in the same way are warmer than small ones, which when narrow do not exclude much frost, the temperature inside them subsiding in a few hours to near the outdoor temperature, and the house then requires more heating. Fruit houses that are lofty and wide are superior in this respect to those that are long and narrow.

Young gardeners.—Why young gardeners of the present day are not all as good hands as they might be is explained by the fact, I think, that apprenticeship to the trade in a regular way is more the exception than the rule. Unlike other trades, lads and men creep at once into the profession from the farm, stables, house, and other sources at an age when they cannot well begin to learn anything else. Some turn out well who have a taste for gardening, but a great many are not better than common labourers, and not so good as many regular garden labourers. The best of them are, as a rule, but the pupils of the gardening fashions of the period, as their knowledge of outdoor plants and their culture at the present time shows. That is not their fault, however. In many gardens, even the best, it has not been possible for men to get a knowledge of some subjects, because these subjects were not there or were not taught. Just now men who were edu-

cated to the bedding-out system require to have a good knowledge of hardy plants when they undertake a charge, and that knowledge they do not possess, but they are fast learning. The same may be said of their knowledge of garden design and ornamental planting, but these are their weakest points. If they do not acquire a good knowledge of fruit and vegetable culture, however, it is either because they have not had time to learn their business properly, or have neglected to do so when they had the opportunity. My experience is that a process of "natural selection" goes on by which means the good men get picked out from the indifferent ones, and upon the whole the best men come to the front. It is astonishing how much a man can learn in a short time when he is put to it. Numbers, however, fail from other causes than want of knowledge.

The divining rod.—With a vision of "T. B." and other authorities of the same stamp before our eyes, one hesitates to express a belief in occult practices like the "divining rod," but, notwithstanding the doubts of the learned, water-finding by those few gifted rustics who "work the twig" is a fact. I hear one of them is shortly to perform before royalty, and I see the agent to the Earl of Jersey has published in *Farm and Home* a matter-of-fact account of the man Mullins's successful operations on that nobleman's estates last August when water was exceedingly scarce. Wherever the man marked water, water was found. No. 6 was "the most remarkable well of these seven alluded to," says the writer. "At a depth of 13 feet 6 inches a spring, whose existence was not even suspected, was found that has been proved, after being tested by steam pumps for several days, to yield between 20,000 and 30,000 gallons per diem, and this after an abnormally low rainfall during the year." We know John Mullins well, having seen him employed more than once besides testing him in every way ourselves, once in the presence of a company of scientific engineers and others who, having failed by sinking and boring to find water, had to employ Mullins, a plain, unpretending working man, professing no scientific abilities whatever. It was quite a treat to see him stepping quietly over the ground with his "twig" and making a mark in the soil with his heel where he said springs existed and where they were afterwards found, discovering water-pipes and drains no one knew anything about previously and doing other wondrous things. That the man has confidence in his powers is shown by the fact that being also a mason he contracts to sink his own wells. For years back he has been employed by gentlemen, brewers, gardeners, farmers, and others in England and Scotland, and has always been successful. A well-known bishop blindfolded him once and led him with his twig over a spring of water under the ground, which the twig unerringly indicated, to the satisfaction of all present and John Mullins' benefit. We advise anyone who wants water-finding in his gardens or grounds to try him. He will find the water if it is there, and he is admitted by gentlemen who have tried him to be the most successful and cheapest engineer in that line they have ever employed. John carries quite a budget of testimonials about with him from gentlemen of all degrees, magistrates, parsons, lawyers, and scientific authorities and others, but his numerous wells are his best recommendation.

The setting of Strawberries.—Notwithstanding Lindley's theory regarding this subject, it is a fact that Strawberries can be fertilised in a higher temperature than some people believe. The worthy doctor has explained that the reason why the flowers become "blackened abortions" instead of berries, is that some of the organs grow too far in advance of the others, and that hence fertilisation cannot take place, but it is a fact that the fruit can be set well in a warm stove at this time of the year, provided fertilisation is effected by the camel's-hair pencil, but without its assistance the flowers will not set satisfactorily. It should be remembered, too, that there is a great difference between imperfectly set and well set fruit. In the first only a number of the pips are set, and the fruit becomes deformed and is of

smaller size. A well set fruit is fairly and evenly swelled on all sides and large, and in artificial fertilisation this desirable result is secured by gently touching the ball of the flower all over with a broad hair pencil, a work easily and soon performed.

The Benevolent balance sheet.—From the way Mr. Douglas writes on this subject I presume he is one of the managers, who are really the responsible parties. If they choose to pay the secretary salary and expenses on a liberal scale, no doubt a man can be found for the office. He says the travelling expenses are less than £25, in which case the petty expenses and postages must amount to nearly £80. About these he is silent. I must say the committee are a business lot of men. I know nothing like their management in the record of benevolent societies.

White Plume Celery.—The *Country Gentleman* is hard on Mr. Muir's favourite. It says:—

My experience with it, on the best possible soil, is that it is an unmitigated imposition, such as the average farmer is periodically taken in with. I purchased the seed at £1 12s. per ounce, at the same time as I did the Celery of commerce. The latter turned out superbly; the former you can safely say is a fraud.

Sowing and covering seeds.—I do not know anything worse for a crop of any kind than sowing and covering in a wet soil—the condition of most garden soils at present. It is not good practice to go on to the ground at all at such a time; but some not over-tenacious soils may be dug and sown even in wet weather provided the seed is sown in drills and covered with dry soil. For this purpose we always keep a quantity of refuse, but good soil from the potting bench, for covering in all small seeds outdoors at this season when the soil is at all "sticky." Crops must be got in before a certain date, and we find that, provided the dry soil is used to cover in with, the condition of the ground does not make so much difference as one would expect. Another important point is the depth to cover. Small seeds should not be covered deeply, but shallow sowing prevents the seeds from germinating as soon as they would do in a dry season if sown deeper. This is particularly the case with hard-shelled seed like *Seakale*, which comes up earlier when sown as deep as early Peas. I have proved this by experiment often, and the same thing applies to mostly all seeds; they must have a sufficient depth of soil over them to keep them moist. Another wrinkle is that a sheet of thin paper is as good or better than a pane of glass over a seed pan. It shades the soil, prevents evaporation, and thereby promotes the germination of the seed; the want of it makes a considerable difference in the time.

Ripe Daffodil bulbs.—As I anticipated from the dry warm season we had last year, our Daffodil bulbs have ripened better, and are showing much better for flower than they have done hitherto—I mean the deep planted ones—another argument in favour of shallow planting in cold soils and localities. There can be no doubt, I think, that the nearer to the surface, the greater the chance of maturity.

A "very difficult art."—An article in another paper on the "Philosophy of Pruning," which manifests a superficial knowledge of the literature of the subject without the practice, describes the pruning of fruit trees as a "very difficult art," and includes Rivers and Du Roi among the exponents of that art with more justification than he seems to be aware of. The expression "very difficult" art does not only indicate its author's erroneous impressions on the subject of pruning, but the impression of many other inexperienced people as well. Pruning is not a difficult art to any gardener who understands his business, and such an expression would only occur to the unlearned. Nothing could be plainer than the "Philosophy of Pruning," which may be summed up in the proposition that each kind should be pruned according to its mode of bearing. Thus, if you tell a novice that the Gooseberry bears on spurs on the older wood and abundantly on the previous year's shoots, he would hardly need to be told that the

"art" of pruning the tree consisted in leaving as much of both as could be accommodated, and that it was simplicity itself. It is the same with all other trees. How cultivators, like Rivers and Du Breuil, ever came to invent their artificial pinching and cutting-back methods in the midst of orchards that had borne superior crops for generations without any such aids to fertility is one of the mysteries of fruit culture. J. S. W.

EDIBLE FUNGI.

"VERONICA'S" lament (p. 129) over the absence of a royal road to distinguish between edible and poisonous fungi, other than that propounded by Mark Twain, calls to mind the "Wail of Smelfungus" (THE GARDEN, Vol. V., p. 114), though the cause of the wail is not quite the same. I fear royal roads to learning of any kind are few and far between, a remark which applies quite as much to botany as to any other branch of learning. There are, however, two or three forms of edible fungi which can be recognised quite as easily and certainly as the common Mushroom. They have been alluded to and figured already with others in THE GARDEN, Vol. Xif., p. 321, but I may be excused for directing "Veronica's" attention afresh to them. First, Agaricus (Lactarius) deliciosus cannot possibly be mistaken, for the slightest wound to the cup or gills causes the effusion of bright orange juice, a character found in no other British species. The stem is short and thick and, as well as the cup, tawny, the latter being slightly zoned with concentric rings. It usually grows in Larch or Fir woods, and is very good to eat. A second, the Chantarelle (Cantharellus cibarius), is readily recognised by its irregularly, funnel-shaped form, which is bright egg-yellow colour all over, its thick wavy gills running down the stem, and its smell of ripe Apricots. It is often very common in woods and is excellent eating. A third, Agaricus gambosus, is unlike the others, which appear in woods in autumn, as it is usually found in April and May in pastures; in colour it is white shaded with buff; gills white, or nearly so; stem very thick and somewhat bulbous. None of these can readily be mistaken for noxious species if the above characters be borne in mind. GREENWOOD.

HOW TO FORM A ROOKERY.

SOME years ago in a belt of tall Poplars at a little distance from the dwelling house three crows' nests appeared, and a little grain was scattered on the ground about the trees as an encouragement. Only two of the nests prospered. Next year twenty-five nests were counted; the following year eighty-two appeared. A neighbouring farmer now began to complain that the crows were troublesome, and stole his newly-planted Potatoes. He begged, therefore, to be allowed to reduce the number of crows. With some reluctance the request was granted, and he brought down between sixty and seventy. That made little difference on the produce of eighty-two nests. Their numbers are now far beyond what I desire. Hundreds sweep in from the east, from the west, the north and south, and still they

come, forming a multitude that cannot be numbered. From time to time they alight on the poor Poplars, making a noise that disturbs the quietude of our summer evenings. To add to the effect of the scene flocks of starlings, not quite so numerous as the crows, but still very numerous, fly along with them, but do not mingle with them, although sometimes a crow or two passes into the ranks of the starlings, which turn as the crows turn and alight when they do. The usual day on which crows begin to build is the 12th of March. Mid-Scotland. A. G.

AGAPANTHUS UMBELLATUS.

WANDERING about with my camera last summer in the Isle of Wight, Mr. Ewbank took me into Lady Hutt's fine garden in the outskirts of Ryde. Here I took several photographs, and, being particularly struck with a very effective bed of Agapanthus umbellatus, I have sent my photograph of it to you. The bed is on Grass, and a charming glimpse of rough woodland beyond it adds greatly to its effectiveness. You will notice that the plants have gone to seed. This stately



The African Lily (Agapanthus umbellatus) in the open-air garden.

African Lily might, I think, be much more used for fine effects than it usually is. In my own garden last summer a group of five plants of it made a grand show for many weeks.

H. STUART WORTLEY (Colonel).

Asphalte walks.—"T. B." must have been unfortunate as regards asphalte walks, or he would not have written so disparagingly of them. We lay down about 100 yards annually of them, which uses up all the tar made at our own gas-works, and I only wish we could make more, for during the past wet weather they have been by far the cleanest and most comfortable walks which we have. Like "S. W." we should not think of making them in pleasure grounds or in the flower garden; but in the kitchen garden, in the frame ground, and about sheds there is nothing to equal them that costs so little; through having the material for nothing, their cost when finished is only about 2d. per square yard. Our method of procedure is somewhat similar to that followed by "W. I. M." Rolling constitutes the principal point in forming a good firm walk. After trying various methods to prevent the material from sticking to the roller the following

proved to be the most effectual: When the walk is ready for rolling give it a good soaking of water, then roll and keep one man always pouring water on the roller with a watering-pot, which will keep the roller clean. The one which we use weighs 8 cwt.—N.

ROYAL GARDENS, KEW.

IN order to prevent any misunderstanding arising from two of the statements made in THE GARDEN (p. 163) by "An Old Kew Man," perhaps you will kindly give prominence to the following, in correction of what was stated with reference to the collecting, labelling, &c., of the seeds ripened at Kew. It is important that work of this kind should be performed by competent, trustworthy men, because of the large numbers of packets of Kew seeds that are distributed among amateurs, nurserymen, botanic gardens, &c., in England, the colonies, and Continental countries. This will be seen by the statements made in the Kew reports; for instance, in 1882 nearly 3000 packets, bags, and boxes of seeds were distributed from these gardens, and of this number a large proportion, probably about one-third, were seeds ripened at Kew. Now, unless these seeds were to be relied upon in respect of ripeness and correctness of nomenclature, their value would be seriously discounted, and if what "An Old Kew Man" has stated were true, it could hardly be expected that the Kew seeds would be very reliable. But I think it can be shown that instead of the work of seed-collecting, &c., being entrusted to incompetent men, the authorities at Kew have been careful to obtain intelligent and thoroughly trained gardeners for this work; in fact, men who have been trained for the purpose in the Royal Gardens. Mr. Grey, who, according to your correspondent, is "an old labourer, nearly blind," came to Kew as a young gardener fifty-two years ago, or long before these gardens were made public. After he had been here a few years he was sent out to

Australia as gardener to Mr. Alex. Macleay. After a few years he returned to England and was again taken in at Kew as a gardener for the herbaceous department, in which he was employed until two years ago, when he was superannuated. Mr. Grey's knowledge of the collection of herbaceous plants at Kew was such as might be expected to be possessed by any intelligent man who had devoted so many years to one department. He was perfectly familiar with the habits, history, names, and whereabouts of all the plants established in the collection. He knew whether this plant ripened its seeds early or late, or if the seeds of that one were likely to fall a prey to birds if not gathered as soon as ripe. To me this man's knowledge of herbaceous plants was simply marvellous. During the past seven years three young gardeners have succeeded each other as foremen of the herbaceous department at Kew, and without in any way disparaging these men, it may be said that Grey understood herbaceous plants much more thoroughly than they did, and in the collecting of seeds, which he had performed for many years, the foremen very wisely allowed him to use his own discretion, without, so far as I can learn, ever having occasion to regret it. Grey still visits Kew daily, and is much respected by

the young men. It may be mentioned as an instance of the zeal and care with which he always performed his work that during last summer and the previous one he might be seen almost daily with his glasses on and a bundle of labels and packets by his side, going over the herbaceous collection and picking seeds, which, as he said, would otherwise be overlooked by the "young ones." This work was voluntary. It would be unjust to a zealous old gardener and a true and faithful servant belonging to the national gardens to allow the error into which your correspondent has, no doubt unintentionally, fallen to pass without correction. During the last two years the seeds in the herbaceous department have been collected by the foreman, assisted by a young gardener who is intended to take charge of this important work as soon as he is capable. The seed collecting in the arboretum at Kew is done by a man who has been employed at Kew seventeen years, fifteen of which he has had charge of the seed department. He is acquainted with the whole of the plants in the Kew arboretum—and they number some thousands of species—better than, or at least as well as, any of the Kew staff. Moreover, he has charge of the labelling and cataloguing of the whole of the trees and shrubs in the arboretum. It must be apparent to your readers that work of such a special character as the above can only be performed satisfactorily by experienced men. The young gardeners who come to Kew do not care to stay long in any one department, and therefore are not to be trusted to do work which requires some years' experience in some such garden as that of Kew before it can be properly performed.

Kew.

W.

FRUIT GARDEN.

SPRING PROTECTION FOR PEARS.

THE loss of our Pear crop was perhaps the heaviest which we experienced from the frost of April, 1884. This fruit is very acceptable during the weeks that intervene between Christmas and the commencement of the Strawberry season, and its failure is quite a disaster in establishments where the amount of glass is insufficient to keep up a supply of Grapes. Any plan therefore of spring protection that is economical and that will be of real service is acceptable at this particular time. In the majority of cases where provision is made for the spring covering of Peaches, Nectarines, and Apricots, no thought is given to the Pear, an omission that may perhaps arise from two causes, namely, the question of cost, and also the thought that its later blooming season may enable it to resist with impunity any weather which it is likely to experience. Certainly when the length of season and time of ripening of the Pear are taken into consideration, it must be ranked first in value of all outdoor fruits, and if we are to secure a crop in the future some provision must now be made to ward off such a disaster as befell us last spring. With a view to this end I have just purchased a wooden coping that will project when in position nearly a foot from the top of the Pear wall at about an angle of 60°, and thus enable tanned netting when fastened to it in spring to swing clear of the trees. A stout board, an inch thick and some 5 inches or 6 inches wide, is fastened to the top of the wall, and from that the projecting board swings, secured by some stout hinges, and by underneath brackets fastened to it in such a manner that they come flush to the wall when the board is down. The boards are in 10-foot lengths, and can easily be pushed back by a short pole, falling back in this case on the top board to which they are fastened, and in such a position keeping no rain or dew from the trees. Both surfaces of the projecting board, being exposed at different times to the weather, are necessarily painted. The boards are easily and quickly fixed, and with an occasional coat of paint will stand for years. I hope that, with a double thickness of tanned netting suspended from them, they will help us to secure some good crops of Pears in the future.

B.

The Pear-shaped Service.—Those who possess many plants of this tree would do well to give them a little attention in the way of thinning out superfluous wood, and also a little root-feeding with a view to obtain, if possible, greater size and better quality in the fruit. Good fruit are the exception from old trees, few ripening satisfactorily, the majority being full of small kernels and without a particle of flavour or moisture. When one is fortunate to find a few in good condition they are certainly superior to the Medlar, although their peculiar flavour is not agreeable to some palates. As a question was recently asked in THE GARDEN respecting the size of individual trees, I may state that the solitary specimen in the pleasure grounds here is a trifle over 60 feet in height and has a girth of 5 feet 6 inches at 5 feet from the ground. The soil is a sandy loam and the situation a sheltered one, the only drawback to the development of the tree arising from the fact that it is hemmed in by other deciduous trees.—E. B.

PEACHES ON OPEN WALLS.

EXPERIENCE and observation both show that shelter from the cold north-east winds and borders for the roots that are neither too deep nor too rich are points of considerable importance in the cultivation of Peaches on open walls. Skilful management may do something towards securing success, but we have more faith in providing shelter from the quarters indicated and a suitable medium for the roots than the most painstaking management where the other items are wanting. We have had under our observation for some few years past a garden in which Peach trees have been grown for many years, and in which the soil is fairly deep, but not very rich, and very little, if anything, has been done to the borders in the way of providing fresh soil. As the trees have got worn out young ones have put in, and considering the precarious character of the Peach crop in many places, the trees in this garden bear more regularly than is generally the case. This we attribute to the excellent shelter afforded by a thick grove of trees, which extends along the north and a good way on the east side, and which reaches within 20 yards of the garden wall. If not the shelter, what is it that saves the crop? It is certainly not superior management; for, the residence being for some time unoccupied, the garden has been neglected. Still, the health of the trees has not been materially affected, and we have no hesitation in asserting that for their prosperity they are indebted to the grove of trees just named, which were planted on purpose to provide shelter for the garden.

THE SOIL, too, should not be deep or rich. The stronger and better the soil the softer and more sappy will be the growth, and such growth is the first to suffer from severe frost. The kind of growth wanted is bearing wood not larger than a goose quill, and as soon as the leaves are fallen it should be nearly the colour of mahogany—a condition that will show it to be well ripened and sufficiently hardened to pass safely through a hard winter. We are more likely to err through making our Peach borders too rich than the contrary. According to our experience, it is not the largest and most vigorous trees that bear fruit most regularly. If we would be satisfied with trees covering a less area, and would plant them thicker, we should have a better chance of securing crops. We do not wish it to be understood that we are altogether indifferent as to the character of the soil, but we do contend that there are not many gardens in which it is necessary to provide new borders. We are satisfied that the Peach tree is less particular as to soil than it is generally supposed to be. We have always found that a depth of 18 inches of good ordinary garden soil will grow Peaches equally well as the most elaborate preparation. If the difficulty of providing for the branches were no greater than the attention required for the roots, open-air Peach culture would present no serious obstacles; and this difficulty will be lessened if cultivators can be persuaded to be satisfied with smaller trees.

SHALLOW BORDERS should be the first step in that direction, eschewing the use of stimulating manure in their composition. If we had to plant a Peach border to-morrow, we should be content with a free and open soil of the depth just stated, and would take particular care to secure good drainage. We would then lay the roots on the surface and make a mound of earth over them. This plan, we are aware, would entail some amount of labour in supplying water for the first two or three years, but this would be compensated for, as it would insure the trees making clean, medium-sized, short-jointed growths, that would be far more likely to furnish fruit-buds than strong, sappy growth, the result of the roots being placed in a rich border. Trees planted in the manner just indicated should have one barrow-load of half rotten manure spread over the mound of earth as soon as they are planted, and it will be desirable to renew it every spring, for the purpose of confining the moisture round the roots.

AS TO BRANCH MANAGEMENT, no inexperienced person can form any idea of the amount of labour which a Peach wall of any considerable length involves. The necessary disbudding and picking off of blistered leaves, and the constant washings from the garden engine which are needed to keep the trees clean, are operations that it is absolutely necessary should be done at the proper times. The practice of overcrowding the branches, at one time so general, is giving way to a proper understanding of leaf functions. Where leaves overlap each other to any serious extent, it is clear that they have not room to do their proper work, and a feeble bud, which it is their business to nourish, is the result. Undoubtedly these enfeebled buds are the first to suffer from any sudden change of temperature. A distance of 4 inches between the bearing shoots is the least that should be allowed, while all the strong leaders should be 6 inches apart when the winter pruning is done. Room to lay in the summer growth will then be left.

PROTECTION let us by all means have, and the more perfect it is, the safer will be the fruit; but better have none at all than place over the trees anything that will exclude light, if it has to remain over them during the day as well as at night. The greatest hindrance to having portable and suitable coverings is the unnecessary height of our garden walls; when Peach trees could be grown without any protection, high walls were all very well, but now, when climatic conditions seem changed, we do not want walls more than 8 feet high. If of that height, we could more easily devise some means of protection for our trees. We feel sure that it is possible to get more regular crops of fruit on walls of the height which we name than on higher ones. To protect trees on walls only 8 feet high, some stout Hessian should be nailed to wooden poles, or, better still, to stout pieces of board. The Hessian net could be readily unrolled over the trees at night and rolled up again in the morning, and this would be all the protection that would be needed, short of one of a more permanent character. In exposed positions it might be advisable to add a wooden or glass coping at top; this need not project more than 1 foot away from the wall, as we find that the principal value of a coping consists in securing the trees from drip.—*Field.*

Easter Beurre Pear.—This is one of the good old kinds that do not seem likely to be superseded by newer varieties for some time to come. In its season there is such a dearth of really good dessert fruit, that it is difficult even in the largest gardens to have any fit to put upon the table; therefore if Easter Beurre received the attention which it deserves, I feel sure it would greatly help us in times of need. As a rule, Apricots, Peaches, and other autumnal fruits monopolise all the sunny aspects on walls, and only half-shaded ones are devoted to late Pears that really require all the sunlight we ever get to bring them to perfection. Where a south aspect cannot be accorded them they would be better grown as bush or pyramid trees on Quince stocks, for, like many other Pears,

I find that what they lose in appearance they gain in quality when grown on bushes fully exposed. This is especially noticeable in the case of such kinds as Marie Louise, that from walls is frequently but third-rate in flavour, while from standard and bush trees it is sweet and luscious. I have lately been reminded of the excellence of Easter Beurré by some fine fruits of it grown on bushes here without any special culture; I, therefore, feel sure that if prizes were offered for dessert fruits at spring meetings of horticultural societies, the Easter Beurré would stand in the front rank of really edible fruits. Some late-keeping kinds of Pears are only valuable for appearance sake, while this is equal to the majority that ripen when fruit is plentiful.—J. GROOM, *Hants.*

THINNING FRUIT CROPS.

PEACHES AND NECTARINES.—It requires a good deal of resolution on the part of the cultivator to thin a well-set crop of Peaches down to the necessary point. It is as broad as it is long, however, so far as general weight of crop is concerned, taken in the lump; but it makes a difference in the quality of the fruit if too many Peaches or Nectarines are left on a tree. One fine, fleshy, and juicy fruit is worth three lean ones, and anybody will say so who has proper opportunities of comparing the two. As a rule, the kernel or stone of a Peach or Nectarine is just as large in a small fruit as in a large one. The difference in size is made up by the pulp, and hence the largest Peaches are the deepest fleshed and most juicy, as well as best flavoured. Now is the time to think about this matter, at least as regards fruits under glass. I recommend thinning to be done freely and without fear, according to the vigour of the tree, and much depends on this, for some varieties will carry a crop twice as heavy as others year after year. The signs of overcropping are, however, soon apparent on a tree. To carry year after year in a regular way, a Peach tree must produce a crop of fairly strong shoots as well as fruit. So long as a tree grows and makes shoots also of moderate length and good foliage, it may be concluded that it is not overcropped; but when the growth is weak and short, or when the terminal shoots on bearing branches show signs of arrested growth, either the crop is too heavy, or something else is wrong. It is about the stoning period when the signs, if any, will be observed, and relief should be at once afforded by removing some of the fruit. Some branches will appear weaker than others—generally the most heavily laden; but all should be relieved according to need. I never like to see a too weak terminal growth—that is, the young growing shoot at the end of the last year's shoot on which the fruit will be. Anyone may prove for themselves the ill effects of too heavy cropping on a small scale by simply leaving, say, a fruit every 2 inches or 3 inches on one shoot. A number of these will probably fall off of their own accord; none of those left will be fine, and the shoot will do no more than produce a tuft of leaves at its point; whereas it should produce a shoot a foot or more in length. On gross shoots we have often left seven or eight fruits, taking it off those that were weaker, and in this way balancing matters—curtailing over-vigorous shoots and encouraging weak ones. It is an altogether wrong practice to go upon the system of leaving so many fruit to the square foot or square yard, unless the tree is of very even growth throughout. Every limb or branch should be gone over by itself. I thin nearly all my own Peaches the last time over, and my plan is to take one limb at a time, following it out to the extremities of all its sub-divisions and branchlets, and estimating the quantity to be left on each shoot wholly by the vigour of the young growth and leaves upon it. As a rule, in a well-grown tree the fruit by this process will be evenly distributed over its entire surface when thinning is done; but it is no haphazard plan, because each shoot is thinned according to its strength. I have often left the fruit from 4 inches to 6 inches asunder on one shoot, while from others

they have been all or nearly all removed. Most of the thinning should also be finished before the stones harden, and not afterwards, as it is the stoning process that taxes the tree most, and thinning afterwards will do little good. To those who are not familiar with this subject I may explain that when a Peach fruit has set and the flower petals have dropped, it swells up fast to about the size of a marble, and in healthy trees its progress may almost be noted daily. When the fruit reaches this size it is still quite soft, and can easily be cut through by the knife, when the embryo stone will be seen. At this stage, however, swelling quite ceases, and the fruit does not enlarge in the least for a month or perhaps six weeks. The stone is hardening, and if at the end of this period a fruit is opened, a stone will be found to have reached its full size, and to be as hard as a bone, the knife refusing to enter it. After this the "second swelling" sets in and the fruit is soon ripe.

GRAPES.—In a natural state the Vine crops itself moderately. It is only under artificial culture that we see it produce far more fruit than it can bring to perfection, and the disproportion in this respect is singularly great. It is nothing unusual to see every shoot produce three large bunches and set the berries on them all, and yet nothing is more certain than that it cannot ripen a third of this quantity. One pound of Grapes to the foot-run of Vine rod, with its lateral spread of branches extending to from 3 feet to 4 feet, is what is considered to be a good crop in a vine; but we seldom see that quantity gathered one year with another from the same Vine, for, as a rule, that is the most a Vine can finish properly. Supposing, therefore, that a Vine shows two or three bunches to each lateral, and that these laterals are about 9 inches asunder alternately, the reader will have some idea of the quantity of fruit that has to be removed in order that what is left may be ripened successfully. On every intended bearing shoot the number of bunches would have to be reduced to one, and on all the others the whole would have to be removed. I have often seen a Muscat of Alexandria Vine 20 feet long show from fifty to sixty perfect bunches, that promised to average from 2 lb. to 3 lb. a piece, but all had to be removed save from eight to a dozen; and that quantity, with as much foliage as the Vine could carry, it took all its time to finish. The number of bunches which a Vine shows is, therefore, no criterion of the number it is able to carry; and such a degree of fertility as the production of several bunches on each shoot is not a reason for leaving more than one. The reduction of the number of bunches on a Vine constitutes the first thinning, which should be regulated by the strength of the Vine, the size and vigour of the leaves, &c.; but it is unwise to leave more bunches than will average a rate of one pound to the foot run in the case of Vines trained from 2 feet to 3 feet apart, and wider Vines need not be grown. As a rule, the first bunch on the lateral is the best—that is, the one nearest the main stem, and that bunch should be left and all the others picked off before they come into flower. To leave them longer is to tax the Vine unnecessarily. The bunches having been thinned out, the next thing is to thin the berries in each bunch, and these require to be reduced in about the same proportion as the bunches if well set. From one-half to two-thirds of the berries should be cut out in all fair sized varieties, and the inside berries are those which should be removed first, as no room is made by cutting off the outer ones, which are naturally placed where they have most room. Late Grapes produce the largest berries—that is, Grapes ripened in autumn or the end of summer. In the operation of thinning, clean, sharp Grape scissors should be used, and they should be frequently wiped of the juice which gathers on them, or it will stick to the berries and disfigure them. All the small berries should be cut out in the first place, and lastly the larger ones, wherever they appear crowded, touching the berries to be left as little as possible in the operation. A Grape bunch when thinned should be of the same shape as it was before it was touched, only much thinner, and

if the rule of cutting out the inside berries and leaving the outer ones has been observed, it will be of this shape.

STRAWBERRIES.—In thinning Strawberries in pots under glass the same rule applies as in the case of outdoor fruit. Ordinarily, we do not consider it necessary to thin outdoor Strawberries. It is not worth while, except in the case of fruit intended to be large for exhibition or some other special purpose, and it is easy to see which fruit ought to be left. The first flowers of the Strawberry are always the largest—they produce the largest balls at least, and these form the biggest berries, owing to the greater proportion of pips they contain, hence these should be left; but after the fruit is set it will be easily seen which are best, and two or three berries to each cluster are sufficient to leave, if very fine fruit is an object.

PLUMS IN ORCHARD HOUSES.—Plums are seldom or never thinned outdoors, but in orchard houses the crop is often so heavy that it is advisable to thin it out freely, just as much as Peaches, only the Plum bears far more fruit in a certain space than the Peach does, and therefore does not need to be thinned so much; neither need it be thinned before it is stoned, as a considerable portion will naturally drop before then. The finer and larger dessert Plums attain a large size when thinned, and one or two may be left to a spur, and on shoots one fruit every 2 inches or 3 inches apart, leaving the best formed and those which promise to swell to the largest size; it will be seen at an early stage which fruits these are.

APPLES AND PEARS.—These are as much benefited by thinning as other fruits, but they are seldom thinned, except in orchard houses, in order to have fruit of extra size. It is questionable how far thinning would be advisable in the case of trees which, when left without it, produce fruit of fair useful size. Small trees in pots are, however, benefited when thinned, and thinning either Apples or Pears consists in only reducing the number of fruits in the clusters.

S. W.

SOIL TEXTURE AND ROOTS.

I REMEMBER once a Pine-apple plant being turned out of a pot and the remark made, "There, you see what the roots of a Pine are like." The plant had been potted in good loam, but very loosely, and the roots had pushed freely into it and coiled themselves round the sides of the pot in long fleshy and thick feeders, such as one often sees in other plants under similar circumstances. My monitor pointed to the roots as showing that not only the soil suited the Pine, but the loose potting as well, the last a thing I afterwards took leave to doubt and put to the test of experiment. The fact is the roots of such things as fruit trees generally and mostly all ordinary fibrous-rooted plants are just what the soil and its texture make them, and the effects upon the growth and fertility of the plant correspond. To take our first example, the Pine, what dissatisfied me with loose fibry turf and loose potting was the fact, first, that the roots congregated mostly in the bottom of the pot, leaving the surface vacant; and secondly, that the rough turfy compost prevented an equable distribution of the manure used (Standen's) among the particles. With many subjects, but especially with pot Vines, Pines, Strawberries, &c., I gave up the rough compost, and had that used instead teased out as finely as rubbing it through a fine sieve would do. This reduced the loam to something like the state of fine Cocoa-nut fibre, and enabled us to blend charcoal, sand, or manure so intimately with it, that the smallest quantity of the compost exhibited the right proportion of all the different ingredients, and not as in the rough compost, a lump of pure loam here, another of peat there, and sandy charcoal particles by themselves in a third place. In potting, this fine compost is rammed moderately firm, the quantity of sand and charcoal dust used preventing it becoming too close, and the effects upon the roots of the plants are in all cases plain to the most casual observer.

In potting, I ought to state that the soil is made firmest at the bottom of the pot, on the top only moderately pressed, and the roots, finding most resistance where they were naturally inclined to go and less resistance near the top, spread themselves evenly throughout the entire ball, and instead of being few and long and fleshy are numerous and small, clustering in every particle of soil. The top growth is proportionately sturdy and fertile, as it should be, for gross roots mean gross growth. I had a good example of this lately in a large *Lapageria* I had occasion to lift and replant in consequence of alterations to the house. Some time ago it was planted in a finely mixed and sifted compost made pretty firm in the bed, a large proportion of sand, charcoal dust, and pounded bricks having been added in the mixing, and when replanted the roots were found everywhere to be just a mass of fibres, penetrating the compost in all directions, and holding the soil so fast together that the ball, a yard or more in diameter, was easily carried with the plant, that now shows no signs of having been disturbed. A very different condition of the roots I have found at times with plants growing in spongy peat, into which they root freely, making great roots like Vines in rich soil and proportionately few fibres. Such roots, unless the compost is well drained, soon perish.

J. S. W.

PRUNING FRUIT TREES.

PRUNING should now be completed as quickly as possible, as the sap is rapidly rising, and bleeding will take place if the operation is longer deferred. Vines suffer more in this respect than most things, except Walnuts, which it is best to leave till they have foliage on them; they may then be thinned out or partly headed back with safety. If Vines are cut now it is advisable to touch the parts with styptic, which stops the pores and prevents loss of strength. Apples in orchards are generally left pretty much to themselves, which is a great mistake, as when allowed to get thick with wood it is impossible for them to produce fine fruit; they may and generally do bear profusely, but the Apples are small and poor in colour. In order to expose them to sunshine all branches should be removed that are misplaced or crossing others, as well as any that are cankered. If the latter is caused by American blight, as is generally the case, coat the bark with lime, which may be effected by using it fresh and hot, as a wash, pumped on by the aid of a garden engine, which will throw it in a regular stream, smother the insects, and make the trees healthy and clean, as the lime will kill and divest them of all Moss and Lichen, however bad they may be in that respect. The same remarks apply to Plums and Damsons, and, independent of freeing them from Moss, it is always advisable to give them a liming to prevent the buds being eaten by birds. Plums, like Apples, are greatly benefited by judicious thinning, and the object to be aimed at is to have the branches regular and well balanced all over the head. Those on walls that are spurred should be kept as close in as possible, and the same with Cherries, Apricots, and Pears, which every year should have some of the longest spurs reduced, as there is generally more than enough of blossom buds, and the great point is to have these as near the wall as it is possible to get them; if not, their flowers get injured by cold winds and frosts.

Morello Cherries bear on the young shoots, but it is useless having these thick, and the same with Peaches and Nectarines, the proper distance apart for which is from 1 inch to 6 inches, laid in all over the trees. In pruning these, attention should be directed to keeping them well furnished near the base. In the management of Peaches and Nectarines much depends on the summer disbud-ding and keeping the foliage free from insects. Figs need but little pruning. The point with them to get them to bear freely is to restrict growth by limiting their root run. This is best done by concreting and bricking them in, or planting in the hardest and poorest of soils, in which there is a good admixture of chalk, as then they

make very short-jointed shoots that become well ripened and studded with fruit. If pruned at all it should be more in the way of thinning than anything else, so as to let in the full light and sun to consolidate the pithy growth which they make; they will then endure sharp frosts. Gooseberries, when wanted for picking green may be left pretty thick, as then the bushes yield more fruit, but if required for dessert, the shoots should not be nearer than 6 inches, and left regular over the bush. Red and White Currants ought to have their branches from 6 inches to 9 inches apart and be spurred in close, and the leading shoots shortened to about 3 inches, but Black Currants bear from the young wood, and only need thinning. Raspberries should have their canes reduced to from three to five, according to their strength, and shortened to about a yard, a height at which they are more manageable than higher. Half their heads may be bent over from each stool and tied at the points, when they will stand fairly stiff without any stakes. Another way of managing Raspberries is to plant or twist the canes up by interlacing them from bottom to top, and if then tied they will support each other. Double bearing or autumn-fruiting kinds should be cut quite down to the ground, as a summer crop from them when the others are in is of no value, and it only helps to exhaust them. Forking or digging the ground amongst Raspberries is about the worst thing that can be done for them, as it disturbs and destroys many of their roots, which a good mulching of half rotten manure fosters and encourages to the great benefit of the plants they are feeding. Instead of disturbing the soil, it is far better to at once spread the manure and leave it on, as not only does it act in the way referred to, but it keeps out drought, and thus assists in producing fine fruit.

S. D.

My one Hyacinth.—I have one Hyacinth in my garden, just a common single white variety, which probably has a name, but of that I can give no information. There is nothing to boast about in having one Hyacinth any more than there would be in the possession of one Daffodil or Tulip, but there are some circumstances surrounding this single bulb that are interesting. It is growing in a very hot, dry position on a narrow border just in front of a greenhouse and in a south aspect. The soil is very poor, for it is so hot and dry in summer, that it seldom grows anything else but blue Cornflowers, which come up from dropped seed. In spite of these exceeding disadvantages my Hyacinth shows from year to year not the least decadence. It has been in its present place several years, is about 3 inches beneath the soil, and just now has a few leaves and a promising spike of bloom just above the surface. Now, we hear at times so much about the impossibility of growing Hyacinth bulbs for the production of good spikes in this country, and are further so gravely assured that all the finest imported bulbs soon deteriorate if planted out here, that I feel it to be remarkable that a bulb growing under the adverse conditions I have described should still year after year come up so strong. Does this experience of mine lead to the belief that Hyacinth bulbs need more of heat and firmer ripening than is usually given them? Still further, do we do wrong in lifting and drying the bulbs, as is the prevailing practice? It would be interesting to learn how others find their border Hyacinths to act when not lifted.—A. D.

Climate.—Why are our spring flowers, as a rule, so tardy this year? After the late hot, dry summer and a comparatively mild winter we find Anemones, Daffodils, and even the wild Daisies on the grass later than they are wont to be. During the winter of 1883 we had abundant flowers on our seedling Anemones, but not so during the winter of 1884. Climate itself is very erratic, but its effects seem still more so, and, so far as human intelligence goes, perfectly unexplainable; for after all, the barometer and the thermometer do not tell us all the facts of climate, while, as we all know, plants are more sensitive than any mechanical contrivances. It has been said that in

Gerard and Parkinson's time either the climate was better or certain plants harder than now; but we must not forget that in the era before bothouses, gardeners were far more successful in the use of rough-and-ready sheltering appliances than now. Then, again, rare plants were so few in comparison, that much more time and attention were given to their requirements.—F. W. B.

GARDEN FLORA.

PLATE 482.

RAMONDIA PYRENAICA AND OMPHALODES LUCILLÆ.*

THE annexed plate represents two pretty little rock garden plants, both familiar to growers of alpine, but both uncommon, though the *Ramondia* has been cultivated in English gardens for some 150 years. On the other hand, the *Omphalodes* may still be called a comparatively new plant, seeing that it has only been introduced within the past dozen years. Our drawings were made some years ago by the late Mr. Noel Humphreys at a time when the *Omphalodes* existed in only a few collections and when its culture was but little understood, and this accounts for the small size of the flowers represented in the plate, but the wood-cut illustration given herewith shows their full size, *i.e.*, when produced on well-grown plants. The *Ramondia*, too, is shown undersized, but the floriferousness of the plant represented may account for that.

The Pyrenean *Ramondia*.

This in all situations is a very distinct and effective plant; although not so striking as some of the bright coloured *Primulas* and *Gentians*,



Flowers of *Omphalodes Lucillae* (natural size).

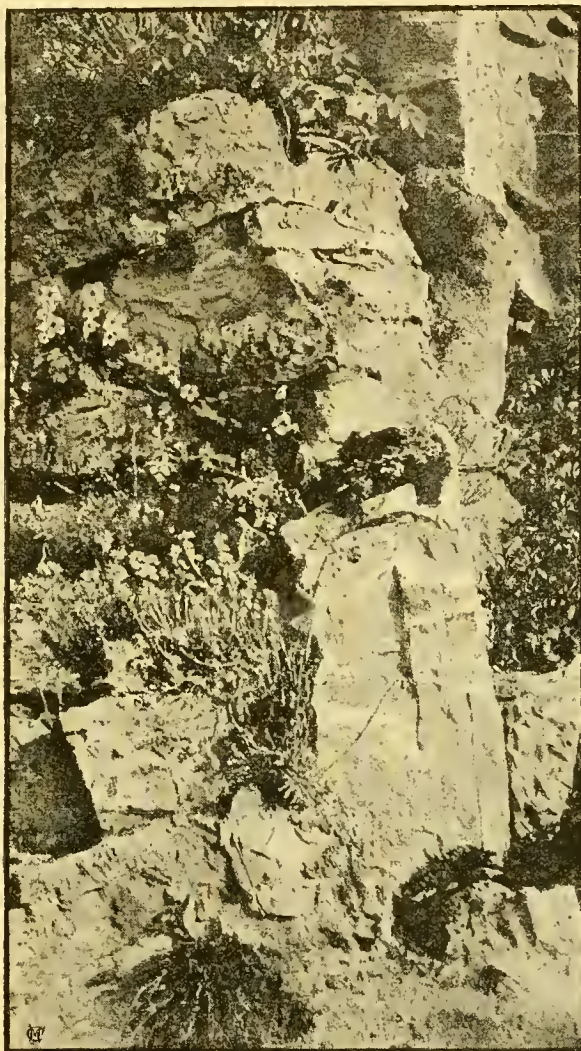
yet it is well worth growing on account of its distinct habit and abundance of bloom. It forms an evergreen rosette of blistered, wrinkled hairy leaves, which clasp the ground, forming, from the same base, a number of crowns clustered together; these in course of time force the centre ones from their original position, thus forming a large raised cushion. The flowers are borne on stems varying from 4 inches to 6 inches in height, each bearing from two to six flowers. The individual blooms

* Drawn in Messrs. Backhouse's nursery, York, by the late Mr. Noel Humphreys.



measure over 1 inch across, and are of a rich violet-purple with orange-yellow centres. Single rosettes often bear when well grown over twenty flowers fully expanded besides buds; when seen in that state the effect is beautiful. It is rarely

near Canterbury, who grows it admirably in his highly picturesque rock garden, composed for the most part of huge masses of stone set in the form of precipitous cliffs. On some of these facing east are colonies of *Ramondias* in the greatest



The white *Ramondia* in Mr. Otto Forster's garden, Lehenhoff, Austria.

seen in good condition under cultivation, owing to unsuitable situations being selected for it. In the Pyrenees, where it is very abundant, it is found growing in almost every conceivable position on the Moss-clad stone just above the water mark of the mountain stream, on perpendicular cliffs amongst Grass on damp spots, and even on the bare rocks fully exposed to the sun, but in this latter position it forms puny specimens similar to what we see here. The most luxuriant plants of it are found on the ledges of perpendicular rocks where the roots can creep into the narrow fissures and secure abundance of moisture, which is essential to full development. It is generally found on rocks having an eastern or western aspect, but rarely in a southern or northern one. When found in a southern aspect there are rocks immediately in front of it, which screen it from the sun. In its native habitat it grows in every kind of soil, but under cultivation peat, mingled with plenty of rough sand or old pots broken up fine, seems to suit it best. It grows freely in this compost either planted out on the rockery in a shady moist spot between stones or in pots under a north wall plunged in sand.

One of the most successful cultivators of the *Ramondia* is Mr. Hammond, of St. Alban's Court,

luxuriance, the roots having penetrated the crevices of the rock, where they doubtless obtain abundant moisture, while owing to the steepness of the cliff the rosettes of foliage are kept free from excessive moisture.

Another successful cultivator of the *Ramondia* is Mr. George Maw, of Benthall Hall, Broseley, who not only grows it well in the open rock garden, but also in pans and pots. A specimen of one of these plants bearing over fifty flowers is shown on p. 196. The following note respecting *Ramondia* culture was sent by Mr. Maw to THE GARDEN some time since. He says: "I have grown this plant in various situations, and have never found the least difficulty in its culture, except that it is impatient of excessive drought, and, under a hot sun, is liable to turn brown and lose its foliage, which weakens the plant for the succeeding year. It is doing fairly with me in an open rock border, composed of broken stones mixed with equal parts of sand, loam, and peat, and blooms freely in this situation, but as the flowers are very fugitive, its beauty soon passes away. In a cold frame it is one of the easiest alpine to grow. It likes thorough drainage and a cool moist situation. I report it every year at midsummer, and put about seven roots in a 12-inch pan. The soil I use con-

sists of equal parts of loam and sharp sand, with a little peat or leaf-mould. I place the pans in the shady part of a deep pit; they are now quite covered with healthy rosettes of the handsome rough leaves, and in about six weeks will be adorned with a profusion of delicate mauve flowers. To preserve its beauty unimpaired it is necessary to keep the flowers from exposure to the sun, and also to avoid wetting them in watering. The flowering pans of *Ramondia* will be lovely objects for at least three weeks, and well worthy of a place in the conservatory or sitting-room."

THE WHITE VARIETY of *R. pyrenaica* is still a scarce plant, but it is satisfactory to know that Messrs. Froebel, of Zurich, are propagating it successfully. It is a real gem among alpine plants, and one that is much sought after. The most successful grower of it is Mr. Otto Forster, of Lehenhoff, near Schrebb's, in Austria, who last year sent us some photographs of the plant and also some showing the portion of his rock garden where the *Ramondia* is growing in perfection. In describing the white *Ramondia*, Mr. Forster says that the flowers are nearly pure white when opening, but become tinged with a faint tint of rose later on. Our engraving (p. 197) does not represent the flowers quite life-size, the largest being fully 1½ inches in diameter. We have not yet heard that this beautiful novelty has made its appearance in English gardens, but probably it may do so before long. *R. pyrenaica* is the only species in the genus, and interesting to cultivators as being one of the two species of the Natural Order Cyrtandraceæ that are hardy, the other being the new *Haberlea rhodopensis*, a pretty plant, a native of the mountains of Central Europe, which we hope to illustrate in THE GARDEN in colour. The name *R. Myconi* is synonymous with *R. pyrenaica*, while *R. serbica* is the same as *Haberlea rhodopensis*.

Omphalodes Luciliæ.

This is also a European plant, chiefly inhabiting the most southerly parts of Eastern Europe and also Asia Minor. Of the many hardy gems that grace our flower and alpine gardens few surpass in loveliness this exquisite little flower. Its leaves are glaucous and smooth, those nearest the root furnished with a footstalk, and those near the end of the shoots sessile. Its flowers are of a bluish lilac or mauve colour, marked with white and about half-an-inch in diameter. It succeeds admirably in a sandy loam, enriched with leaf-mould in a partially shaded warm situation. Though essentially a rock garden plant it abhors being planted on a dry stony mound, which so often passes under the name of a rockery. It must have a good depth of soil to grow in, but this must be well drained so as to keep the plant dry during winter—its most critical season. Failing a well constructed rockery, it would be better grown in a flat border; indeed some say this is the best place for it. We saw the other day in Messrs. Paul's hardy plant nursery at Broxbourne a whole border full of fine plants just pushing up their new foliage, yet not a stone was near them, the border being flat and, if anything, below the ordinary level. True, the bed was protected by a glass light to throw off excessive rain. Messrs. Paul's foreman, an experienced grower of alpine plants, asserts that he cannot induce this *Omphalodes* to thrive in the rock garden, though it luxuriates hard by in the border. The finest plant of *O. Luciliæ* we have ever seen was grown by Mr. Hook when at Bradfield, in Berkshire. This was fully a foot across, one compact mass, and this was grown in an ordinary raised border lying well up to the sun. Here used to grow numbers of other "miffy" alpine plants that are generally thought to require an elaborately made rockwork. In such a position a long succession of flowers from the 1st of May onwards may be looked for. In early spring or in autumn the plants may be increased by division, and by seeds sown any time after they are ripe or in the spring. The two other cultivated species of *Omphalodes* are also important garden plants. The best known is the common little creeping Forget-me-not (*O. verna*), whose clusters of tiny turquoise-blue flowers

are so lovely in spring midst their luxuriant carpets of green foliage. The other species, *O. linifolia*, is an annual, a pretty plant, growing about a foot high and having silvery foliage and creamy white flowers, similar in shape and size to those of *O. Lucilæ*.

KITCHEN GARDEN.

MARKET GARDEN NOTES.

THIS is a busy time with market gardeners, and especially with those in the south of England, where, owing to a genial climate and generally a light warm soil, seeds may be safely committed to the ground much sooner than would be advisable in cold retentive land. The winter, too, having been unusually favourable for outdoor work, the majority of market gardeners have every bit of uncropped land manured and broken up ready for the reception of the seed, not that much is allowed to be fallow in market gardens, but during winter ground cleared of crops must remain so until seed time. Ground thus circumstanced has been thoroughly broken up, and now that copious rains have fallen it will shortly prove to be a capital seed bed, as in this district about two dry days render the surface dry enough to stand any amount of trampling without injury.

ASPARAGUS BEDS that have had manure or seaweed spread on them during winter are now being lightly forked over just deep enough to cover the manure, a little soil from the alleys being added to allow sufficient to be over the crowns to keep them from being injured when cutting, but the old system of cutting down alleys deep enough to injure the main roots has long since been given up. New beds in preparation are deeply trenched and enriched, a good dressing of sea sand being considered beneficial, but the planting will not be done until the tops have made some progress. April is, perhaps, the best month for planting in this part of the country, and May in less favoured localities.

ARTICHOKES of the Jerusalem kinds are now being planted in rows a yard apart in open sunny positions; the weight of roots which they produce is enormous; the remainder of last year's crop is now being dug up and stored in pits. If exposed to the drying influence of the atmosphere the tubers soon lose their flavour; they therefore require to be kept in soil until the time when they are wanted for use.

GLOBE ARTICHOKES are now having the protecting material placed around their crowns at the beginning of winter, lightly forked in between the rows, thus utilising it for enriching the soil about the roots.

BROAD BEANS are by some sown in autumn, but the greater part is put in in February; they do best in tolerably stiff soil moderately enriched, and for market the Early Long Pod and Mazagan are largely grown; for the main crop Taylor's Windsor is the best.

CABBAGES from late-sown beds are being planted, and those put in in autumn and winter are being surface-stirred when the weather is favourable for that purpose. The earliest planted ones put out thickly for drawing in a half-grown state are now making rapid growth, and will soon be available for market.

CAULIFLOWERS wintered in frames or under cloches and hand-glasses are now being thinned out, and replanted under some kind of temporary covering, and seed of the Early London is being sown in cold frames for summer crops. The Autumn Giant is also being sown, so as to get a long succession of this valuable kind.

CUCUMBERS.—These are grown in considerable numbers in frames heated with manure. The main crop is sown about this time. After the young plants get well established the increased solar heat is sufficient to keep them in vigorous growth. Varieties of medium length are the greatest favourites with market growers, a good selection of Telegraph being still one of the best.

Ridge varieties are grown largely in this part of the country. They are sown in March and grown on into good-sized plants in frames along with ordinary varieties, and finally planted out in May on ridges of stable manure under hand-glasses or cloches, the protection being retained until they are well established in June.

LETTUCES, both Cos and Cabbage, are being planted out from beds of late autumn-sown plants. The Brown Cos is still one of the best for standing the winter. Seed of both White and Green Cos are being sown under glass for early crops and in beds outside for a succession.

HERBS.—Beds of all kinds are being dressed and replanted. Good quantities of Mint roots are put in under glass or covered with movable lights, green Mint being in great demand early in the season. Parsley for the main summer and autumn crop is sown now.

ONIONS of the autumn-sown kinds, such as the Giant Rocca and Tripoli, are being transplanted in rows 1 foot apart on well-enriched soil. For the main spring-sown crop the soil is being deeply cultivated and well enriched. James's Keeping and Bedfordshire Champion are popular market kinds, and the silver-skinned is sown thickly on rather poor soil for producing small, clear bulbs for pickling; they are a profitable crop in this district.

PEAS, consisting of the earliest kinds, are mostly sown before this, and now second earlies are claiming attention. They are grown on the open field plan without any sticks; very tall kinds are not in favour, or very small varieties either; those that grow about from 3 feet to 4 feet in height are in most request.

RMUBARB is forced in considerable quantities for market by the well-tried plan of covering the crowns with pots or tubs, and placing stable manure over them sufficient to ensure a gentle heat. Early varieties merely covered with litter to ward off cutting winds produce good crops in March.

SEAKALE is now being supplied in excellent condition from roots lifted and placed on temporary hotbeds covered with mats and stable litter.

SPINACH of the prickly-seeded kind sown last August is now abundant, and the round-seeded summer kind is now being sown in quantity.

FRUIT PLANTATIONS are receiving their annual pruning, manuring, and forking between the rows. Cuttings of bush fruits are being put in, and grafts

Plants put out in nursery beds in autumn will, if carefully removed at this time, make fine plants, and bear good crops this season. Fruit prospects are at present good, flower-buds being plentiful and not unseasonably advanced. J. GROOM.

Gosport.

TRANSPLANTING PARSLEY.

THERE is a constant demand for Parsley, but, as has been pointed out in THE GARDEN (p. 132), the supply is not at all times easily maintained. However, since I have adopted the plan of transplanting it a failure has never occurred, and we have been in the happy position of having plenty for our own use, and usually some to spare should our neighbours not have sufficient. It is usually the earliest sowings that have failed with us. The seed is proverbially slow in germinating, and the tiny seedlings not unfrequently disappear almost unaccountably, or after they have made a slight progress they suddenly refuse to make any further advance, turn yellow, and die. Whether this is caused by insect pests or something injurious in the soil I have not quite determined, but any way it is very annoying to those who are most anxious for it to grow rapidly. In our case to sow the seed early in the open ground is only to court failure, and we have long since adopted the plan of sowing in a hotbed and transplanting the seedlings when sufficiently strong for the purpose. Many have doubtless observed how luxuriantly chance seedling plants of Parsley will grow in an early frame of Carrots, and it was a remembrance of these that determined me to sow early in frames, both for an early supply and plants for the open borders.

A HOTBED is prepared for Parsley much as we do for Carrots; the heating material consists of stable manure and leaves, on which a shallow frame is placed, and partially filled with the shortest of the heating material; on this are placed about 8 inches of good loamy soil. If we require Parsley early, two or more lights are sown, and as many strong old roots as we can procure are also dibbled in thickly and forced into active growth. As it happens, we have abundance of it both under frames and in the open ground. One light only is sown with Parsley specially for transplanting. The seed is either sown thinly broadcast or in drills about 4 inches apart and lightly covered with fine soil. Our soil is usually quite moist enough, but were it at all dry, it would



The Ramondia, as grown by Mr. Maw, at Benthall Hall, Broseley (see p. 195).

of Apples, Plums, &c., taken off and laid in by the heels in a cool shaded place. Freshly slaked lime and soot are being dusted over the bushes, both to keep birds from attacking them and to destroy Moss and Lichen. Strawberry beds are being cleared of weeds and lightly forked over, and in some cases new beds are still being formed.

be watered either before or directly after the seed is sown; the frame is kept shaded and close till the seedlings appear, when it is ventilated in common with the other frames whenever the weather is favourable. Sown early in February and thinned out where at all crowded, the greater portion of the plants will be fit for transplanting to

a warm border by the middle or end of April, the latter date being quite soon enough in cold localities. Supposing Parsley to be scarce in the open, half the plants would be left in the frame and encouraged to grow rapidly, these affording good pickings in succession to the old forced plants. No attempt is made to transplant the seedlings with a ball, but they are carefully eased out of the soil, so as to preserve the strong tap root as intact as possible. They are then pricked out on a well-prepared border in rows about 9 inches apart and 6 inches asunder in the rows. They soon take to their new quarters and grow to a great size, and in our case we thus secure beds of Parsley that rather surprise some of our fellow-gardeners who happen to pay us a visit. If only a few plants are required, or

are dibbled in more thickly, or about 6 inches apart each way, and it is surprising what a quantity of good Parsley can in this manner be obtained throughout the winter. It is seldom required till late in the winter, as plants first pricked out continue to yield plenty of leaves till injured by much wet weather or frosts. Those in the frames are kept cleared of decaying leaves, have the soil about them occasionally stirred, and mats or other protecting material are put on when the weather is very severe. W. I. M.

WORK DONE IN WEEK ENDING MAR. 3, 1885.

FEBRUARY 25.

HEAVY rain in the early morning prevented the continuance of planting operations, but having

done. Washed all Pine pit lights; there has been but little sun this year as yet, so that every bit of additional light is of value, even if we did not think it needful to be done for neatness sake alone, which we do. Potting off those struck and putting in other cuttings of various kinds of bedding plants occupied the remainder of the day.

FEBRUARY 26.

Drying, and very fine. Finished planting coniferous plants and made another start at moving winter bedding shrubs from terrace garden to their summer quarters. The ground where they are being planted was deeply trenched during the winter, so that planting out is not a formidable job; the ground being so light it works very easily. Raked over ground for sowing the main



THE WHITE-FLOWERED RAMONDIA (*R. PYRENAICA*). NATURAL SIZE. (See p 194).

should frames not be available, a pinch of seed might be sown in a box, or even a pan, filled with good light soil, and a very little warmth will bring on the plants much in advance of those raised in the open ground. To some all this may appear to be needless trouble, but those who, like myself, have been more than once much bothered because Parsley was scarce, do not care how much trouble is taken so long as we can get a good supply. Besides, I am under the impression that we obtain much finer plants since we have adopted the plan of transplanting.

WINTER AND SPRING PARSLEY we always raise on a border, the seed being sown early in May. The seedlings are freely thinned out, and when of good size transplanted to a well-enriched and convenient border, so arranged as to admit of the beds being covered during the winter with span-roofed or other frames. In this case the plants

abundance of shrub pruning and hedge clipping still on hand, there was no hindrance of work. We cut dead Bracken and brushwood generally in vistas adjoining pleasure grounds, and also cut off a few boughs of several kinds of trees that intercepted the distant prospect or views from various parts of pleasure grounds. Being thickly surrounded with trees, this kind of work requires to be done, more or less of it, each year. Common and Portugal Laurels, and more particularly the former, must be trimmed up yearly if it be desired to keep them bushy and well furnished with foliage from top to bottom. I would not be understood by trimming to mean close cutting in a formal manner, but simply the cutting back all leading growths, or such as encroach on other shrubs and trees. Work indoors has been further disbudding of Peaches, renewal of mulching—fresh stable—on a couple of inside Vine borders, watering with warm water having been previously

crops of Onions, Parsnips, and Carrots. It is still too wet for sowing, but the stirring it about will help to dry it on the surface that possibly we may be able to sow in a day or two. Finished the planting and repairing of Box edgings, and also the re-gravelling of kitchen garden walks. Tied down and stopped back shoots in early vinery, all tendrils and the remainder of surplus shoots being taken off at the same time. A singular and unaccountable circumstance has occurred in this house. A Vine of Black Prince, healthy and every way vigorous, did not show a solitary bunch, whilst all the others—Black Hamburgs—are without exception first rate. The variety has always been shy of fruiting, but there has hitherto been plenty for a crop, and why there should not be this year is very puzzling, as the Vine was more than unusually vigorous. We cannot risk any further uncertainty, and therefore it has been pulled up, and a Hamburg cane will be run up

in its stead. Potted Pelargoniums and Fuchsias for growing on as vase plants for the flower garden. The best kinds of Pelargoniums for that purpose are the old Vesuvius, Happy Thought, Mrs. John Gibbons, Bonfire, and Henri Jacoby; and the best Fuchsias which we use for the most sheltered vases are Elegance, Charming, Venus de Medici, and Rose of Castile. Other good vase plants which have also been potted singly are the yellow and white Marguerites. The blue-flowered Agatheæ celestis, together with Ivy-leaved Pelargoniums, make splendid plants for drooping over the edges of vases, and the plants for that purpose are now being potted in 3-inch pots. Potted off remainder of Chrysanthemums, and which, till new roots are emitted, will be kept rather close in a warm pit. Pricked out in cold frames more Cauliflowers and Brussels Sprouts, and made another sowing of Celery and placed it in warmth.

FEBRUARY 27.

Another wet morning. We are now more than satisfied in this respect, and do so long for a continuance of fine weather, that we may get in kitchen garden seeds; but to attempt such work under such weather conditions would be labour worse than wasted, and patience must, therefore, be exercised. Pointed Pea sticks, made pegs and labels, washed pots and cleaned out sheds, and, the rain having passed, did more shrub cutting and clearing away of brushwood and Bracken through woodland walks and vistas. Made up hotbed for striking Alternanthera cuttings, and for plunging in bottom heat small stove plants that have been recently potted, and for raising various seeds, such as Melons, Cucumbers, Cannas, &c. Soiled up Potatoes in frames and planted others. Put in cuttings of Petunias, Coleus, and Fesine, and planted out in frames newly-struck plants of Lobelias. The great bulk of the old plants of Echeveria secunda glauca having wintered successfully out of doors, they are now being trimmed up, and offsets taken from them are being dibbled thickly together in pits, not that they are likely to be wanted, now that the old plants are safe, though they might be; and, if not, they will come in for another year. I do not care to use a large proportion of such formal plants, as they give the whole garden a too stiff and artificial appearance. Pinched out the points of bedding Calceolarias; they are still in the cutting frames, and therefore rather close together, so that they are "drawn" somewhat, and this pinching will conduce to their throwing out side shoots, and by the time these are formed the season will be sufficiently advanced to admit of our planting them out of doors, either at the foot of fruit walls, or else in the newly-formed Celery trenches—indeed, anywhere so that they can be readily covered up with mats in case of frost. Violas are more sturdy, and only need the flowers picked off to keep them growing till such times as they can be transplanted to their summer quarters, which will be as soon as the winter shrubs are transplanted and the beds prepared by manuring and trenching for summer planting generally.

FEBRUARY 28.

The fine weather of to-day has indeed been a contrast to that of yesterday, so that we have been able to get a lot of the winter bedding shrubs transplanted and the fernery cleared of dead fronds and weeds, and a little new snail added to plants that had got bare at roots and hard places amongst the plants forked up, though not on Moss-grown places, as this we like to see, and therefore such patches are simply cleared of weeds. Swept up walks and roads, and the lawn, too, where needed. Being Saturday, as a matter of course all the houses were extra well cleaned out, Grapes in hottles looked over, and fruit room also, Watered Fig-house border and pinched out the points of the forwardest shoots, and rubbed off a few fruit, including all that were deformed and some that were not so, from shoots that had the fruit clustering together. Brown Turkey is the best—at least the safest—early kind, as it also is the best for general cultivation. Filled up Strawberry house with plants from frames, the vacancies

having been made by shifting plants that had set their fruit into Pine stoves from which the ripe fruit had been gathered. The plants now take more water, and as spider is certain to get the upper hand if they suffer in the least for want of moisture, we find it desirable to examine the plants with this intent twice each day.

MARCH 2.

A drying easterly wind has made the ground work well to-day. Plots for Parsnips, Onions, and early Carrots have again been run over with coarse-toothed rakes to make the soil fine preparatory to drawing the drills, which for Parsnips are 15 inches apart and 3 inches deep, and for Carrots and Onions the same depth, but only a foot apart. Weeded Spinach, and soon as the soil is a bit drier, the ground between the rows will be deeply stirred with forks. To me this is an important crop; therefore we try to keep it in full growth till the summer Spinach is ready, and this will not be for some weeks yet. Planted out a few more Cauliflowers; these we always plant in deep drills, which at this season serve as protectors of the plants, and in summer rain reaches them the sooner, or, lacking this, watering can be more effectively done. Transplanting small shrubs from flower garden and did more cutting of Laurels and Holly hedges. Work in glass department has been more of a routine character than for some time past, for now that fruit forcing is in full swing there is always some tying or stopping of Vine shoots, disbudding of Peaches, or moving about and thinning of Strawberries, tying up Melons, Tomatoes, &c., besides the regular necessary introduction of fresh roots, &c., required to keep up supplies of Seakale, Asparagus, herbs, and salad-ing. Divided old roots of Cannas; pieces with from three to six crowns we prefer to a larger number, as they not only grow away more freely, but they make a handsomer bed, by reason of the growths being more even. Potted off Coleus that are intended for pot cultivation for the furnishing of vases in rooms, for which they are well adapted, and being so easily grown one does not mind the destruction of a few plants, rather than injury to more valuable ones through being placed in dark and otherwise unsuitable places.

MARCH 3.

Another rainy day has upset all our arrangements as to planting shrubs and kitchen garden seed sowing, that it was decided should be done to-day, but instead thereof we have had to be content to do only the usual wet day jobs, such as peg-cutting, pointing sticks, making labels, and washing pots, all hands possible being employed in the houses cleaning plants, lime-washing, scrubbing woodwork, doors, &c. Potted into larger pots Echeveria metallica, Sempervivum arboreum variegatum, Echeveria farinosa, and a few other varieties of succulents that are required for use as sentinel or dot plants, and, therefore, it is desirable to have them as large as possible. Potted up all old Fuchsias that were used for flower garden last year, and which have been wintered in a cellar, being packed close together in leaf-soil. They have been pruned to form a pyramidal shape, which seems to be the most natural form for Fuchsias. They will be started into growth very slowly. For the present they are arranged in a lateinery that is closed up early in the afternoon, but in which there is no fire-heat as yet.

HANTS.

FRUITS UNDER GLASS.

VINERIES (*early houses*), started before the end of the past year, will now be making good progress. In the most forward the fruit will be set, and in many instances the bunches intended to ripen will be thinned the first time over. When this stage has been reached, the inside borders must be examined and top-dressed with good rotten manure prior to watering either with pure water or diluted liquid at a temperature exceeding the maximum maintained in the house. Old Vines, from which heavy crops are taken every year, will most likely derive great benefit from the moderate use of stimulants at every watering after the fruit is set and thinned; but young ones which

start vigorously may not require liquid until after the Grapes are stoned—a stage at all times trying to Vines be they young or old; therefore, while leaving every grower to decide what kind of liquid is best for his Vines it may suffice to say every watering should be thorough, and the food, where stimulants are used, should be varied as much as possible.

Stopping and tying.—Although all admit that stopping is necessary, there is a wide divergence of opinion as to the way in which this operation should be performed. Some pinch at the first joint beyond the fruit, and go on pinching every lateral and sublateral as soon as they have made one leaf. Others allow two or more joints beyond the bunch, and then keep all laterals closely pinched, while others, who believe in extension training and as many leaves as can have full exposure to light, stop once to throw strength into the bunches, and afterwards lay in as many laterals as will furnish every part of the trellis with foliage. Under the close pinching process the Vines produce compact clumpy bunches furnished with good berries, but they are short-lived and quickly resent overcropping, either by shanking or refusing to finish off properly. Under extension or semi-extension training larger bunches are obtained, the berries invariably colour well, and, judging from the number of old Vines now in existence in this country, we may assume that this mode of training tends to longevity and the production of the greatest weight of good Grapes.

Daily management.—Assuming that syringing was discontinued when the Vines approached the flowering stage, it is possible that spider may put in an appearance in dry corners or near the hot-water pipes; if so, a first effort should be made to stamp it out by syringing with soap and water, by putting in a syringe of water wherever it can be applied without wetting the fruit, and by maintaining a plentiful supply of atmospheric moisture from the steaming trays, walls, and floor when the weather is favourable to the use of pure water, diluted liquid, or soot water. If used in moderation, one, or all of these stimulants, while feeding and strengthening the Vines, will be found the best insecticide, as poverty and parasites generally go together. Of equal importance is judicious

Ventilation, otherwise the growths will be long-jointed and watery, the foliage will be thin and flabby, and most likely covered with warts, a sure sign that stagnant moisture is present in excess of fresh air. The temperature of a Hamburgh house may range from 62° to 68° by night, and from 75° to 80° by day, with a rise to 85° after closing with sun heat, but as no one now confines himself to fast lines, external conditions should not be lost sight of in the maintenance of the heat through this early and changeable period of the year. By way of illustration I may state that on this day week we registered 16° of frost. At the present time the glass stands at 55°, a temperature that will justify the maximum night heat with a chink of air from the time the fires are made up until the house is opened the following morning. In order to keep the internal atmosphere fresh and sweet, and to prevent condensation of moisture on the tender foliage on bright mornings, a little air should be given at the apex when the heat touches 72°, but not in sufficient quantity to produce a depression, and it should be gradually increased until the maximum of 80° is attained, when upon the same principle it may be reduced or shut off at once, as may be suggested by the conditions of the atmosphere and the probability of a bright or sunless afternoon. Immediately after the house is closed all available parts should be well syringed, and the evaporating pans filled up with water or diluted liquid, as it is during the remainder of the day that wood and fruit make the most rapid progress.

Succession houses.—Although the temperatures in these will not run quite so high, the mode of managing the ventilation and moisture will be precisely the same as that just recommended, unless the Vines are in flower, when a somewhat drier condition of the house will be necessary. Disbudding will require timely attention, and

tying down will be best performed on fine afternoons after the house has been freely ventilated, the young growths at that time being more flaccid and less liable to snap under the gentle pressure placed upon them. All tying should be performed piecemeal, and stopping will of course be carried on in the same way. Many people are under the impression that ripening Grapes are influenced and benefited by the admission of direct sunlight. Muscats and other white varieties always lay on colour quickly or otherwise in proportion to the amount of sunlight, but black Grapes revel under a good canopy of fresh, healthy foliage; therefore it will be found safe practice to lay in as many lateral growths as will fill the roof with foliage, and so aid the swelling of the berries of all kinds, while its presence will be a safeguard against the cracking of such varieties as Madresfield Court Muscat, Foster's Seedling, and some of the Frontignans. The white kinds can always be gradually exposed to light when the last swelling is finished and the colouring process begins. The caution usually observed in the syringing of early houses will not apply here, at least to so great an extent, as days are getting longer and brighter and Nature is with instead of against the cultivator, but syringing, like ventilation, plays an important part in the maintenance of bold healthy foliage, without which good Grapes cannot be expected, and, provided spider can be kept in check, it is better to err on the side of moderation than to weaken and debilitate the foliage by persisting in a saturated, sloppy state of the house.

Late houses.—As nothing can be gained by longer delay, all late houses from which the Grapes were cut for bottling in December will now be closed for starting into growth. Assuming that the inside borders were watered in January and again in February, and the external roots have had the benefit of exposure to the elements, the roots will be in a fit condition to respond to the gentle warmth which may now be applied to the Vines. Lady Downes, Mrs. Pince's Muscat, Gros Colman, and kindred kinds, which require a long season to bring them to perfection, may be brought forward under Muscat treatment, as one ton of fuel at this season will do more than ten times that quantity in the autumn, when an abundance of air is of more value than strong fire heat. Moreover, by getting the Vines well advanced in the spring, a march is stolen upon a cold, unfavourable season. Plenty of time can be allowed for stoning and colouring, two important points in the growth of late Grapes, which must be thoroughly ripe by September if they are to keep fresh and plump for five months after they are removed to the Grape room. Old Vines which have been spur-pruned for a number of years may be tied up to the trellis, as they always break well, but strong young canes should be kept in an arched or horizontal position until all the buds are on the move. Good syringing is an important factor when March winds prevail; three times a day is not too often. Let the water be warmer than the air and syringe backwards and forwards, to moisten every part of the canes. The only exception to artificial starting of late houses applies to the late Hamburgh house. In this compartment the breaking of the buds should be retarded as much as possible, as summer warmth will ripen the Grapes quite early enough. When thoroughly finished they may be cut and removed to the Grape room, where they will keep better than if left on the Vines; the Vines can then have a month's firing to ripen up the wood.

POT VINES.—Where these are expected to yield the first crop of new Grapes, the fruit will now be in various stages from setting to the completion of the stoning process. If the object is the production of the greatest weight of good fruit, the pots will be plunged in troughs or placed on pedestals with fermenting material below and

around them; the apertures will have been enlarged to set the crock roots at liberty, and constant feeding with good top-dressing and stimulants will form an important part of the routine of general management. Once the stoning process is complete, the roots being under the influence of bottom-heat, the temperature may range from 70° at night to 80° by day, and 85° after closing with sun heat. Unless the Vines are wanted for any special purpose, the ordinary way of tying the rods to the trellis is the most rational system of training, as the sap is not impeded in its progress, and laterals can be laid in on the semi-extension principle to secure an even spread of foliage over every part of the house exposed to sun and light. Atmospheric moisture of a stimulating nature can be produced by using weak guano water, soot water, and drainings from animal manure, well diluted of course, as powerful stimulants are more fatal than poverty itself.

Cut-backs.—As every cultivator has not the convenience for growing fruiting canes from "eyes" in one season, many cut back young Vines of the past season when they are dormant, break them in heat, shake out and pot on when the buds, two or more, have made about 2 inches of



Hydrangea quercifolia.

growth. As this stage is reached, the pit intended for their reception being properly prepared, crocks, pots, and soil dry and warm, no time should be lost in getting them on. Plunge near the glass, where, having the benefit of plenty of light, they can be regularly trained in the full rays of the sun. When fairly started rub off the weakest breaks, as one only will be wanted; carefully preserve the main leaves and pinch all laterals at the first leaf. Having filled the pots with roots, the next shift into the fruiting pots, 10 inches to 12 inches in diameter, must be performed before they begin to coil, otherwise a check will follow, the young rods will harden, and most likely cast some of the main leaves when they again commence swelling into free growth. The young canes should be well syringed to promote clean healthy growth, and ventilation must be sufficiently liberal to secure solid, short-jointed wood. If the Vines are wanted for ordinary pot fruiting they may be stopped when they have made from 6 feet to 8 feet. Vines from eyes of the current year may be treated in a similar way, but unless they are likely to make fruiting canes they need not be shifted into pots exceeding 8 inches in diameter. Sound turfy loam, old lime rubble, and bone dust make a suitable compost. Manure encourages worms and becomes sour; it should, therefore, only be used as a top-dressing.

W. COLEMAN.

FLOWER GARDEN.

THE OAK-LEAVED HYDRANGEA.

THE common Hydrangea is so popular and so prominent in all our gardens, that we seldom see a plant that is more picturesque in habit, if not quite so good in flower, viz., the Oak-leaved Hydrangea. This, however, is a very fine species, with handsome foliage, and one which flowers profusely. We remember seeing it in admirable condition in the pretty garden at Rhianva, in Anglesey, and various others. It is an extremely valuable plant for picturesque effects, and is not nearly used enough. The present little illustration well gives the effect of its foliage, and is from a sketch in Messrs. Parsons' garden at Flushing, Long Island, where it seems to be as happy as in the gardens of Britain.

CALOSTEMMAS.

ENQUIRY is made (p. 141) as to whether *C. luteum* is known to be in cultivation in England. I have looked through all the bulb catalogues I possess and have also searched through the gardening papers to see if any of the Calostemmas have been in cultivation in recent times, but have found nothing. No doubt Dean Herbert caused the introduction of large numbers of rare and strange bulbous plants during the many years which he devoted to their cultivation, and there is little doubt that with his death a great many of his pets disappeared and have not since been recovered. A glance at his rare work on *Amarylhidaceae* or at the illustrated botanical works of his time will show how very important a position bulbous plants held in Herbert's days as compared with their position now. (I am not now, of course, speaking of the commoner bulbs, such as Tulips, Hyacinths, Gladioli, &c., which have long been, and will continue to be, popular in horticulture.) The Calostemmas belong to the list of losses, and as they are both pretty and apparently easy to manage, a few words about them may induce some Australian nurseryman or amateur to take steps for their re-introduction into English gardens. There are but three species in the genus, all natives of Australia, both south and north, and in New South Wales and Queensland, where they are found along the river banks sometimes in the company of the *Eurycles*. This genus and Calostemma are the antipodean representatives of the *Eucharis* of the New World. The three species of Calostemma described in Bentham's "*Flora of Australia*" are—

C. PURPUREUM, which has a truncate bulb 2 inches in diameter, long linear leaves which are usually developed after the flowers, a flower-scape sometimes 2 feet in length bearing a many-flowered umbel. There is some variety in the colour of the smallish, but prettily formed flowers, purple being the most prevalent, but pink and white sometimes occurring. There is a resemblance to some of the small-flowered Daffodils in the shape and structure of the flowers. A good figure of this is given in the *Botanical Magazine*, t. 2100, and another in the *Botanical Register*, t. 422.

C. LUTEUM.—This is like the above except that its flowers are larger and yellow or white, generally the former. It is figured in the *Botanical Register*, t. 421, and 1840, t. 19.

C. ALBUM.—The form and texture of the leaves of this resemble those of *Eurycles Cunninghamii*, but are smaller. Bentham points to this character as being notable—"A remarkable species with the flowers of Calostemma and the leaves of *Eurycles*." The scape and flowers are similar to those of *C. purpureum*, except that in *C. album* the form of the flower limb is more spreading than in *C.*

purpureum; they are pure white. Being found only in Northern Australia, this last species would require tropical treatment; the two others are found in the more temperate regions, and would, therefore, probably thrive in an ordinary greenhouse.

There are some good Crinums to be introduced from Australia as well as the above Calostemmas, and those of us who are interested in the choicer bulbous plants would be glad to see these Australian kinds in cultivation. It may interest bulb growers to learn that Mr. Baker is now preparing a monograph of the Cape bulbs to accompany the next volume of Harvey's "Cape Flora," and as this work is in English it will be of great value to horticulturists, as there is absolutely no book to which one may refer for information on the myriads of good garden plants whose home is at the Cape. It is hardly necessary to add that Mr. Baker is one of a very few botanists who are in thorough sympathy with horticulture, and that he is therefore sure to prepare his monograph with an eye to the wants of bulb growers who are not botanists. B.

DAFFODIL NOTES FROM IRELAND.

HERE, in the south of Ireland, Daffodils are now (Feb. 20) very forward. My first bloom this spring, in the case of native bulbs, was from minimus (Feb. 9). This was followed by the Italian Daffodil *precox*. Then came a variety of *nannus* much larger than the typical form, followed by Italian bulbs of *odorus heminalis* and the imported "doubles" already mentioned by me in a previous notice. On Feb. 23 I picked my first flower of an Irish pseudo-Narcissus in its "double form," a very beautiful flower, preserving, even with high cultivation, the crown intact, distinct, and apart from the perianth. I sent it to a friend in Dublin for criticism, together with a very fine bloom of what John Parkinson styles, the Glory of Daffodils. This is one of Mr. Barr's "missing links," hard to get true. The peculiarity of this rare old Daffodil is its enormous round spathe prior to bursting, its narrow cylindrical crown of distinct orange and reflexed lemon-coloured segments and perianth, all thrown back to the stem. The foliage is a sea-green, quite distinct from that of any other double Ajax known to me. Some of the double Italian Daffodils just mentioned are very handsome; they consist of the short trumpeted *Telamonius*. *Priniceps*, single, may bloom next week. With a good position, and planted at the same time as Italian ripened bulbs, there is not much difference, as regards earliness, in the case of this fine Daffodil. I expect some very fine blooms this season from *priniceps*, as I have treated it very well. There is not a doubt that we have its double form in small quantity in the south of Ireland.

I do not think after all that we have the real typical *Telamonius plenus* as known in England wild in Ireland. The English *Telamonius* I am persuaded is Van Sion of Holland. This latter I know; of the English *Telamonius* I have had no experience until this year, but Van Sion I have had for years from Holland. We have propinquus in double form, major, and one or two others, but no actual English *Telamonius*. I wish the mystery as regards double Daffodils was more satisfactory. If you send blooms to experts in England, or probably Scotland, you will always get one reply: "Your flowers are those of *Telamonius*," though you may take such flowers day after day from bulbs with the most opposite foliage. Where are the doubles of all [the single majors that we see catalogued in Mr. Barr and Mr. Ware's lists? Should we not have double forms of *spurius*, *obvallaris*, and *maximus*? Then, as to dwarf Daffodils, there certainly are more than what were seen at the conference. Would experts tell me what is Trumpet *nannus* of Holland, or Trumpet minor, *nannus minor*, *Ajax minor*, &c.? In all cases it is the same thing. What is it? It is not what I know as *nannus*, *pumilus*, or minor. It has foliage as broad as that of Rip Van Winkle. It is the same height, same bulb, same colour, and flowers at the same time as Rip Van Winkle; in

fact, it may be his single form; and this conclusion I arrived at last season, but I am not persuaded of the fact; but if the blooms are taken from both bulbs, and the bulbs and foliage are sent to all the experts in England, they will pronounce them to be similar. I purpose to do this when next I send my blooms to South Kensington for a close scrutiny.

OF CAPAX there are two varieties—the one a perfect star, the other a confused formation of petals of the palest yellow; one has glaucous flat foliage, the other pale green grooved leaves. There is a very small form of cernuus in Ireland, of which I have some, and the growth, foliage, flower, and spathe are now alike—"neck and neck." I suspect this to be the "missing link," or single of capax. This, however, is a bold assertion to make when we consider that authorities, as regards Daffodils, have been for years looking for it. Herbert suggested *V. minor* and *Ilaworth calathinus*, though the foliage in both cases is so different. W. B. H.

Temple Hill, Cork.

HARDY CALCEOLARIAS.

CONSIDERING the well-earned popularity of this extensive and valuable class of plants, it is to be regretted that so few are found to be capable of wintering in the open air. A few of the larger growing sorts, such as *C. violacea*, *C. hyssopifolia*, *C. Pavoni*, and *C. fuchsifolia*, stand well against a wall on a warm south border without protection, i.e., if the winter is not very severe; but those that stand in the open border are very few. They include *C. Fothergilli*, *C. plantaginea*, and the hybrid between these two called *C. Kellyana*. *C. Fothergilli* is rare, if now in cultivation at all, although it will grow well in any position that exactly suits *Oxalis enneaphylla*, another handsome plant seldom seen in our gardens; partial shade and its roots well jammed between chalk stones appear to be the only way to success, and then copious waterings at the root without touching the foliage are also necessary. It has hairy spatulate leaves, and the slippers, which are deep purple and yellow, are not so handsome as those of *Kellyana*. The latter is said to have been raised in Edinburgh from a cross as above; but if so, there are very few of the *plantaginea* characters distinguishable in it. It seems to partake wholly of *Fothergilli*, with the exception of the slipper being a trifle longer and the markings smaller and more numerous; the leaves and habit are exactly alike. *C. Kellyana* is much easier managed than its parent, as may be seen from the large plant growing in the open border in the Edinburgh Botanic Garden, where it never fails to yield a profusion of its pretty flowers. It is easily increased from cuttings, and no trouble whatever is experienced in propagating it. A stiff loam with a little peat added suits it best. *C. plantaginea* differs widely from the others in having pure yellow flowers without markings, and larger, smooth, shining, pale green leaves. It suffers most from damp, and should be planted on dry slopes on the rockery or raised mounds in the border; the leaves are deciduous and should be cleared off as soon as brown, so as not to engender damp. K.

HELLEBORUS NIGER MAXIMUS.

THE difference, if any, between Mr. Tymons and me is so small, that I should not have written further, but that he has a right to the explanation he asks. *H. niger maximus*, be it a permanent variety or be it a species, is found wild. My postulate (for it is nothing more) was, that it must not be assumed to be a mere variety of *H. niger* typical, unless proved to be so by experiment. Mr. Tymons very properly says that I should extend that limit to experiments with *niger* varieties as well as *niger* typical. I quite agree with him, subject to the absolute exclusion of any pink-tipped plant from the trial ground. I agree with him that shade of colour is quite immaterial; but is it not rather begging the question to call his pink-tipped plants "true *n. angustifolius*," unless he can give their pedigree and

show that the parent plant could not have had any intercourse with *maximus*? I have not had much experience with *angustifolius*, but its claims have generally been pure white, with a tendency rather to green than to red. Last week I saw a flower of the Glasnevin plant, and we now know of four *nigers* with pink tips: 1st, *maximus*; 2nd, Mr. Poë's; 3rd, Mr. Tymons'; 4th, Glasnevin.

I do not know in what respect the second and third differ from each other, but that from Glasnevin has red-spotted stems and small pointed sepals. Of these four I do not think I am mistaken in supposing that *maximus* is the only one known to be wild. So much do I value Mr. Tymons' criticism, that I would gladly have an expression of his opinion upon the vexed question of *lividus* v. *argutifolius*. I give him credit for more science than he professes, but as it stands the question is not one of science, but of credibility. In addition to what I have already urged against the conclusion arrived at by Cambessedes and Lindley, will anyone, with the oft-mentioned plates before him, endorse the assumption that "upon consulting the figure in the *Botanical Magazine* all my doubts were dispelled; it represents the plant of Corsica and of the Balearic Islands as well as the size of the work would permit"? Such an assertion is marvellous! T. H. ARCHER-HIND.

South Devon.

A LOST HELLEBORE.

SINCE writing the above note on *Helleborus maximus*, in which, thinking it the end, I added a few words as to *argutifolius*, I have received assistance and references from a botanist whose name I only refrain from mentioning because I have not asked his permission to do so; but I may safely say that no one would question either his scientific authority or his opportunities of knowledge. In your issue of February 14 I ventured to say that Miller's description was not applicable to the Corsican plant we now cultivate. In corroboration of this, the gentleman I refer to says, "Miller's must have been a different variety from that now grown." He further suggests that Corsica being the country from which our present plant is derived, we ought to ascertain what forms are to be found in the other habitats mentioned—viz., Sardinia and the Balearic Isles; but, further, he has told me that there is "an old specimen labelled 'Nice, Herbar. Forsyth,' which comes very near the Bot. Mag. figure." Now, Forsyth was curator at Chelsea, and I believe that Sweet's plate of *lividus*, which was from a plant in Chelsea Gardens, also approaches the form given in the *Botanical Magazine*. I think, then, we may fairly conclude that Curtis's livid or purple Hellebore was not a fancy picture, but that it represented either a species or a variety very different from the Corsican plant; and once again I hope that Mr. Brockbank, who re-opened this discussion, may be successful in his researches either in Sardinia, Majorca, or Minorca, or in the country around Nice.

South Devon.

T. H. ARCHER-HIND.

WINTER AND SPRING CROCUSES.

THE following list bears ample testimony that the stir made in favour of a greater variety of Crocuses to carry us through the flowerless months has not been without its reward, so far as the number and variety of distinct species is concerned; and whereas we had at one time to wait until well on in February before we had Crocuses in plenty, we now have a continuous succession from November right into the heart of summer. In colour, too, they range from orange through lavender and buff, with most exquisite purple and bronze featherings to deep purple selfs and almost pure whites. The first to make its appearance is *C. vitellinus*, which opens its pretty orange flowers in November and continues until March; from different localities, however, it seems to vary. One from Beyrout, which we think the loveliest, is self-coloured, rarely feathered, as in the Aleppo plant. Next comes *C. Cambessedesii*, which is said to be variable in its time of flower-

ing; with us it commenced early in December. Its flowers are pale buff or lilac, with faint purple featherings. *C. Imperati* comes next—a good old species, willing to make itself at home almost anywhere; its deep buff-purple-feathered flowers are very handsome, coming in almost with the new year. *C. suaveolens* is hardly distinguishable from the above in colour, but differs in its unbranched style and unbranched purple lines on the segments. *C. versicolor* outwardly is nearly allied to both the foregoing, but without the yellow throat—a good lasting species. *C. Sieberi*, with bright lilac flowers, is hardly so interesting as its piebald variety. *C. susianus* comes next; though small, it is one of the very best for effect; it has long been in cultivation under the name of *Cloth of Gold*, which it well merits; the flowers are deep shining orange, with intense bronze or dull brown featherings on the outer segments, which become reflexed as the flowers get full blown. *C. Korolkowi*, a new species found by Dr. Regel in Western Turkestan, is handsome, and when plentiful likely to become a general favourite. Its flowers are dullish orange suffused with brown on the outside. *C. stellaris* has not lost its beauty with age, its bright self-coloured orange flowers being very striking. *C. carpetanus*, with its delicate lilac flowers, is very pretty, as is also the allied *C. nevadensis*. *C. alaticus* is also a rare species; it comes from about the same locality as *C. Korolkowi*; its flowers are greyish and somewhat ineffective. Then there is the pretty orange chrysanthus, also *C. Olivieri*, orange; *C. aerius*, purple; *C. vernus*, various; *C. bannaticus*, deep purple; *C. Tommasinianus*, pale lavender; *C. aureus*, the large spring Crocus; *C. etruscus*, cream with purple featherings; and lastly, *C. biflorus* and its varieties *estriatus*, *Weldenii*, and *Pestalozzei*. I noticed the other day that some of the flowers of our Crocuses looked ragged, and found that the birds, to get at the anthers and style, had completely destroyed the base of the segments, doing the work as neatly as a pruning-knife would have done it. In some of the flowers part of the anthers and pollen had gone; in others the style, but only where the anthers were withered. The throats of all those I examined were not in the least damaged. K.

NOTES ON HARDY PLANTS.

VIOLA PEDATA.—This is one of the prettiest plants that has of late been sent to us in quantity from North America. In a cultural point of view there is, however, in that fact something not altogether satisfactory, because nearly 130 years have passed since it was introduced, and yet we do not manage to supply our own wants with it. It does not appear to increase freely in this country, though under special care chance plants do thrive. The knobby portion of the roots seems to get out of the earth, and, as in the case of the Primrose, the new roots issue from the highest part, it brings itself to a deadlock; nevertheless, by means of a timely top-dressing a few plants have done fairly well with me, besides affording bloom both early and late. True, we have the option of seed, but I have not yet been successful in obtaining the true form from bought seed; in fact, instead of getting plants with only radical foliage in the bulk of the seedlings, we get the pedate leaves from stems. Some consolation may, however, be had from seedlings of obscure origin, for if they have any of the beauty of the species whose name they bear, they will not be entirely worthless.

SHALLOW versus DEEP BULB PLANTING.—In this I have found a sort of compromising plan to be most useful. Of late nearly all bulbs have been set in raised beds or borders. I like to adopt this method with nearly all flowers. Since I began it all such bulbs as those of *Scilla*, *Chionodoxa*, *Muscari*, *Ornithogalum*, and even *Crocus*, *Tulip*, and *Snowdrop*, have shown a marked improvement in their floriferousness, but more especially in the quality of the flowers. Larger bulbs, such as those of *Daffodils*, by this system have not only the advantage of being well covered, but the superficial soil seems to afford that freedom from too much moisture which is doubtless beneficial

after growth has stopped, and still the feeding roots when at work get into the natural soil; these we know die off annually, and if the bulbs have been planted so as not to be lower than the superficial portion of the soil of a raised bed, they are practically "chambered" when such natural severance takes place. The importance of such or similar management is obvious if bulbs really do require a season of comparative dryness, for it is to be feared that many would not care to be at the trouble of lifting and replanting annually. Perfect drainage is, perhaps, of itself ample, but it is too rarely carried out, and, unfortunately, ground pests, such as grubs, are very destructive to tunicated bulbs, between whose wrappers they lodge. Manure imperfectly rotted in contact with bulbs is an evil, whilst if sand from the road-side, which has become pure from the action of the sunshine or frost, were more freely used in completely surrounding bulbs, they would probably make such a vigorous start as to be able to resist all their enemies until such time as they needed thinning out.

VARIETIES OF CHRISTMAS ROSE.—A year or so ago I spoke of a bed of mixed kinds and other batches from seed I have since seen and handled. Once these *Ranunculads* break from their typical bonds, the end of variety cannot be seen. We have instances in *Clematis*, *Anemone coronaria*, *Ranunculus*, *Aquilegia*, *Delphinium*, and *Paeonia*. Two things may be against seed raising; it is a slow process, and it is inconceivable that more beautiful varieties than we have could be produced, but these considerations will scarcely stop progress. A splendid kind which I do not think I have seen before or read a description of is now in bloom in my garden; it was, I think, sent to me last summer.

RANUNCULUS AMPLEXICAULIS.—It is not yet too late to set strong roots of this for flowering this coming season. Fleeshy-rooted kinds like this having little or no fibre are capable of being lifted without damage, even after a little growth has commenced. It enjoys a light soil and a little shade. Every border of hardy flowers should number this *Crowsfoot* among its occupants. It is, indeed, both beautiful and distinct, its neat habit and grey-green foliage being as attractive as its substantial white flowers. Of late I have grown this in the same way as *R. aconitifolius* and *St. Bruno's Lily*—that is, in single crowns. It not only takes kindly to such repeated disturbances, but the plants, if less, are little pictures of neatness, whilst the flowers are abundant and large. The early period at which it dies down not only affords plenty of time to work it by this method, but other things may be put in its place to flower later, *i.e.*, if to keep the borders gay be the chief consideration.

SIDALCEA CANDIDA produces delicately beautiful flowers nearly the size of a florin; they are sent up in spikes one after another all the summer, and so present themselves as to be available for the two principal uses for which flowers are grown, *viz.*, to make the border showy or afford plenty of material for cutting. Though liable to rampancy, it does not well endure transplanting too late in autumn; about the present time is safest, and those who have not yet made its acquaintance should do so. Those who plant it must give it plenty of space and put it alongside something capable of resisting its encroachments. Its flower-stems are fine, 2 feet to 4 feet high, and straight as arrows.

SPRING FLOWERS.—Some of these are very early, and though the list is but a short one, the kinds are worthy of note. After a fortnight of seasonable weather, there have been a few bright days. This change, together with the finely pulverised condition of the land, has made the earlier plants almost bound forth. Quite a dozen kinds of *Hellebores* are in flower, and the coloured sorts have brighter hues than formerly, and both flower-stems and foliage are dwarfer. Can this be caused by the dry and hot summer we had? The winter *Aconite* is very fine, and also *Anemone fulgens*; various *Hepaticas* are opening beautifully, and yet another *Ranunculad*, the pretty little

Ranunculus magellensis. *Snowdrops* are ever with the earliest, but here, on a raised border and under the shelter of a bush of double *Gorse*, *Imperati* is quite as forward as any other kind. *Primroses* are represented by but solitary flowers, and these lack that freshness which is a peculiar feature of normal bloom. The *Heliotrope-scented Tussilago* I never saw finer. Tire-some as this plant may prove when wrongly placed in the garden, it ought not to be thrown overboard. *Cyclamen repandum* and *Saxifraga Burseriana* are two bright objects in a small way, and indispensable where something is desired to "show" all the year round. *Iris reticulata* and *Sisyrinchium* are in charming condition. Two flowering shrubs ought not to be overlooked, as they often are; they are neither new nor novel, but, what is better, they are old tried friends—*Jasminum nudiflorum* and the double-flowered *Gorse*. The latter is not yet in bloom, but the buds are thickly set and promising. Nothing can exceed the warm effect of its deep orange colour when large bushes are in full blossom; one then feels that there is a floral feast, though not another flower may be near.

Woodville, Kirkstall.

J. WOOD.

Narcissus Rip Van Winkle.—In reply to "B." (p. 172) I may say that Messrs. Rolliesson & Sons, of Tooting, had no *Narcissi* in 1877 that were not well known to Mr. Barr, and some one could, no doubt, tell us exactly what the two double varieties really were. By the names I should surmise that they were Dutch varieties—*i.e.*, grown in Holland. Years ago I purchased *N. nanus* fl.-pl. from Holland, and it was what we now call *N. lobularis plenus*, a much larger and quite a different thing to *Rip Van Winkle*. The feature which distinguishes the latter from all other double *Daffodils* is its array of extremely narrow perianth segments, which are sharp pointed—in fact, hook-tipped, like *crochet-needles*, as a lady remarked when I showed her a flower. I think it is a very distinct "cultivated" phase of *N. Pseudo-Narcissus*, but we can have no sure proof unless it should turn single again.—F. W. B.

Transplanting Primroses.—These and *Polyanthuses* are, I find, benefited by being transplanted annually. Thus treated, the blooms come finer and more abundant than on plants left in one position for years; and I also find it very beneficial to plant deeply, almost burying the fleshy crowns, that in bare ground soon get exposed to drying winds and trying periods of drought. If transplanted just after blooming, they strike out fresh roots that greatly invigorate them. It may be thought, because the woodland *Primrose* makes such a goodly display of bloom when left undisturbed, cultivated sorts need no transplanting, but this is altogether wrong. In their woodland haunts the crowns are buried beneath the falling leaves and decaying herbage by which they are surrounded, and it is surprising what a mass of covering they will push through in spring. If, therefore, we cannot give such plants the benefit of an exact counterpart of Nature's covering, we should at least provide the best substitute we can, either by transplanting frequently or adopting some kind of mulching, and for this purpose leaf-mould spread over the crowns at the approach of winter will be of the greatest benefit. I find the single white *Primrose* to be the most precocious bloomer of all. It flowers right through the winter, long before the hardy wild ones cheer us with their blossoms, and so floriferous is this variety, that in spring it becomes completely covered with bloom; then the coloured single and double varieties come in to keep it company.—J. GROOM.

Carpeting hardy bulbs.—One of the difficulties attending the cultivation of hardy bulbs that are best left in the ground all the year round, or, if transplanted, returned to the soil without further delay than is absolutely necessary, is to find a position where they are secure from spade or fork in winter, for, as a rule, herbaceous borders require more or less re-arranging every year, and at the best season for dividing and replanting most herbaceous plants the bulbs are just

making active root growth, and to disturb them is to half ruin the chances of a good bloom. After trying several different plans, I have found the following to answer best of any. Beds about 5 feet wide are set out with alleys between them. They are solely for hardy plants to supply cut flowers. They are planted in rows crosswise, sufficiently wide to allow of free growth, and a row of bulbs between each row of plants. These get on capitally together, as the early flowering bulbs produce their blossoms, ripen off their foliage, and are gone to rest before the other occupants of the beds come into flower. I need not enumerate all the plants which we find well adapted for this double cropping system; the following will illustrate my meaning: Beds of Carnations, Cloves, Pinks, Irises, Phloxes, Delphiniums, &c., are now showing intermediate lines of Daffodils, Hyacinths, Tulips, &c. These get no staking, such as they do on bare soil, as splashing the blossoms with dirt, even if they get blown down, is almost entirely prevented, and by a little care in arrangement many useful combinations may be thus formed.—J. GROOM.

Merendera caucasica alba.—We are always glad to welcome anything in the shape of a white flower early in the year, and more especially if it be hardy and able to endure the rigour of our changeable climate; such flowers are, however, rare if we except the Snowdrop and the Christmas Rose, the pure white variety *angustifolius* not being very plentiful yet in gardens generally. In the white variety of *Merendera caucasica* we have another instance of how confusion is ever and anon propagated even by those who ought to know better. It has been described and introduced to cultivation by Dr. Regel under the name of *Bulbocodium Eichleri*, a name under which it is being grown by the few who are acquainted with its rare merits. This wrong nomenclature is unfortunate; it is not a *Bulbocodium* at all. The style of *Merendera* is capitate and undivided, while that of *Bulbocodium* is three-parted. The white variety will doubtless prove an acquisition to all lovers of hardy spring flowers who are ever on the alert to add to the number of plants that flower between December and February. It grows from 2 inches to 3 inches high, and the flowers, which are nearly as large as those of *Crocus Imperati*, are pure ivory white, handsomely set off with pretty black and gold-banded anthers. A stiffish black soil, under the shelter of a west wall, seems to perfectly suit its requirements, a dozen or so of bulbs planted an inch apart in such a situation making a fine show. It commences to flower about February, and is a considerable improvement on the type, which we seldom see before May.—K.

Snowdrops at Chiswick.—I am always interested in the collection of Snowdrops which Mr. Barron has got together at Chiswick, thanks mainly to the late Mr. Melville, of Dalmeny. There may be said to be four distinct types of the ordinary single Snowdrop. First, there is a variety called *præcox*, a very early kind; then there is the common form of *Galanthus nivalis*; then there is Melville's late form; and so these three give quite a succession of flowers. Then there is Melville's Dunrobin Snowdrop, a giant

single-flowered variety producing large bold blossoms. They are on the rockwork at Chiswick, whereon Mr. Barron has from time to time planted such a variety of good things, that at all periods of the year there is something to be met with of a specially interesting character.—R. D.

Saxifraga ligulata.—I feel constrained to put in a plea for this fine hardy plant, which is so suitable for growing in pots early in the year. I have a good sized cold house, somewhat exposed, which is filled during autumn and winter with hardy evergreen plants, such as *Aucubas*, male and female, the latter in berry; *Marguerites*, *Retinosporas*, *Golden Box*, *Yucca recurva*, *Aralia japonica*, hardy Palms, *Aspidistra*, *Phormium tenax variegatum*, &c., all of which are bright and cheerful through the dull season. The large-leaved *Saxifragas* are very useful, *S. ligulata* especially. I have some large plants in pots that are already showing bloom, and will presently yield from a dozen to twenty spikes of flower. They retain their leaves all the autumn and winter, and are valuable before the flowers come. After they have flowered the plants are taken out-of-doors for the summer, and well looked after in the matter of watering. They are reported about once in

raised in this way from a sowing of what to all appearance was seed of a true species. Division is also a ready way of increasing good forms, and it may be done at any time between November and April. *A. Amellus* throws up several rigid generally branched stems, and rarely attains more than 2 feet in height. The leaves, which are obovate, are flat and rough to the touch; the flowers are large and very showy, violet or purplish blue, with a yellowish disc. It is a native of Southern Europe, and is perfectly hardy in our climate. Under cultivation it seems to sport a little, having given rise to a few forms of real value to the florist. *Bessarabicus*, another dwarf kind, has large regular flowers with long pointed rays, narrower than the type, and of a deeper colour; a semi-double variety also does duty under this name; then we have *cassubicus*, which differs from the above in having much broader flowers and a brighter golden disc; the rays, too, are deflexed and very pretty. *Amelloides*, which is nearly twice as high as *Amellus*, is a free flowering and very handsome plant; its rays are narrower, and the colour lighter, if anything, than that of the type; *roseus* is a reddish purple flowered variety of great beauty; and lastly, we

have *Archer-Hind's* variety, if the true plant belongs to this group at all. One plant which we received under the above name turned out to be *A. spectabilis*, a pretty bright violet-flowered species, seldom more than a foot high, and very neat in habit. *A. multiradiatus* is a most beautiful species from the Himalayas, but, unfortunately, very variable; some of the forms in a weak state are hardly distinguishable from *A. alpinus*. In its normal state, however, the flower-heads are very handsome, half as large again as that just alluded to, and of a fine bright purple-blue colour; the leaves are lance-shaped, narrowing down to the petiole, and yellowish green. It grows about 2 feet high, and flowers all through the summer months. *A. diplostephoides* is about the same height as the above, but has much larger flowers,



Aster Amellus.

three years, but during the summer are treated to occasional surface dressings of Clay's fertiliser.—R. D.

A FEW DWARF ASTERS.

AMONGST the many Michaelmas Daisies now grown in gardens, few, if any, surpass *A. Amellus*, represented by the annexed illustration. It was cultivated by Gerard as far back as the year 1596, and it still retains a foremost place in our gardens, notwithstanding the many additions that have of late been made to this popular genus. The dwarfier sorts seem to be better suited for ordinary gardens than those of tall and rank growth, and, moreover, as most of them are comparatively slow growers, the danger from overcrowding if divided every third year will be but little. They succeed in almost any soil, and so readily do they suit themselves to the most adverse circumstances, that, however bleak the aspect, no garden need be without its selection of Asters. They may be increased either by division of the roots or from seed; where variety rather than perpetuity of the original species is wanted, the latter mode is the only one available. Many of the varieties found in gardens at the present time have been

which are rarely less than 4 inches in diameter and of a handsome lavender-blue colour, with a prominent golden yellow disc. It is found at elevations of from 8000 feet to 16000 feet from Sikkim to Kashmir, and is perfectly hardy in our gardens. It flowers in July and August. Among others may be mentioned *A. glaucus*, *sibiricus*, *pyrenæus*, *Thomsoni*, *ericoides*, and *versicolor*.

K.

Gentians.—I am pleased to have got "J. C. L." out of his difficulty in regard to *Gentiana tibetica*, not *tibetica*, as written by him. I can, however, hardly believe him to be in earnest when he concludes that I referred to the Tyrolese plant in quoting the name *Froelichi* in connection with *G. saponaria*. I omitted *G. Froelichi* (Jan. t. 1650, Reichen. Fl. Germanica), which was perhaps unfortunate, because I had never seen a living specimen of the true plant in flower, and also from its near affinity to *G. acanthis* and some of its varieties, a name under which I believe it is quoted in Sturm's "Flora," 13, 54. The plant to which I referred, as will be seen by the text, is a native of America, and is the *G. Froelichi* (Gray, Man., ed. 1, 360), under which name it found its way into cultivation; and

having myself, like "J. C. L.," been confused, I included the name in the hope of assisting some other unfortunate who might find himself in the same difficulty. With regard to cultivation, "J. C. L." seems to be making mountains of molehills. I do not assert that all the species mentioned can be made "quite at home" on one rockery, or even cultivated with advantage on this side of the Tweed, but the majority of them grow fairly well, even in the neighbourhood of London. Not many miles from London I have seen the following doing well, viz.: *G. verna*, *Burseri*, *septemfida*, *purpurea*, *saponaria*, *Andrewsi*, *pneumonanthe*, *acaulis*, *cruciata*, *tibetica*, *macrophylla*, *brachyphylla*, *Kurroo*, *asclepiadea*, *lutea*, *ornata*, *Walujewi*, and *punctata*; therefore I cannot but believe that with a little attention most of them might succeed almost anywhere.—D. K.

ARRANGING HERBACEOUS BORDERS.

It is not by any means a difficult matter to arrange beds and borders of herbaceous plants to look well at all seasons, but the nature and habits of the plants used must be clearly understood and kept in mind. In every garden of hardy plants there ought to be at least three distinct divisions. One for plants which do not like fresh manure, but prefer decayed vegetable matter; one for plants requiring high cultivation and frequent renewals of the soil; and a third for plants which require to be left alone and allowed to grow and spread for years. This arrangement may be further extended by having beds of varying soils, and there should always be reserve beds for new plants; plants which rapidly extend their roots and overrun their neighbours should be planted by themselves in spaces in front of shrubberies. "O. A.'s" difficulty (p. 120) is caused by injudicious arrangement. If bulbs are planted so as to form great masses of bloom, there must be blank spaces left when they die down. A far better arrangement is to plant bulbs in clumps of a dozen or two amongst spring flowering herbaceous plants, taking care to have properly placed clumps of Tulips and yellow Crocus, which can be lifted and dried after blooming, and so leave spaces to be filled with late flowering half-hardy plants. In the south autumn-sown annuals are useful in the same way, as they can be cleared away in time for half-hardy annuals to be planted out to succeed them. In a bed of light nourishing materials *Anemones*, *Hepaticas*, Tulips, *Poet's Narcissi*, *Primulas*, and *Pansies* can be arranged so that the ground will be nearly carpeted all winter and covered with bloom in spring, and yet allow of plenty of tall-growing plants and bulbs to keep the space furnished in summer and autumn and shelter the spring flowers from being burnt up by hot sunshine.

PREPARATION OF THE BEDS.—These should be three spits deep, of good rich soil, well broken up, and dressed with old, well-rotted manure. No manure except such as is rotted to powder should be mixed with the top spit for such plants as naturally live on leaf mould, but as these do not as a rule root deeply, the soil may be manured beneath. On borders prepared in this way the great majority of garden plants will thrive. The best way to arrange them is to think of three definite periods of the year at which the border or part of it is to look a mass of bloom, and let everything else in the way of filling up be subordinate to that. The varying seasons will spread the bloom over the intervening periods. In the first weeks of May spring flowers should be at their best, in June the larger growing hardy plants, and in August and September the half-hardy and tender plants. In other parts of the same border April, July, and October might be the showy periods; other parts might be still further varied. An arrangement of bulbs coming up through carpeting plants would look very well. The effect of their sword-shaped leaves alone is not good, but they look well intermixed with foliage of a totally different character. For a border of hardy plants alone, the best way is to have the tall plants which disappear in winter towards the middle of the border if seen from both sides, or towards the back if seen from one

side; intersperse these with *Primulas*, *Narcissi*, &c., which require to be shaded in summer. Have the edges wholly of evergreen plants, and between these and the first named plants place such things of medium height as remain green tufts during winter mixed with clumps of liftable bulbs. In large borders and beds any bareness where the tall plants are may be greatly obviated by a sprinkling of evergreen shrubs. A good way of using early bulbs and tubers is to plant them in rings from 1 foot to 18 inches in diameter, so as to allow a pot plant to be placed in the centre of the ring without disturbing the bulbs. My flower beds are too extensive to be of much use to any but the possessors of large gardens, but two long borders I am carrying out may afford some hints. The borders in question are perfectly straight, cut out on turf, and intended to form when completed an avenue of flowers bordering a 20-foot wide Grass path. The borders are 10 feet wide, and each is divided into three blocks 72 feet long—six blocks in all. Their occupants will consist mainly of hardy florist's flowers—*Hollyhocks*, *Phlox decussata*, *Dahlias*, *Gladioli*, *Pyrethrums*, early *Chrysanthemums*, *Delphiniums* (various), *Pentstemons*, *Antirrhinums*, biennial Stocks, and double German Wall-flowers. The dwarfier plants will be mainly *Pansies*, *Anemones*, Tulips, *Primroses*, and *Polyanthuses*, *Saxifrages* (dwarf), *Irises*, *Scillas*, and *Pinks*, while the edgings will be *Arabis*, *Aubrietias*, *Thriffs*, dwarf *Phloxes*, and *Sunroses* which are indigenous. With these will be mixed a few large growing perennials—*Hydrangea paniculata*, *Lupinus arboreus*, perennial *Sunflowers*, pillars of *Clematis*, and *Everlasting Pea*, and some of the best things of dwarfier growth, such as *Campanulas*, *Lychnises*, *Enocheras*, *Tritomas*, *Eryngiums*, *Funkias*, *Megaseas*, and the dwarf *Lilies*. All the best biennials will be used in these beds, such as *Sweet Williams*, *Canterbury Bells*, and German *Scabious* extensively, also the best hardy and half-hardy annuals and tuberous-rooted *Begonias*. The soil is the light loam usual on chalk, so that plants which require rich or heavy soil have to be grown in specially made beds. The selection of plants is in fact ruled by what I have found to do well in the soil. *Carnations* are omitted, because they will be grown in a separate border. Many other suitable plants are also omitted because they will be grown in other beds. I think most people will agree with me that that is the best way to arrange a garden; let each part have a distinct character of its own and do not muddle things up all over the place, so that every border presents the same featureless mixture. Most of my perennials will be planted now, but all the bulbs, tubers, and biennials not till autumn, so that the perennials will fill their allotted space before the other things are planted. Annuals will fill the blanks for the summer. By that means all trouble about calculating the space which plants will fill is avoided.

WHAT TO PLANT NEXT EACH OTHER.—This is a point on which some experience is necessary. Where plants make a great mass of roots, as *Chrysanthemums* and *Phloxes* do, keep other plants well away from them, and let their nearest neighbours be things which can live on little, such as dwarf *Antirrhinums* and *Tropaeolums*; but where a plant makes a few long rambling roots other things may be planted tolerably close to it. Carpeting plants covering bulbs look well in patches amongst taller plants. *Sedum spurium* splendens is neat in growth, and although it loses its leaves in severe weather, it is never unsightly and begins to grow very early; spring bulbs come up well through it. Seedling *Pansies* planted early in autumn carpet the ground for the winter and bloom in the spring months. A bed of dark purple, claret, maroon, and golden brown *Pansies*, with scarlet *Anemones*, Tulips, *Narcissus* *Grand Monarque*, and double and single *Poet's Narcissus* coming up through it, produces a delightful spring effect. Those of the *Pansies* which turn out worthless can be cleared away and half-hardy things can take their places. *Gladioli* can also be planted amongst the *Pansies* in April. In autumn the *Pansies* will flower again, but the are not to be trusted through a second winter

For carpeting beds in winter the best way is to have a bed of good kinds and save seed, sowing it as soon as ripe; about the beginning of September the plants should be in their blooming places. The dark selfs are to be preferred, as they bloom through the winter if the weather is mild. The leaves are but little injured by severe frosts. Border *Pinks* and broad-leaved *Saxifrages* are equally evergreen. The great majority of evergreen dwarf plants flower in spring and early summer, so that where autumn bloom is wanted in dwarf patches it is better to trust to half-hardy annuals, such as *Portulacas*, *Grammanthes gentianoides*; bedding *Lobelias* and *Mesembryanthemums*.

HARDY GARDEN PLANTS naturally arrange themselves into dwarf spring and tall summer and autumn bloomers. The way in which wild flowers arrange themselves in the woods on the chalk here offers good suggestions for the arrangement of borders. The edges of the paths are mainly of *Lotus corniculatus*, *Sunroses*, *Polygalas*, *Hawkeed*, wild *Thyme*, *Eyebright*, and similar dwarf plants; through these rise in spring *Orchids* and *Cowslips*. Behind them amongst the cover are *Primroses*, *Violets*, *Wood Anemones*, *Lily of the Valley*, and *Solomon's Seal*, *Orchids*, and *Ferns*; following these come the taller plants, *Columbines*, *Valerian*, *Bugloss*, *Mullein*, *Campanulas*, &c. To follow this arrangement in gardens the edges of the beds should be mainly evergreen, and the spring flowering plants, which require to be cool, shaded, and moist in summer, should be in the middle amongst tall late-flowering things.

J. DUNDAS.

DOUBLE DAFFODILS.

WHAT constitutes a true double Daffodil seems to be an interesting subject. If you get the doubles of any of the nine pseudo and of the fifty-three major varieties that I see in the conference list and send them to men who see the points with the eye of a florist most minutely in the single flower, you will be told, "Your flower, sir, is *Telamonius plenus*." It would be a strange thing, and it would go a long way to prove the argument that *singles become doubles*, if all the wild double Daffodils in England of the pseudo class are *Telamonius plenus*, while the single type has become like "angel's visits"—few and far between. I dare say no botanist now-a-days could tell me the spot in all England where he could get a bunch of pure single *Telamonius* growing wild. I know for a fact that there is no such thing in Ireland, and, further, that we have very little pseudo in its single form—as in England—wild in Ireland, and yet we have the latter in its double form here and there. If we have no single *Telamonius* in either England or Ireland in quantity, how have we it in its double form in both countries? This subject should be well mastered at the next Daffodil conference. And let us get rid of the short cuts to conclusions that we certainly pursue at present, as, for instance, that of calling all our native double Daffodils *Telamonius plenus*. In my collection I am now cutting Daffodils that I believe to be double propinquus and lobularis. They were planted for trial with Italian pseudos ripened under the blue sky of Italy, and yet in the open they have given me my first perfect double flowers, and if I send them to an expert, he will tell me they are *Telamonius plenus*. In two months hence if I cut from the same garden more double Daffodils, I will be told they are likewise *Telamonius plenus*, though the lot in foliage, spathe, height, bulb, &c., be as different as possible. *Telamonius plenus* as I know it, in bulb, for instance, has a very thick, double skin, and under good cultivation becomes a very large bulb. Syn. Van Sion of Holland, double lobularis, has a very thin film or skin caul-like and a small bulb. Irish pseudo fl.-pl. is much smaller, and has a most beautifully shaped round bulb, quite distinct and very thin-skinned, and yet within the past week I have cut flowers from what I believed to be these three varieties, and if I send them to experts they will be called *Telamonius plenus*. Verily the fairies wield the magic wand

over the flower of the poet still, and man, poor dull man, is but an infant in their hands.

Temple Hill, Cork. W. B. HARLAND.

Iris reticulata.—I send you a photograph of a cluster of this lovely little Iris, now in full beauty in my garden. The clump is about a foot across, and contains some thirty-six flowers and buds; twenty-three were fully expanded when the photograph was taken. Eighteen bulbs were planted in an ordinary good border in the autumn of 1883, and flowered well last year. They were not disturbed and got no protection beyond a handful of coal ashes. The foliage was allowed to die away naturally. The border slopes a very little towards the south, but has no wall behind it; a hedge a little way off breaks the force of cold winds. Yesterday I counted thirty-five open flowers, two or three of which were just going off. This Iris is deliciously sweet-scented, almost as sweet as Violets. I tried a few in a pot last season and failed utterly. We had 6 inches of snow a fortnight ago, which covered some of the blossoms, but as soon as it melted they straightened up again, none the worse. Last year there were several of the red-purple form (Krelagei). These appear to have either changed into the violet form or disappeared. The flowers of this Iris had everything to recommend them—beauty, early blooming, perfume, and hardiness. Slugs and snails are very fond of them. I find perforated zinc the best protector.—GREENWOOD, Monkston.

* The photograph showed an unusually vigorous, well-flowered clump of this lovely Iris.—ED.

Early Daffodils.—One of the earliest of all our Daffodils to flower this year is the soft pale *N. pallidus præcox*. *N. nanus* and here and there a bud of *N. maximus* are not far behindhand. The very first to bloom was an Italian *N. pseudo-Narcissus* having pale edges to its yellow perianth; this I notice is quite a peculiarity among the Italian kinds. I am afraid many will be disappointed over the flowering of the two royal Italian Daffodils, *Regina Margarita* and *Umberto I.* Mr. Wood, of Kirkstall, was the first to flower these, and I have since seen flowers from other growers, no two, however, being alike. The fact seems to be this: The Italian trade growers possess no true stock, but the early blooming tendency observable in their bulbs renders them desirable for forcing. The big Welsh Sir Watkin is pushing up apace with broad glaucous leaves, which remind one of those of *N. Horsfieldi*. A big bunch of blooms of *Narcissi* (*N. Tazetta* vars.) from Scilly is lovely. *Soleil d'Or*, as grown there in the open air, has a cup almost vermilion in colour, a fact not without its suggestiveness to those who are trying to raise a scarlet *Narcissus*. Two other fine varieties are Scilly White, a lovely white large-flowered *N. Tazetta* with a creamy white cup, and *N. Tazetta floribundus*, all long ago introduced, and now acclimatised, even if not really naturalised, in Scilly.—F. W. B.

Anemone fulgens.—We find this to be very serviceable for many purposes during the early months of the year. Although so distinct from and in brightness surpassing all ordinary outside spring flowers, yet it associates admirably with most of them, especially in a cut state, and it has the merit of lasting a considerable time in perfection. For early flowering it is scarcely necessary to say we select a warm sunny position well sheltered from wind, for we find that if a severe gale blows over the foliage its colour becomes a rich bronze; the plant then makes little further headway for some time and the flowering is much retarded. As regards soil, we do not think that it is very particular, provided it is fairly rich and contains plenty of sand or grit. Avoid fresh manure, for while this is slowly decaying during the cold winter months it forms a very unwholesome diet for this *Anemone*. If the ground is not considered to be in sufficiently good condition we use thoroughly decayed manure for it; that from an old hotbed would be as good as any that could be used for the purpose. One and a half inches below the surface and 1 inch of sand spread over the whole is a good depth for early flowers. The

sand acts beneficially in rapidly removing the surface water. The flowers referred to in THE GARDEN (p. 122) were treated as here described; they were planted in August. We have several times tried to force this plant, but it has always been a complete failure—like "Hamlet, with Hamlet left out," for it always loses that depth of colour which is its chief glory.—CHAS. SMITH & SON, Guernsey.

ORCHIDS.

NOTES ON ORCHIDS IN FLOWER.

The Orchid houses at Messrs. Veitch's nursery at Chelsea, particularly the large span-roofed Cattleya house, afford a magnificent sight at the present time. On one day previous to my visit 1500 flowers had been counted open at one time. On the day I was there 1300 blooms were open. There are many flowering sheaths on which the flowers are not yet expanded, so that the display will be continued for a week or two longer. The variety of form, as well as in the colours of the flowers, is very striking, no two of them being alike either in form or colour. The finest are those with broad, well-formed sepals and petals, with the labellum of a rich crimson colour. Others have rose-coloured sepals and petals, with a purple flush, and crimson labellum; these are equally valuable, especially if the throat is rich orange. In many cases the plants are very large, from ten to twenty flowers being on each. Some have the sepals and petals shaded in two colours, or rather light and dark shades of the same colour. Besides the varieties of *Trianæ* there are many noteworthy specimens in this house.

The growth of *Lælia purpurata* is very remarkable this season; there are quite 100 flowering sheaths. One plant of the shy-flowering *Cattleya lobata* has seven flowering sheaths. Some noble *Vandas* are arranged down the centre of the house, and have an exceedingly good effect; as many as eight spikes are showing on some of the specimens of *Vanda suavis*. There are also some good flowering examples of the Trentham variety of *Cologyne cristata*; it is distinct from the ordinary form in bulb and in the length of its flower-spikes. *Lælia bella* is a splendid hybrid, and a fair rival to *Cattleya exoniensis*. The flowers have a very delicate perfume, and are of the largest size; the sepals and petals are a rich rosy purple, with a crimson labellum and a flush of orange in the throat; there are two flowers on the spike. It is a hybrid between *Cattleya labiata* (autumn flowering) and *Lælia purpurata*.

CYPRIPEDIUM TESSELLATUM PORPHYREUM is in flower. It is a distinct hybrid, and combines in a remarkable manner the characteristics of its parents, *C. concolor* and *C. barbatum*. *C. Sedeni candidulum* is a charming form of this popular hybrid; *C. Schlimi album* is the seed parent, and *C. longifolium* the pollen bearer; the lateral and dorsal sepals are whitish, with the slipper portion of a delicate rose. *C. Harrisianum superbum* has larger and richer coloured flowers than those of the species.

Every visitor is particularly struck with the light and elegant appearance of the *Odontoglossums*, which are arranged in a new span-roofed house. It is truly remarkable to observe how well the flowers are developed, and how delicately beautiful they are in what one may almost term the heart of London. Besides the endless varieties of *O. Pescatorei* and *O. crispum* (Alexandre), *O. cirrhosum* is a lovely species, and has not yet been sufficiently appreciated; it is very light and elegant. The white form of it, exhibited under the name of *Hrubbyanum*, is not so rich as the best of the spotted forms, but it is a very elegant plant. A plant of *Oncidium unguiculatum* should be placed in the corner of every cool house; its long-branching spikes continue to produce flowers for three months. Another distinct and desirable companion to it is *Oncidium nigratum*. The flowers are small, with peculiar, narrow-twisted sepals and petals, with dark maroon, indeed almost black, blotches.

In the warmest houses one has an opportunity to compare the largest with the smallest flowered *Angræcums*—*A. sesquipedale* in many flowering plants and *A. hyaloides*, a tiny tuft with flowers of the purest white. The firm are also flowering *Aerides Lawrenciæ* from their own importation. It is certainly a great novelty, the flowers being of a peculiar form and the petals very beautifully tipped with crimson. Many people would overlook *Neottia spiralis*, it is so small, and bears a small spike on a most slender stem, with tiny white flowers arranged in a spiral tuft at the top of it.

The *Phalenopsis* are also very beautiful; many species are in flower. *P. Stuartiana*, *P. amabilis*, *P. Schilleriana* have been often described. *P. Portei* is in flower; it is not only handsome, but interesting from its rarity. It is presumed by some to be a natural hybrid, but it is probably a species, though very rare, even in the Philippine Islands.

The *Dendrobium* house contains some fine examples in flower at the present time, but it will soon be a blaze of beauty. *D. speciosum*, one of the New Holland species, is not to be despised, as it will pass a considerable part of its existence in a greenhouse, and the plant here had some handsome spikes of yellow flowers on it. *D. Wardianum* and *D. nobile* are in hundreds; they are the finest of all this popular genus. *D. infundibulum* is very strong, as many as nine flowers in a cluster. *D. Rackeri* is not showy, but is a distinct and pretty species; the flowers are yellowish buff in colour, small and of peculiar form. *D. crassinode* and the variety *album* are very pretty. A plant of *Zygopetalum maxillare* has six fine spikes. *Calanthe nivalis* is plentiful, and its dense spikes of pure white flowers are very beautiful. The *Vanda* house is filled to repletion with handsome plants of *V. suavis* and *V. tricolor*; one hundred spikes are in course of development.

J. D.

BULBOUS CALANTHES.

"W. P." (p. 164) wishes to know if the number of flowers I stated having had on the red-eyed variety of *C. vestita* were the produce of several spikes from the same bulb or of one spike. They were from one spike, which produced three side branches. These *Calanthes* require to be very strong before the flower-spikes form more than a single side shoot, and even in the case of the biggest bulbs with me it was only those that made one bloom-stem from the base of the bulb that produced an exceptional number of flowers like that named, although I frequently had others nearly as large. The greater portion of strong bulbs formed from four to six spikes each, proportionately smaller than where all the strength was directed to the support of one or two. I should not expect an Orchid like this, which is not epiphytal, but grows naturally on the ground with its roots in the soil, would ever get so strong in a basket as it would in a pot; the roots would soon get through the material in which it grows, and would then stop, having nothing to feed on, just as with other plants, the nature of which is to have their roots in the soil—*Nepenthes*, for instance. A few years back an attempt was made to show that they could be as well grown in baskets as in pots, but there was no evidence to support the basket treatment further than that many *Nepenthes* were and still are grown fairly well in baskets, but none much more than half equal to those that have been seen in pots. As regards the leaves dying, which "W. P." enquires about, I always found that the better the bulbs retained their leaves in a living condition, the finer the flowers were, besides the plants having so much better an appearance with leaves on them when in bloom. The points of the leaves usually begun to show signs of decay about the time the first flowers opened. Once a week they were gone over with a pair of scissors, cutting the unsightly ends off, and by the time the flowers at the extremities of the strongest spikes were expanded the leaves were about done. To keep them alive as long a

this it is necessary to be careful in giving them water from the time that the bulbs have attained their full size, as if, after this stage has been reached, the soil is not kept considerably drier than during the season of active growth, the roots all go rotten at once, and with them the leaves will as rapidly lose their vitality. With me the old back bulb from which the current season's one was produced generally used to keep life in it until the time the flowers began to open, having gradually shrunk into less room as the young one got bigger. Now and then one of these old back bulbs lived on over still another season, but it was not a common occurrence. T. BAINES.

DR. PATERSON'S ORCHIDS.

How true it is, that gardening draws its votaries from every walk in life. Every age has a Fabricius or Cineinnatus, who is happier in his garden than when swaying the destinies of peoples. Virgil is thrice pardoned by us for his scanty mention of the craft, since he has given us the undying character of the old Cilician pirate, whose garden was his all-in-all. We would like to have heard of the Rose beds of Paestum and the late-blooming Narcissus; but the poet's silence thereon seems to say, these must be seen with the eye. It is a long leap from this garden by the Black Galesus to that of a north country doctor, yet, no doubt, the same animating sense of beauty and content is and was in the owners of both. Dr. Paterson is a very good instance of one, who, although very busy with this world's work, yet finds rest and refreshment for body and spirit among his flowers. His houses are unpretentious, one even heated with a flue. The plants stand on plain deal board shelves. The floors are of clay with a covering of ashes. The temperature is cool, and there is not a pervading sense of dampness. Yet everyone who has seen his Orchids must allow that he has seldom or never seen healthier plants. The converts he has made, consciously and unconsciously, from the generous impartiality with which he allows his houses to be inspected, are many in number. The visitor goes away, having seen by the most sullying evidence that Orchids can be well grown by anyone who is painstaking and really anxious to succeed. Anything simpler or less expensive than the three plain houses, by which these Orchids are covered, could not be well conceived. The framework and glass are of the best quality, but the internal fittings are the opposite of elaborate. Few other plants besides Orchids are grown. Over the doorways are placed Elk's-horn Ferns. In the smallest house is a thriving *Lapageria* on the shady side, and on the staging are some *Amaryllises*. In a frame joined to the wall of this house is a very large *Todea pellucida*. It is growing without any heat, and has once or twice been frozen; notwithstanding this, the plant is as healthy as possible. A *Sarracenia purpurea* is growing in the same way under a portable glass. From these two examples the question may well be asked, Are greenhouse and stove plants really the tender things we imagine them to be? I have heard of a crateful of *Cocos Weddelliana* being frozen hard, and yet sustaining no harm.

The Orchids that were in flower towards the end of January were many and various. And since, as I have said, Dr. Paterson's treatment presents no great obstacles to anyone who may wish to become an Orchid grower, a list of them will doubtless be acceptable.

Of *Odontoglossums*, three or four forms of *Alexandrae* were in flower; one quite a treasure. It was as large a plant as I ever remember to have seen, one of the spikes being quite a yard in length. In size of flower and perfection of colouring it was perhaps unsurpassable. *Rossmajus* was also well represented by some long spikes of flowers of a hue much darker than usual. The same remarks are also applicable to *cordatum*. *Uro-Skinneri* had been in flower for months, and was yet bright and capable of lasting still longer. This is truly an Orchid for a limited collection. There were some enormous spikes of the yellow *prænitens*, a rather dear, but very effective va-

riety for winter blooming. *Vexillariums* were extremely healthy and clean, and gave promise of producing, as time goes on, some grand flowers. A curious plant is shown of *Oerstedii*; it is a rejuvenated part of a decayed bulb. *Oncidium violaceum* is grown here to perfection; there were six spikes on one of the plants. The curious brown and twirling *O. serratum* was likewise in full flower, as was also *O. cheiroporum*. A healthy little plant of *Lycaste Skinneri alba* was showing two fine flowers, which unfortunately were not expanded at the time of my visit.

OF *DENDROBIUMS*, Dr. Paterson has bought lately a number of *Jamesianum*, which he has subjected to cool treatment together with some plants of *Disa* and *Odontoglossum Alexandrae*; not that these Orchids are not generally grown in the cool house, because they are. The experiment is remarkable from the fact of the house in which they are growing being of a primitive pattern and but imperfectly heated by a flue; in fact, no better than many of the houses used for wintering *Pelargoniums* in some of our older gardens. Nevertheless, the growth was as vigorous and as healthy looking as anyone could desire. The most notable *Dendrobies* in the larger houses were *Ainsworthi* and *nobile coerulescens*. As regards *Laelias*, Dr. Paterson aims at a selection rather than a collection. Prominent was a grand plant of *superbiens* bearing four spikes, one nearly 5 feet long with fourteen flowers on it. Than this hardly any species in the genus is prettier. Another fine variety that does well here is *L. elegans Turneri*.

CATTLEYAS were magnificently flowered, and caused quite a glow of rich colouring to pervade the house in which they are grown; the rich shades of purple were quite bewitching. In full flower were the scarce and beautiful *C. Symei*, *Trianae*, *labiata*, and *Warneri*; but most beautiful of all was the gorgeous *C. Percivaliana*. One plant of *Trianae* had four spikes of very large flowers. *Vandas* are largely grown here. A specimen in blossom of *V. tricolor Patersoni* was a poor variety, but this little defect was amply expiated by the splendour of *V. Cathcarti*. Few Orchids are more striking, and the red bars with which it is laced seem as if traced by a geometer's pencil. Of *Epidendrums*, the most noticeable was the white *E. ciliare latifolium*, a pure and delicate flower with a pleasant fragrance in the evening. Dr. Paterson owns one of the largest plants of *E. vitellinum* in the country. Some vigorous growths of *E. nemorale*, although not in flower, showed that this noble variety was not neglected. *Zygopetalums* were represented by *Z. intermedium* and *Mackayi*. Dr. Paterson's was written on the label of one of the latter, and its flowers certainly seemed larger than usual; but with that, perhaps, the health and vigour of the plant have something to do. The most noticeable *Phalaenopsis* was *Schilleriana*, a very good variety, bearing two fine spikes of rich rose-coloured flowers. The bearded *Coelogyne* was very pretty. A valuable plant was a specimen of *Aerides rubrum*. Two *Cymbidiums* stood out from the rest, to wit, *Lowi* and *elegans*. The flowers of the former were produced in lavish profusion. Of *Cypripediums*, mention deserves to be made of *C. longifolium* and *C. Haynaldianum*. The above are only a few of the gems of this collection. Many of the older kinds are still cultivated, such as *Celia macrostachya*, the leaves of which are so prominent, and a space is found for *Ansellia africana*. M. C.

ORCHID SEED.

I ANNUALLY harvest a crop of Orchid seed and sow it immediately it is gathered, but I have never succeeded in raising a single plant. I always sow on the surface of the pots containing the plants from which the seed was taken with one exception, and then I prepared a pot some time before the seed was ripe in the same manner as I would one in which to grow the plant, covering the surface with live Sphagnum, so that when the seed was ripe the Moss was growing well. I then scattered the seed lightly on the top, taking great care that the Moss was kept constantly moist, not by over-

head watering, but by plunging the pot in a larger one and filling the space with Moss, which was only watered, but with the same result. I should be glad to receive any instructions that would lead to success. Subjoined is a list of the varieties from which I have gathered seed, the first named being the seed bearer: *Cypripedium cordatum* + *venustum*, *villosum* + *insigne*, *Dominianum* + *Argus*, *Lawrencianum* + *Dominianum*, *superbiens* + *villosum*; *Dendrobium nobile* + *chrysanthum*, *nobile* + *Pierardi*, *nobile* + *macrophyllum giganteum*, *Pierardi* + *m. giganteum*, *Pierardi* + *nobile*, *Pierardi* + *Wardianum*; *Vanda teres* + *tricolor*. *Odontoglossum Alexandrae* and *Lycaste Skinneri* seed very freely with me; in fact, their beauty is ruined in the summer, as the flowers drop in a few days after being fertilised—I suspect by my neighbour's bees. I have at the present time a fine batch of seedling *Disa grandiflora*, which I have succeeded in raising. P. W.

NOTES ON RECENT NUMBERS.

Half-a-dozen *Acacias* (p. 177).—*A. cyano-phylla*, one of the most beautiful, is left out from the list; is it scarce in England? For depth of colour and as a late blooming sort it is most desirable. Trained against a wall it does well, and, with some protection, I should think might almost prove hardy in the warmer parts of England; at all events I hope to try it so.

***Bordighera Palms* (p. 165).**—Your correspondent mentions the privilege granted to this district of supplying bleached Palms to Rome, but does not describe the disreputable look of the whole place about Easter when they have been cut after having been tied up so many weeks. The general effect is not beautiful while they are being "treated like Lettuces;" but (N.B.) do not go to *Bordighera* to see its Palms just after all the leaves have been sent away!

Tar-paved walks (p. 166) if well laid out first are no doubt in many cases most satisfactory. They are no more unsightly than walks covered with cinders, and are no trouble to keep in order, for they will last for a great many years if there is not very hard traffic on them. They have, however, two drawbacks; they are very slippery in frosty weather, and if once they get damaged the repairing is very much a case of "sewing new patches into old garments." We have one from the gardener's house to the kitchen garden, which was made many years ago, and has not been touched since; during this time five minutes have not been spent either in edging or weeding it.

Living Sphagnum (p. 164).—In Sowerby's "English Botany" four species of *Sphagnum* are described, and in this neighbourhood there seems to be two distinct sorts, of which I have always remarked the superiority of one over the other for use with Orchids, though they may be, after all, only varieties of the same. I would say that the finer the *Sphagnum* is the better; it keeps green longer, does not sour so soon, and recovers itself more quickly after been dried than the coarser. A point to be noticed in collecting *Sphagnum* is, if possible, not to gather it from among Heath roots, but to choose that which is growing out in the open or among Sedge, for that which is from beneath Heath has a tendency to produce small white fungus.

The Mulleins (p. 172).—I was much pleased to see these old-fashioned plants spoken of with praise. I have often wished, after looking at the drawings of them in Curtis, Edwards, &c., that I could get some more varieties, for, with the exception of one or two sorts, no one seemed to grow the majority of them. Some time ago I wrote recommending *Celsia Arcturus* for use in a dark room, where its long spikes of bloom last in beauty for weeks, and I also suggested potting up some of the smaller *Verbascums* to form a contrast. The varieties of *phoeniceum* are most effective indoors; the colours do not come so bright comparatively as the *Celsia* if kept in the dark, but the flowers open all up the stalk at the same time and last well in beauty thus protected from wind

and rain. Phœniceum out of doors should be planted where it will not be scorched by the sun, otherwise the individual flowers last only one day, and you get no mass of colour. It should not be allowed to seed, but should be cut off as soon as over, as then fresh spikes will at once be thrown up from the base. *Celsia* and *Verbascum* may be treated alike, and indeed to the ordinary observer there is not much apparent distinction between the two.

Reprinting.—"Amateur" suggests (p. 182) the publication of the list of Lilies in pamphlet form. Those who can afford room on their shelves for all the volumes of *THE GARDEN* are much to be envied, but being one of those who cannot, I make periodical good resolutions to buy a second copy and to cut out and paste in a book all that I think may be likely to prove of lasting interest or use for reference. This, I am sorry to confess, I do not carry out in practice. When great pains have been taken each week both with the plate and the letterpress accompanying it, especially in a synopsis of a family, as frequently of late has been well and fully given with a number of woodcuts, it seems a great pity that so much trouble should not be embodied in some more lasting form, but should be mixed up with much that is of merely personal or temporary interest. See what is affixed to the end of the same list of Lilies: "*Cattleya Trianae*, a poor variety, in no way remarkable either for size, form, or colour," "Names of plants and send in flower," &c. I would venture to make two suggestions, and beg my fellow-readers of *THE GARDEN* to come forward and support me if they approve. Either that a volume should be issued at the end of the year, for which subscribers should send in their names beforehand, to contain a collected reprint of all the letterpress accompanying and referring to the plates or bearing any special interest in connection therewith. The first impression of the coloured figures and woodcuts might be reserved for this, to ensure their being good, and the whole might be arranged with an index, to a great extent as a collection of monographs, in a style to make it a really valuable book of reference in a good library. Or if a sufficient number of subscribers could not be got together in order to carry out this plan, then I would suggest that certain pages each week should be reserved for advertisement, discussion, &c., and the rest should be so arranged that they might be taken out and bound together at will. Against this I would urge that often from coming through the post or other causes or misfortune one's copy is not always in first-class order for binding, and that it would not always be easy each week to limit to or fill up the prescribed number of pages; whereas by a reprint one could obtain one's volume arranged in better order with the comments and experience called forth in subsequent numbers by the plant published weekly. I hope that all in favour of my suggestion will hold up their hands, and will also raise their voice or their pen in order that we may come before you, Mr. Editor, in sufficient numbers to insist on our petition being heard. C. R. S. D.

THE SEASON IN SOMERSET.

NOTWITHSTANDING that up to the beginning of March we have had no severe frost, having only registered 9°, and that in the month of January, vegetation in the open air is not so forward as I have known it to be in some previous years. For this one cannot account, seeing that, owing to the diminished rainfall, the ground must be drier and warmer than usual. It may, however, be owing to the low temperature that prevailed for the first three weeks in the new year. Amongst hardy spring flowering plants, the *Anubria* and *Myosotis* are particularly late in coming into flower, so are also *Pansies*, *Violas*, *Daisies*, and *Polyanthuses*. In the kitchen garden there is not much difference from other years. Early Broccoli are coming in, and other sorts of the Brassica family are just starting into growth. Fruit blossoms are very promising, and as yet not in a forward state.

Apricot trees are well set with bud, and, so far as one can judge, these are the only hardy fruits that promise a full show of bloom. The pears have just bursted their first brown scales and are showing uncommonly fine buds, but their number is certainly less than usual. The condition of the Apple trees is such, that with a favourable spring we may look forward to a full crop. Should this hope be realised, it will make the third good consecutive fruit crop which we have had up to the present. Bush fruit trees promise well.

J. C. C.

NOTES OF THE WEEK.

Messrs. Wm. Paul, of Waltham Cross, will make a special exhibition of Camellias in pots in flower at the next meeting of the Floral and Fruit Committees at South Kensington, on March 10.

Hull Chrysanthemum Society.—The annual report of this society for last year has just been published and shows a result in every way satisfactory. At the first annual show, held on the 20th and 21st of November last, about 4000 persons were present, the result of which is a surplus of £77 13s. 6d., besides which there are still a few subscriptions, &c., to collect, and further contributions have been already promised for the ensuing season. It is encouraging to learn that the late show has given a considerable impetus to the entlivening of the Chrysanthemum in Hull and its neighbourhood.

A collection of about fifty water-colour drawings by the landscape painter, Mr. Alfred Parsons, consisting chiefly of the most picturesque spots in Shakespeare's country, in the valley of the Warwickshire Avon, will be exhibited on March 16 at the rooms of the Fine Art Society in New Bond Street. Readers of *THE GARDEN* have now and then had the opportunity of seeing Mr. Parsons' landscape and flower drawings, and some may like to see his sketches in colour of one of the most charming districts in England, embracing the Avon from source to sea, and including the scene of some of the most famous battles, from Naseby field downwards.

In the forthcoming international exhibition at Antwerp, to be opened on May 2, great interest is being manifested in the horticultural section, as it is still the idea of the King and of other prominent men that Belgium shall one day become the garden of England. Under the direct patronage of the Belgian Government, the Royal Horticultural Society of Antwerp will organise the following special exhibitions, viz.: 1, ornamental plants, shrubs of all kinds; 2, May 10, 12, Roses, Azaleas, Orchids, Rhododendrons, &c; 3, June 28 and 29, Roses; 4, Aug. 2, 3, 4, 5, and 6, horticulture generally; 5, fruit, more especially Apples and garden produce.

Australian plants.—We have been greatly interested in seeing drawings of a number of Australian plants made in their native country by Mrs. Rowan. The appearance of these flowers, drawn from nature and size of nature, is such as to make us doubt whether the culture pursued in our greenhouses has ever shown us the true beauty and high value of these plants. The lovely types, the brilliant and tender colours, the curious forms, the freedom and grace of the plants, are all such as we have never seen shown by Australian plants as grown in this country. They make us long to see such an interesting flora or to see the plants grown as they should be.

White Plume Celery.—In your issue of January 10 Mr. Muir wrote in praise of this Celery, but unfavourable mention of it was afterwards made. When I was in America on a holiday, a year ago last September, I was particularly struck with the unusual excellence of the Celery brought to table. I set myself to enquire for some seed, and among others went to the editor of one of the principal horticultural journals. He made merry over my ignorance, and said that it was not so much in the seed that the excellence lay, but in

the method of cultivation, which he then explained was to grow the Celery on the top of the ground without any earthing up. And afterwards he put an amusing paragraph in his paper as to our interview, but without mentioning my name. Some true White Plume was sent me lately by an American friend, and if any of my gardening friends care for a little to try I will send to any of them who write.—Colonel H. STUART-WORTLEY, *Rosslyn House, Grove End Road, Feb. 25.*

QUESTIONS.

5326.—**Sulphate of ammonia for lawns.**—Can any of your readers kindly tell me the weight per acre of sulphate of ammonia that should be given as a spring dressing to lawns?—S. P.

5327.—**Plants for a dark house.**—I have a house 30 feet by 20 feet with stone walls, a slate roof, a large glass door on east side, and large window on the south end. Would any of your correspondents kindly name me any kind of plants which would succeed in such a place? They may be either flowering, fine-foliaged, cool, or exotic subjects.—AMATEUR.

5328.—**Field mice.**—I am very much troubled with field mice, which destroy my *Erocii* by eating away the stem. Will any of the readers of *THE GARDEN* inform me of a plan by which I may get rid of them? I have tried all kinds of traps, but unless I find out their runs I fail to catch them, as they live only on vegetable matter, and do not take a bait.—W. S.

5329.—**Heating.**—My greenhouse is heated by a stove and hot-water pipes, but I experience a difficulty, owing to the fire not lasting more than about three hours after having been made up, and it has happened on several occasions that in the morning the temperature of the place has become so low—the fire having gone out—as to injure the plants. Perhaps some reader of *THE GARDEN* who has a house which is heated by the same arrangement may be able to suggest some means to get over this. Hitherto nothing but coke has been burnt in the stove, and it has been found that the fire has been spent all the sooner when the stove has been filled to the top.—R. R. S.

5330.—**Wasps and fruit.**—The discussion on protecting fruit trees is interesting, but if anyone will suggest a protection against wasps, it will be equally so to many. In many places it is impossible to take all the nests, and to those who, like myself, have excellent crops of fruit on open walls, the wasps are most exasperating, eating everything the moment it is ripe, from Bird Apples to Golden Drop Plums. Can anyone name an effective plan of protection with net or muslin so as to exclude wasps? Muslin bags do for hanging fruits, but not for Peaches and the like which are close to the wall; muslin curtains nailed on rarely fit the wall so closely as to exclude wasps, and where one finds a way in the rest soon follow.—F. R.

LATE NOTES.

Celery (J. L.).—Seed of the White Plume is not now scarce. Most seedsmen keep it.

Chrysanthemum on plate (W. C.).—The large buff flower is William Robinson; the white, Single White; the red, George Stevens.

Cattleya Trianae (W. Owen).—A pretty variety, the flowers of which are well formed and delicately coloured. The white edging to the labellum is a distinct character, not common.

Seedling Auricula (T. J. R. M.).—A pretty and distinct variety, the colour being unusual and pleasing; the flowers, moreover, are of large size and admirable form. It is certainly worth increasing. It belongs to what florists call the "fancy" class.

5332.—**Gardenias.**—I consider it beneficial to plunge Gardenias in Cocoa-nut fibre (or any other suitable plunging material) especially during the hot sunny summer season, and more particularly if the plants are subjected to a high temperature and the pots filled with roots. Under less favourable circumstances better not plunge them. I have no experience of the thickening of the bark of Gardenias in the manner referred to by your correspondent.—D. S.

Naming plants.—Four kinds of plants or flowers only can be named at one time, and this only when good specimens are sent.

Names of plants.—J. T. S.—1, Habrothamnium fasciculatus; 2, Aphelexis macrantha; 3, Tradescantia zebrina.—W. S.—Fraxinea eximia.—Sub. (Morpeth).—Oncidium Cavendishii.—J. Tigwell.—Narcissus Tazetta var. Soleil d'Or.—F. L.—Apparently a poor form of Cattleya Eldorado.—W. J. E. B.—Epidendrum cochleatum.—E. U.—We do not undertake to name Camellias and other florists' flowers.—W. Elliott.—1, Elechnum occidentale; 2, Adiantum pubescens; 3, Adiantum hispidulum; 4, Odontoglossum pulchellum majus.—E. W.—Your *Lycaest* most resembles that known as *L. Deppel punctatissima* —W. B.—*Schomburgkia crispata*.—M. S. C.—Apparently *Oncidium pulvinatum*, but cannot be certain without seeing leaf.—Subscriber (Cork).—Apparently *Narcissus Pseudo-Narcissus spurius*.

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"This is an Art
Which does mend Nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare*.

DOUBLING IN DAFFODILS.

AT the conference on the doubling powers of the Daffodil, Mr. Baker said he should assume (1) that everyone admitted that a single flowering Daffodil was capable of turning into a double flower under high cultivation, and the only question at issue appeared to be (2) whether a single flowering pseudo would, by high cultivation, turn into double *Telamonius*. Mr. Baker did not, nor, as far as I could gather, did anyone present, favour this (2) proposition; nevertheless, a committee was appointed to plant single pseudos with the object, I imagine, of seeing whether, by high cultivation, they could be turned into double *Telamonius*. I imagine this is the object of the committee, because they could hardly have been appointed to demonstrate what it was assumed that everyone admits (1); and yet this is really the question. Some Daffodil growers, including Mr. Barr and Mr. De Graaff, are not yet convinced that a really single flowering Daffodil can by any cultivation be turned into a double. The opponents of the theory do not say it is impossible, only they would like further more definite proof before they can be sure that singles do, can, or ever have turned into doubles. Therefore I do hope the committee will address themselves to clearing up this matter first.

It seemed to be also assumed that all our doubles are the result of this turning process, instead of having originally come double from seed and then reproduced by multiplication of bulbs. Mr. Harrison Weir and Mr. De Graaff both stated that they had each raised a double from seed—the one similar to poeticus, the other to minor or nanus. Why should not all the doubles have come thus from seed? Does it not seem, on the whole, more probable than that they have turned double under cultivation? It is true, some may have originated one way and some the other, but is there not this difficulty in the turning process, viz. ?—We were told by its advocates that the turning will only take place in certain soils and under certain conditions, and that we about London might experiment until doomsday and should never get one to turn. But if that be the case, if our soil and surroundings are so uncongenial to doubling, that not even the highest cultivation will effect the conversion, does it not seem strange that doubles have been growing in our gardens and wild in our fields from time out of memory; but that yet they have never been known to revert to their original singles? Is it possible that the long, long ago cultivation which turned the singles into doubles left such an indelible impress and influence that in all these hundreds of years it has never been noticed to fail, unless, indeed, Mr. Barr's Butter and Eggs prove to be a case in point. I hope, therefore, that the committee will be very careful to see that the bulbs which they plant next autumn are now bearing perfectly single flowers with no sign, however rudimentary, of doubling, and, further, that they will be very careful next and every succeeding spring to have all the

seed-pods picked off, otherwise they may shed seed in the beds which might possibly produce double flowers, and so vitiate the whole experiment. The doubters of the turning-double theory are, I am sure, quite willing to believe; they only ask to be convinced by such scientifically and exactly conducted experiments as those which the committee has undertaken doubtless will be. Therefore with hope of long life to the members of the committee to see the end of their labours we patiently wait.

Allow me to add that I once thought I had myself observed a case of turning double and greatly rejoiced, and very nearly wrote to THE GARDEN to record my success, but on more exact investigation I found out my mistake. I can, therefore, quite understand others feeling as sure as I did, and after all they may turn out to be as right as I was certainly wrong, only let us be patient and await the committee's report. W. WILKS.

SAVING FRUIT BLOSSOMS.

FROM this time forward till May is out fruit growers will be anxious concerning fruit crops, especially Peaches and tender fruits on walls. It cannot be too often impressed on the inexperienced that it is not always the frost which kills, but the sudden thawing of the flowers afterwards. Gardeners are familiar with the fact that Peach blossom is often killed on an east or south-east wall when it may escape on a south-west wall close by, although both may have experienced the same degree of frost during the night. The cause of the injury on the eastern aspect is the sudden bursting of the sun's rays on the trees while they are still frozen, and the reason why the west wall escapes is that the trees get thawed more gently before the sun's rays reach them. The best plan when sharp frost occurs in April or May, when the sun often beats fiercely against a wall after a clear frosty night, is to shade the trees until they become thawed, and if they can be dewed over with water from an outdoor tank after the outdoor thermometer has risen above the freezing point, their safety will be, as a rule, insured. Plants, like animals, when frost-bitten are killed by the application of tepid or warm water or heat. Just as human beings restore animation to frost-bitten limbs by rubbing with snow, so the flowers and foliage of trees can only be restored under the same circumstances by the application of water as nearly at the freezing temperature as possible, and by keeping the temperature low at the same time till restoration is effected. We remember watering all our Strawberry and Gooseberry quarters one year during a severe late frost in May, just about sunrise, getting up with all the men about three o'clock a.m. to do it, and we noticed afterwards that where the flowers had been missed in the sprinkling they were killed. The plants and bushes were simply dewed over by an engine or the watering-pot and rose after the outdoor temperature had risen above 32°. It is of no use applying the water sooner, as it then just freezes on the plants, making things worse. The water was taken out of the open tanks, the ice on them having to be broken to dip the pitchers in.

On another occasion one of the young men was told to sprinkle a *Calceolaria* frame that was frozen, and through ignorance or misapprehension he used water out of one of the vineries at about 60°, with the result that every plant was as dead and black a few hours afterwards as if they had been boiled, the rest, to which cold water had been applied, showing no signs of injury. On another occasion, during a sudden drop in the temperature, a large houseful of valuable *Cinerarias* (in an unheated house) was frozen rigid, but the house was covered promptly by straw and mats before the sun gained power, the plants copiously drenched with cold water by the syringe, and no harm was done unless to a stray plant here and there that had been missed. But for these measures the whole stock would have been lost. I

mention these facts among many that could be recorded to show how much mischief may be prevented to crops under such circumstances. In the case of fruit trees on open walls shading is often sufficient in itself, but the cold water douch will never do any harm. At all times keep the sheets down till the branches are thawed, and where no such means of protection are employed, cover up the trees with hay, straw, branches or sheets, whichever comes readiest to hand. Many a wall crop is lost simply because such precautions are not or cannot be taken. Tender blossoms on north walls, as a rule, escape, when those on south walls are killed just because the north wall is shaded from the sun when frozen.

But frost is not the only cause of destruction to the blossom of fruit trees. What we have most reason to fear here are the scathing east winds that prevail in April and May. Standard Apples, Pears, Plums, and Cherries in flower, &c., will endure slight frost if the weather is not bad otherwise, but a few days of keen east winds will work utter ruin. Much depends on situation, but orchards cannot easily be protected from their penetrating influences. Peach walls, while east winds blow or sleety showers are falling, should have the sheets let down, and hexagon is best at such times, because it breaks the wind and rain and does not obstruct the light too much.

In the case of unheated orchard houses and the like in which the blossom is far more frequently injured by late frosts than is admitted, the best preventive is keeping the trees back till all danger of frost is over. The tendency of trees in unheated glass structures is to come into bloom much sooner than they otherwise would do, and frosts occur that such structures are powerless to exclude, the crop is lost, and the whole purpose of the orchard house is defeated. Trees can, however, be kept back in such houses if the precaution is taken in time to keep the ventilators and doors wide open during the winter and on till the trees come into flower at the right season. After the new year buds begin to push if the least excited by a close temperature, and the flowers soon expand and are then at the mercy of the weather. J. S. W.

NOTES ON RECENT NUMBERS.

Camellias are hardy in Guernsey (p. 185), and so they are in many parts of England, as has often been remarked, and, I suppose, as often disbelieved. No doubt some sorts will stand the cold and wet better than others, but one must not complain when the old double white and the *reticulata* are among the hardiest. From the bushes growing so thick and healthy in the open air, even in the severest weather, good blooms may be gathered which Nature has protected by the profusion of leaves, and the foliage itself is so good that they deserve to be planted for the sake of that alone. When such a sort as the old *Pæony*-flowered is covered with bloom it is a sight to be remembered. We have, amongst others against the house, one of Chandleri several feet high, not trained, but as a "big bush," and a very different looking thing it is from the poor starved specimens one usually sees in pots, which are so often prescribed for on account of "dropping their buds" and "leaves turning yellow." Out of doors they usually begin to flower in February, but April is really the best month for a display of bloom.

Climate.—"F. W. B." asks (p. 194), "Why are our spring flowers, as a rule, so tardy this year?" Is it not solely on account of the excessive dryness last autumn? It is not only bulbous plants, but other things as well which are late. Our earliest scarlet *Rhododendron*, which both in 1883 and 1884 was well out in February, is only just beginning to open its blooms, and *Narcissi*, which last year had flowered and withered by this time, are now only just out of the ground. As a proof of the unusual dryness in this district I may mention that a spring in our fernery, which usually runs nearly all through the hottest summer, was dry in June, and did not break till January. Does not the tardiness of the *Rhododendron* show how mistaken we are in considering many plants as "fast

asleep" during the autumn and winter in treating them as such, merely because we do not see much change going on, whereas in reality they have got "one eye half open all the time," and are working away at their buds or roots? It cannot be the cold which has hindered the flowers, for the winter has not been a hard one, and so one can only suppose it was the want of action in some form which kept them for once in a way really asleep!

Agapanthus umbellatus (p. 185) is a much more tender subject. Colonel Stuart-Wortley does not say whether his plants, from which his photograph (on p. 191) was taken, were permanently established or only planted out. The variety *Mooreanus* is advertised as hardy. Is it sufficiently so to be of practical use?

Viola seed (p. 201).—I see in a catalogue an offer of seed of Comte Brazza's double white Violet. Do the double Violets seed? I do not suppose that the blooms, for the sake of which we grow them, ever bear perfect seeds, but do the same plants produce in summer little apetalous seed flowers as some (query all) of the single ones do? I was asked the other day what was the single form of the Neapolitan. If the double Violets do seed, we ought to be able to give a single counterpart to each double, which at present does not seem to be an easy task.

Calostemmas (p. 199).—*C. purpureum* is offered by two firms, but apparently *luteum*, about which I asked, is not in commerce in England or Holland. Is there any handbook giving a short description of the different classes of non-hardy bulbs that would be suitable for an ordinary gardener, not expensive, simple in style, and with plain directions as to the varying treatment of *Pancratiums*, *Crinums*, &c.? One buys a bulb of some species lately imported. Without some instructions it is almost impossible to tell at what season it ought to flower, whether its deciduous character is real or only enforced, if for stove, greenhouse, or frame. Even if the old botanical magazines are at hand, they are not always to be relied on, for plants some few years ago were generally kept in higher temperatures than they needed, and the plates and descriptions were published before their capacities were fully known or realised. There are surely many bulbs which deserve to be introduced again from Australia, as "B." says, p. 200 and elsewhere; and if the fashion (which "Veronica" condemns) sets in again in this line, I do not doubt but that many startling novelties might be raised either from improved or hybrid varieties. We have had some fine new hardy *Crinums* lately brought out; why not some day a hardy *Eacharis*?

C. R. S. D.

Arisæmas.—During recent years we have had occasion to note every spring the flowering of a collection of these singular Aroids which has been got together at Kew. They are flowering this year earlier than usual, many of them now bearing their curiously formed spathes, though there will be a good display of them for some weeks to come. If these plants did not produce any flowers at all, the beautiful markings of their leaf-stems would entitle them to favour. Toned, striped, spotted, or marbled in the most exquisite manner, they resemble the bodies of beautifully marked snakes. The leaves, too, are not unhandsome, pedate, palmate, and decompound forms being amongst those grown at Kew. The flowers vary with the species even more than the leaves and stem markings do, the most beautiful, perhaps, being *A. speciosum*—a large horn-like cup, very like the cup of the *Richardia* (*Arum Lily*), but narrowed to a longer tailed point, and coloured deep vinous red, with numerous stripes on the outside. The spadix or "tongue" of this bell-like spathe is erect and somewhat thickened towards the top, from which grows a long thread quite 18 inches in length, which thread, according to Sir Joseph Hooker is meant to enable crawling insects to reach the flowers, and so bring about fertilisation—a wonderful providence as thus explained, and such an explanation seems to be the right one. Other

species have green, or white and green, or purplish and green cups, some of them being hooded, or in other ways made attractive or quaint looking. For the cultivation of these plants all that is required is a warm house in which to flower them, a cool house or frame in which they can be wintered, and a little bottom-heat to start them as soon as repotted. The flowers come before or along with the leaves, the latter remaining fresh through the early part of summer. When at rest these plants should not be allowed to get dry, as, owing to the conditions under which they are found growing wild, it is impossible for them to suffer drought. A low temperature affords them opportunity to rest, but if this is accompanied by drought the tubers almost invariably suffer. This rule applies to all the tuberous Aroids; even *Caladiums* when kept moist in winter are much safer than when kept perfectly dry, as is usually recommended.—B.

PLANTS IN FLOWER:

Iris tuberosa.—The blooming time of this Iris and that of *Iris persica* is so nearly the same, that they always seem to race. This year *persica* wins easily; it has been for some days in flower in the open border, delighting one with its most dainty colouring and delicate violet scent, while *tuberosa*, under the same conditions and in a next-door patch, is not yet quite out.—G. J., *West Surrey*.

Saxifraga ligulata.—There is a charming mass of this now in flower in the Paxton house at Chiswick, showing it to be a plant to be appreciated at this (in the way of flowers) somewhat cheerless season of the year. On the rockery the following plants are in flower—viz., *Crocus*, extra large yellow, a very showy sort; *C. Queen Victoria*, a fine white; *C. Grand Vedette*, a striking blue sort; *C. Pride of Albion*, a fine pale striped lilac. Snowdrops have been a very interesting feature, but they are now nearly over.

Hæmanthus Kalbreyeri.—This showy bulbous plant is now in great beauty in Mr. Ball's nursery at Chelsea. It bears, on stout stems a foot or so in height, massive round heads of flowers, which, in fact, consist of little besides long crimson stamens, which stick in all directions, so as to make a globular mass. It is a most attractive stove bulb, and the fact that it can be had in bloom now and endures a long time in perfection enhances its value. The old *Griffinia hyacinthina*, another showy bulbous plant, likewise adds to the attractions of Mr. Ball's nursery at the present time.

Cydonia japonica nivalis.—Among the numerous varieties of the Japanese Quince, all of which differ more or less widely in point of colour, this new form is the purest of all, the flowers being absolutely white, whereas the flowers of ordinary white, named *alba*, are suffused with a pinkish tinge. Messrs. Veitch have introduced the *nivalis* variety into commerce lately, and in their Coombe Wood Nursery it is now beautifully in bloom, together with the other sorts, remarkable among them being a deep-coloured kind—the richest, in fact—called *princeps*. The sprays which Messrs. Veitch showed at South Kensington on Tuesday were much admired.

Chionodoxa sardensis is a gem among spring bulbs—one of the rare really blue flowers. Compared with *C. Lucilia* the individual blooms are smaller, but they are much brighter in colour, and a good sized patch is strikingly brilliant. The colour is not only much deeper than in *C. Lucilia*, but the petal is coloured very nearly to the centre, which makes the white cone-shaped cluster of stamens show up very distinctly. This capital plant, being new in cultivation, is not yet widely distributed in gardens, but must become a great favourite. Like the other species, it likes to be well established, not showing its full size and beauty the first year after planting.—G. J., *West Surrey*.

Iris reticulata.—The colour of this is perhaps unmatched among purple flowers for intense richness. Like all noble colouring, it is full of delicate gradation. The splendour culminates on the lip of the lower petal, where it is suddenly contrasted with a narrow rib of pure deep orange colour on a little patch of creamy white. The end of the orange rib joins the richest part of the purple by a small space of pure velvety black,

which also invades the rib in spottings and netted splashes of black, these being softened into purple where they occur on the little spaces of warm white. This Iris, with *I. persica* and *I. tuberosa*, deserve especial and careful observation on account of their extremely beautiful and curiously arranged colouring.—G. J.

Guernsey Freesias.—We send you some blooms of *Freesia Leichtlini major*. They have been grown and flowered in an ordinary cool house in good soil, and the result well repays every care and attention given them. To give a better idea of the profusion of bloom which they yield, we may say that one bulb has given us as many as fifty-five blossoms, counted on one spike with its side shoots. This vigorous growth gives them a great advantage over the two other varieties, as cuttings can be made from one potful during three or four weeks. The flowers themselves are also larger than those of the others, more substantial, and last, but not least, they are the most deliciously scented of all.—HUBERT AND MAUGER, *Doyle Road Nursery, Guernsey*.

* * Very fine specimens, some of the spikes carrying ten flowers. We see no difference between that called *F. Leichtlini major* and *F. refracta*. So far we have seen only two distinct *Freesias*, viz., *F. refracta* and *F. refracta alba*.—E.D.

Scarborough Lilies in March.—The very fine scarlets of *Vallota purpurea* which Messrs. Carter showed at South Kensington on Tuesday last seemed quite a surprise to most of the visitors, so seldom is this plant seen in flower in spring. The brilliant scarlet colour in the *Vallota* is so different from that of ordinary spring bulbs, that the fact that it can be successfully forced into flower so early as March is worth knowing. It would interest our readers to know the treatment these plants had received. Nothing could be brighter or more beautiful than the display they made. Messrs. Carter also showed flowers of a very late *Chrysanthemum* named *Ceres*, a Japanese variety whose long shaggy white flowers, though seemingly so out of season in spring time, were admired. The autumn *Vallota* and the winter *Chrysanthemum* in spring seem a reversion of seasons.

Primula floribunda.—This pretty little Himalayan Primrose should, when better known, become a universal favourite, as in a greenhouse temperature it flowers continuously throughout the winter. Some specimens of it in pots here so treated have been in bloom since October, and are still as good as ever, the earlier flower-spikes having been, when over, replaced by others, which in their turn will be succeeded by those just visible in the centre of the plant. In general appearance it reminds one of *P. verticillata sinensis*, but the leaves are in no way mealy, as in that kind, while the flowers, though about the same size, are of a beautiful deep rich golden colour. Though not very large individually, they are, as the specific name implies, borne in the greatest profusion; even a small specimen will throw up several spikes, each of which in its turn bears a large number of blooms arranged in four or five tiers, so that during the dull days of winter, if the atmosphere of the house be kept pretty free from damp, a single spike from the expanding of the first flower to the last will remain in beauty more than a couple of months. This *Primula* is of the easiest cultivation, doing well in a light part of the greenhouse, and kept free from stagnant moisture. A compost, such as that in which the varieties of *Primula sinensis* delight, just meets its requirements. It is increased readily enough by means of seed, which should be sown as soon as ripe, otherwise, in common with many *Primulas*, especially those with whorled flower-spikes, it is sometimes liable to remain a long time in the ground before germinating. Along with the variety just named we have had the almost perpetual flowering mauve-coloured *P. obconica*, so well illustrated in last year's GARDEN, September 6. The high opinion of its merits formed from seeing a large quantity of it in bloom at Messrs. Veitch's has been quite maintained by the fewer, but equally beautiful, specimens here.—H. P.

SOME AMERICAN WILD FLOWERS.

FIRST among our treasures is the delicate Pyxie (*Pyxidanthra barbulata*), a little prostrate trailing Evergreen, forming dense tufts or masses, and among its small dark green and reddish leaves are thickly scattered the rose-pink buds and white blossoms. It is strictly a Pine-barren plant, and its locality is confined to New Jersey and the Carolinas, yet we may travel over large sections of these States without meeting with it, but when we find its haunts, it is often in such profusion that the ground is thickly carpeted with its delicate sprays. The trailing *Arbutus* frequently blends its clusters of pink blossoms and exhales its delicious fragrance with the flowering sprays of Pyxie. Nothing can be more charming than Nature's blending of these two lovely plants. The *Arbutus* blossoms from a month to six weeks earlier in the Pines of New Jersey than in New England, where it takes the name of Mayflower. It is not unusual to find it in the Pines in full bloom by the middle of March. And by this time, or even earlier, we are sure to find the little shrub *Cassandra calyculata*, with its one-sided racemes of closely set bell-shaped flowers. There is an entrancing influence about these early flowers That come before the swallow dares, and taint The winds of March with beauty,

making the first days of early spring in the Pines days never to be forgotten. We listen to the whispering Pines and catch their odorous breath, while beneath our feet the spicy aromatic Winter Green, with its dark shining leaves and clusters of scarlet berries, yields its fragrance at every step. The Sweet Fern, with its plummy catkins, is redolent with perfume, and the Wax Myrtle adds its share of grateful aroma. The Wax Myrtle with its crowded clusters of greenish white waxy berries, takes us back to the early settlers, who used these berries to make candles, and also an agreeable smelling soap. Looming in the distance is a long sinuous line of dense Cedars, forming a dark background to the more open Pine barrens, toward which I direct my steps. I peer among the thickly set trees standing like sentinels, dark and forbidding—the place for ghouls. Darker and darker it grows as I cautiously advance, with an oppressive dread of something which I cannot define. But the spirit of adventure overcomes the fear, and I am wholly occupied in finding secure spots to stand upon. Ample compensation comes at last. Here, hidden among the underbrush, is the rare and local *Helonias bullata* in full bloom, standing thickly among the trees. The flower-stalk of this fine plant arises from a mass of large glossy evergreen leaves to the height of 1 foot or 2 feet, with a dense raceme of reddish purple flowers at the summit. And here, too, is the Golden Club (*Orontium aquaticum*), with its large dark velvety leaves and elongated scape of yellow flowers standing above the water. It must not be inferred that the *Helonias* can be found anywhere in the Cedars. At this point the plant extends over two or three acres, when it wholly disappears. And now we follow the winding course of the swamp, lured on by many attractive plants near its borders, halting now and then to gather the interesting Sundews, especially the rare thread-leaved Sundew (*Drosera filiformis*), which is just beginning to unfold its singular fly-catching leaves. On, on we go, through patches of the delicate little

Windflower (*Anemone nemorosa*), interspersed with the pretty trailing Vines of the Partridge-berry (*Mitchella repens*) and Violets innumerable. Some of the shrubs of the Heath family are also coming into bloom. These lovely plants seem to have inspired the early botanists with poetic fancy. We find a genus dedicated to Cassiope, and another to her daughter Andromeda. Cassiope, however, belongs wholly to the mountains of the North, but Andromeda and Cassandra and *Leucothoe* skirt the Cedars in profusion. The bright showy Pinxter flower (*Azalea nudiflora*) also helps to make up the coterie; and now, parting a thick clump of *Ilex*, we find the beautiful Orchid *Arethusa* hid away in the gloom as if

they extend I do not know, but they are found to a considerable depth in an excellent state of preservation. They are often extricated and made into shingles and other useful things, which are said to be much more durable than when made from trees which have been cut for such purposes. But lest I get beyond my depth in the red waters, I will once more return to the glorious sunlight in the open Pines. While I have been wandering amid the dark Cedars and lost in speculation, the Pines have come out in May-day attire—full gala dress. Brilliant clusters of pink and white Laurel (*Kalmia latifolia*) as far as the eye can reach, and graceful drooping panicles of the pure white blossoms of the Fringe tree, add their charms to light up this enchanted garden. The heavy olour of the Magnolia tells us of its close proximity; and now we come to another of Nature's plants which she has restricted to these gardens, the stately *Xerophyllum setifolium*. The flowering stem rises from a thick mass of long Grass-like leaves to the height of 3 feet or 4 feet, and is surmounted with a large globular head of showy white flowers. Until recently this fine plant has stood with Nuttall's name, *X. asphodeloides*, but in the revision of the North American

Silvaceæ, by Professor Watson, of Harvard, we find he has restored Michaux's name of *setifolium*. Of the smaller shrubs now in bloom we find the Sand Myrtle, with its terminal umbel-like clusters of small pinkish flowers; and *Gaylussacia* (named in honour of the distinguished chemist, Gay-Lussac), with its lovely racemes of open bell-shaped white and pink flowers. The Pitcher plant and golden-winged Iris also add their charms to this May-day attire. As summer advances we find a constant succession of beautiful shrubs and herbaceous plants, the fragrant *Clethra*, and *Azaleas* and lovely Orchids too numerous to mention; but we cannot bid adieu to the Pines without mention of the very local little Fern, *Schizæa pusilla*. This is one of Nature's rarest treasures, to which she has given but one lone spot on earth—in damp grounds amid Pines where it extends a mile or two, and then is seen

Pine Barren Beauty (*Pyxidanthra barbulata*).

guarded by this nymph of night. Still we wander on; 10 miles are passed before we come to another locality of *Helonias*. Again penetrating the dense forest we find the plant extends over several acres, and then suddenly ceases. Great clumps of the Royal Fern (*Osmunda regalis*) are just beginning to unfold their large fronds. Here it attains almost gigantic proportions, the magnificent fronds towering above our heads, 6 feet to 7 feet in height. Lest the reader should accuse me of losing my subject in the Cedars, I hasten to say that these great swamps are simply the banks of the rivers and streams which run through the Pine-barrens, so I have a legitimate right to wander on. The banks sometimes extend a mile or two beyond the edge of the stream, and are not very picturesque nor generally attractive; but when it is asserted that there is nothing of interest connected with them, it only shows how little some people can manage to see. The streams themselves are not devoid of interest. Their red waters are constantly undermining the trees, causing them to fall, when they do not decay, and the falling trees are slowly and continuously changing the bed of the streams. How far below the surface

no more. This little Fern I have transported with the greatest care to similar-looking spots miles away, and given it to the care of Nature, but she refuses to recognise any right to the change, and allows the poor plants to languish and die.

Southern New Jersey has ever had an irresistible fascination for the botanist, unequalled by any other section in the Union. Picturesque New England with her charming flowers cannot equal it, nor the great plains of the West; and even Florida—acknowledged to be the land of flowers—must, it is universally admitted, yield the palm to the Pines of New Jersey.

** The foregoing account of flower life in the American Pine-barrens from *Harper's Monthly* will, we feel sure, be appreciated by our readers. The illustrations show plants beautiful in a wild state which here are cultivated with but indifferent success, take what trouble we may with them. *Pyxidanthra*, *Helonias*, and *Xerophyllum* especially seem to object to our modes of treating them, so seldom do we see them fully developed. —ED.

FLOWER GARDEN.

SCILLY ISLAND DAFFODILS.

I HAVE just received a boxful of Daffodils from Tresco gathered from the open ground, and very beautiful they are. Mr. Barr, in his Daffodil book, states that he limits his list of

TAZETTAS to a few, which are either of special interest or decorative value, albeit in the division with yellow perianths, he has omitted some of the most striking. Particularly can this criticism be applied in the case of *Konigin Niederlander*—truly a queen in every respect. The flowers are of great size and good substance, with elongated perianth divisions of a beautiful clear tinge of yellow. The cup is also larger than usual in this class, and bright orange in hue. *Sulphureus* is a pleasing flower. The light orange cup is so open as nearly to touch the lobes of the perianth, which are of a bright clear sulphur colour. Prince of Wales is small, neat, and worth cultivating. Of those enumerated by Mr. Barr the two best are *Apollo* and *Jaune Suprême*. The former is very prolific, there being invariably a goodly number of pedicels. *Mercurius* is somewhat similar, but differs in the shape of the cup. A most distinct variety is *Marquise de Westerade*; the perianth is straw coloured, with a deeper dyed channel down the centre; the cup is a bright guinea gold. This is also very free flowering, and it is curious why Mr. Barr does not mention it.

Turning to those with white perianths, the most unmistakable is, of course, *Bazelman major*, but many would just as soon look at *Grand Monarque*, which is very little inferior in size. One umbel contained 16 expanded flowers. The brilliant and very light pure yellow of the cup offers a great contrast to the pure white evenly-set divisions of the perianth. *Staten-General* is a smaller version of the same. *Sub-albidus* deserves wide recognition; the lobes are elongated and very much like those of papyraceous enlarged, and twist and twirl in divers manners. The cup is in tint chrome-yellow. Of those with darker yellow cups, *Don Carlos* and the true *libertus* were perhaps as good as any—*Don Carlos* the larger, but *libertus* the more floriferous; equal in this respect to *gloriosus*.

Quite half of the double Roman are single flowers. The Scilly white, bulbs of which can be got from its native isle (or at least native by long residence) very cheaply, is a peculiarly delicate and fragrant flower. There can be nothing more worthy of being forced into bloom to brighten up the winter months with stainless purity. I have previously alluded to the rich colouring and great substance of *La Favorite*. It is hard to avoid rhapsodising when one has before him a large bouquet—and what looks prettier *en masse*? But in no instance is there any exaggeration.

ATAX VARIETIES.—Mr. Burbidge is right in assigning *maximus* the premier place. No Daffodil has such a bright and effective shade of yellow or a more daintily imbricated lip curve. The colour has well been compared to newly beaten gold. Of the remainder, which, like it, are uncoloured, major must be mentioned. A large fully expanded flower is a good contrast beside the other. The lighter shade of yellow is very delicate, and does not at all approach a washed-out straw colour. The edge is not so deeply indented as in the case of *maximus*, but is more reflexed. *Obvallaris* is too well known to need any comment. But one has only to put a flower of it beside *maximus* to notice the superior colouring of the latter. Of pure whites, although the smaller flower, many will prefer *cernuus pulcher* to *cernuus*, if only for the striking arrangement of the perianth divisions around the chalice, the edge of which is more imbricated than the other. The blooms which I had were almost without a trace of primrose. Among the bicolor varieties, *Emperor* is far away the best. The broad, soft, but bright, yellow petals are almost as effective as the brilliant stainless yellow of the tube. *Princeps* is far behind it. Indeed the chief charm of *Emperor* is the grand arrangement of the petals. *Princeps*, to give it its due, however, is as

prettily edged as any. *Empress*, with its creamy shading to white petals, is the best of the distinctly bicolor *Ajaxes*. Last, but not least, is the sulphur-white *pallidus præcox*. In the specimens before me the petals and tube are of different shades of colour, but the difference is so very slight, that Parkinson's description may, I should think, be said to be correct.

INCOMPARABLES.—These "earth stars" were not so numerously represented as the others. *Concolor* is an exceedingly pretty variety. *Edward Hart* cannot fail to be extensively grown, and the same may be said of *sulphureus grandiflorus*, notwithstanding its rather thin and straw-coloured petals. Those of *Edward Hart* are of a bright clear lemon tint. *Leedsii* is very noticeable from its lengthened petals and the deep orange rim round the crimped tube. *Barr's incomparabilis* was represented by three very pretty types. The most beautiful of all was one with a pure white perianth and a bright golden cup about two-fifths the length of that of *Empress*, than which it is smaller. It was all the prettier from being without any dark ring or stain and is a very beautiful form of albus. *Conspicuous* was the best of its colour, and is a large and brilliant flower.

Double varieties were represented by three very diverse forms of *Telamonius plenus*. In one the cup was densely filled, but unbroken, the perianth segments being quite apart. Is this the double form of *princeps*? *Incomparabilis aurantius plenus* is adapted for forcing even more than the *Orange Phoenix*, and is the more delicate flower. To make this box of Daffodils fully representative of those now in bloom, were added *odorus Campenelli*, a deep, rich, soft yellow flower, and the peculiar *Corbularia citrina*. M. C.

LEUCOJUM CARPATHICUM.

IN your editorial comments upon my notes (p. 185) on this variety of the Spring Snowflake you say that "you consider that it is only a twin-flowered form of the common *L. vernum*, and that it is doubtful if it can be considered a distinct variety at all, seeing that *L. vernum* will often bear two flowers on a spike." Allow me to state the matter fully. The ordinary *L. vernum* is figured in *Curtis' Bot. Mag.*, pl. 46. It is shown with a bulb the size of a Hazel Nut and with green spots on the corolla. That I take to be the standard by which to judge the true *L. vernum*. It is also figured by Reichenbach (*Icones Flo. Ger.*, pl. 804). I have now before me Mr. Baker's MS. notes on the *Leucojums* (not published), and he states—scape one, rarely two-flowered, one to two to a bulb. There can, therefore, be no doubt about this plant.

Leucojum vernum b (the Carpathian Spring Snowflake) is also figured in *Curtis' Bot. Mag.*, pl. 1933, and is a very different plant. It has a much larger bulb, larger flowers tipped with yellow spots; it has shorter leaves and altogether a different habit of growth, flowering before the leaves have attained half their length. The description states, "This fine variety of *L. vernum* differs from the one before figured (pl. 46) not only in its two-flowered spathe, but also in the colour of the spots at the apex of the laciniae of the corolla, which in our plant are yellow and in the one-flowered variety always green. From the Carpathian Mountains." Johnson's "Gardener's Dictionary" gives the date of its introduction to England 1816. So rare, however, was the plant, that Dean Herbert in his "Amaryllidaceæ" (1837) says: "Erinosma *vernum, b*; carpathicum; *Leucojum vernum, 6*. *Bot. Mag.*, 1933. Spathe two-flowered, spots on the perianth yellow. I have not been able to obtain a sight of this plant. I see no reason for confounding it with the one-flowered, green-spotted *vernum*."

Mr. Niven (*THE GARDEN*, 1875, Vol. VII., p. 156) says: "There is a variety known as carpathicum which to my mind is sufficiently distinct to rank as a species. Its bulb is twice the size of *L. vernum*, its stature is considerably greater, and it frequently produces its flowers in pairs; it is rare in cultivation." When I was studying the

Leucojums last year this plant was not to be found in any nurseryman's catalogue, save one, and from that one source it was not obtainable in its true character. It was only by hunting for it everywhere that I at last obtained it.

I believe there is now no doubt whatever as to the identity of the plant of which I forwarded examples to you. Mr. Baker has also had specimens of it, and it has been shown by him at the last meeting of the Linnean Society. We have at least 200 bulbs of it in bloom here, and a great many also of the ordinary *L. vernum*. When thus growing side by side there is a very marked difference between the two plants, *L. carpathicum* being much more floriferous and in every way superior. It is quite true that it is now found to be plentiful. The difference between the two seems to have been entirely overlooked, so that the bulbs got mixed in nursery gardens and all classed as *L. vernum*. This was particularly the case at the Newton Nurseries, where *L. carpathicum* was in plenty, quite unknown to Messrs. Dicksons until I pointed it out to them. It is the same with imported bulbs. A good many of the twin-flowered yellow-spotted variety are amongst them. It is also by no means unlikely that cross varieties occur through seeding, and that the green-spotted form is more frequently two-flowered than formerly. We have two clumps of this sort selected from the rest which are exactly like *carpathicum*, but with green spots. These we take to be cross varieties as far as our present knowledge goes. The bulbs obtained from Northumberland, are we believe, the true plant, as they have grown alone for a great many years, and they agree in every particular with the old descriptions. In this variety there are frequently two scapes from one bulb, one of which is twin-flowered and the other single. It will thus be seen that we are merely identifying and separating an old well-marked variety, and that the plant under consideration fulfils all the conditions. Mr. Leo Grindon, the author of "Garden Botany," was here this afternoon, when we took up bulbs of *L. vernum* and *carpathicum*, which he critically examined and compared with the above cited description. He came to the conclusion that our plants were correctly named, and that the varieties were distinct in bulb, leaf, and flower, as well as in habit and floral effect. I strongly advise all lovers of early spring flowers to secure a good supply of the Carpathian Snowflake.

Brockhurst, Didsbury. WM. BROCKBANK.

SPRING FLOWER NOTES.

SAXIFRAGA BURSERIANA.—This is stated in *THE GARDEN* (p. 143) to be in flower in frames at Chiswick. I have found it do better planted out-of-doors in the open ground without any protection. We have two plants in the rock garden, where they have flowered two winters. The major form opened its flowers this year about the middle of January; after 12° of frost they were still fresh and beautiful. The ordinary form did not open its flowers till a month later—that is, about the middle of February. I am unable to say whether there are two distinct types of this Saxifrage or not. The late-flowering plant was sent to us from Chiswick; the major form came from the York Nurseries. I saw a batch of it in flower there, the major form and the ordinary type together. Our plants have this habit of early and late flowering; they have done so for several years.

ANEMONE BLANDA.—This is a charming companion to the late-flowering form of *Saxifraga Burseriana*. It is now (February 25) in full beauty. No other *Anemone* is anything like so early as this. *A. apennina* is quite a month or six weeks later. The brilliant *A. fulgens* is showing its flower-buds, but none will open for a week or two. Every garden should have a patch or two of *Anemone blanda*.

NARCISSUS MONOPHYLLUS.—This is stated to have been sent by Mr. Kingsmill, and seems to have been grown in the open ground, the flowers having been exposed to twenty-four hours' rain. Am I right in this supposition? I find it difficult

to grow cultivated in pots. I bought sixty bulbs of it in the autumn of 1882. Most of them had been imported direct from Algiers, and they were expected to flower well at least the second season. They did not do so. Our first flowers have just opened; there are two of them only; very pretty they are, but it seems a good deal of capital to invest and much labour expended for very small results. The plants grow well during winter, spring, and early summer. When they die down, we withhold water and place the pots containing the bulbs in the sun. They receive little water until they start to grow again. Would any successful cultivator say how they ought to be treated? We are very successful with *N. Bulbocodium* under the same conditions.

LEONTICE ALTAICA is in flower on our rock-work, a simple little plant with tiny trusses of small pale yellow flowers—interesting perhaps to the botanist, but of little value as a garden flower.

CYCLAMENS.—The most brilliant plant in our rock garden was a clump of five or six corms of *Cyclamen Coum*. They formed a mass of bloom early in January and are still beautiful. The plants are sheltered from the north winds by a large stone, which partly overhangs the plants. Three weeks ago there was quite two score of fresh blooms open at one time.

Also well sheltered from the north and open to the south-west is our clump of *Iris reticulata*. The first flowers opened about February 9; they stand up bravely against the north winds, owing to the sheltered, yet sunny, nook they are planted in.

I may remark, *en passant*, that the best position for *Colchicum speciosum* is in one of these sunny nooks. The bank slopes upwards to the north at an angle of say 45°. The space where the bulbs are planted is cut out of the bank in the form of a step. Spring flowers are now abundant. Various species of *Scillas*, also *Leucojum vernum*, are beautifully in flower, and all the *Snowdrops*; *Primroses* are also in great abundance.

J. DOUGLAS.

BULBS AND BULB PLANTING.

LILIUM AURATUM often dies in a provoking way, the cause of which long puzzled many of us, but it seems to be decided now, to the satisfaction of some, that it is a fungus, while others think this only follows the disease instead of bringing it about. Be this as it may, it is pretty certain that there is a fungus on many of the bulbs when unpacked, and that few escape having some portion of their scales decayed. No doubt a good deal of this arises from bruises, and after being shut up in boxes, mould or fungus generates and spreads rapidly, and if not soon arrested spoils the bulbs. The way to treat such bulbs when received, as well as any home-grown ones showing the same symptoms, is to carefully scrape and clean the soft decaying parts away, then dust with powdered charcoal and lime, which will absorb the moisture and help to heal up the wounds. The bulbs will then be ready for planting or potting, and in either case they should be sprinkled with sharp sand, which will run in between the scales and assist in keeping them clean and healthy by draining off the water that would otherwise lodge about them and admitting more air. If potted, the soil ought to be in a moist state, and no water should be given till the plants have made some growth and formed plenty of fresh roots.

Although late now to plant dry bulbs of *Hya-cinths*, this is a good time for buying up cheap any that have been left over, which may be used for putting in shrubby borders or along the sides of pleasure-ground walks, positions for which *Hya-cinths* and *Tulips* are well adapted, and where they make a fine show. Those that have been forced should also be saved for the same purpose, but as the leaves are yet tender they should not be turned out at once, but placed in a cold frame or pit to harden for a week or two, after which they should be planted without disturbing the balls. *Crocuses*, *Snowdrops*, *Narcissi*, and *Ane-*

mones do well under deciduous trees, places which, in the case of lawns and pleasure grounds, should be reserved for these bulbs, as the plants look more at home in such situations than anywhere else. The best way of planting is to have different kinds of bulbs under separate trees, instead of being grouped indiscriminately together, as such plants look more natural in masses of one sort. The Grass ought not to be cut till the tops of the bulbs ripen and die away, but if it appears likely to smother or injure them, it should be pulled off round the plants, so as to let light and air to the foliage. In planting, in order to give the bulbs a good chance, it is necessary to dig fair-sized holes and fill them with fresh soil, which may be done, if care be taken, without injuring the roots of the trees. For early blooming it is time a portion of the stock of *Gladioli* was in, and if these are planted in borders, the way in which they look best is in clumps of three placed triangularly at about 6 inches apart. In order to prepare for them, break up the ground in which they are to go and place in it, well down, some thoroughly rotted manure, which should be well mixed up with the soil below, where the plants will find it when they most need it, viz., at the time of making their growth and sending up their fine spikes of bloom. The proper depth at which to put the corms is about 6 inches, and it is a good plan to surround them with a handful of sharp sand, which keeps the wet soil from coming in immediate contact with the bulbs and prevents them from rotting. *Ixias*, *Sparaxis*, *Babianas*, and *Tritonias* require a dry, warm border, that is, one sheltered by being close under a wall facing the south, a position in which, if the border is drained and prepared, they do well. The soil which they like best is that which is rich and sharp by having plenty of sand worked into it, and in winter it is advisable to mulch with sifted leaf-soil to keep out the frost.

The same kind of situation also suits *Belladonna Lilies*, but where they do best is close along the front of a plant stove or greenhouse, where the soil becomes a little warmed by the pipes, and when so favoured they increase rapidly and flower with the greatest of freedom. Although a little late, it is still a good time to plant these *Lilies*, which should be put in 6 inches deep and have the surface of the ground covered with sifted leaves or Cocoa-nut fibre to protect them from cold.

S. D.

Aponogeton distachyon.—No doubt Mr. Milne-Redhead's ponds are infested with mice. I have watched and seen them often dive to the bottom, gnaw away the stalks of *Aponogetons*, and carry off the bulbous roots. Wire netting, unless of very fine mesh, is no protection. A little white arsenic mixed with parboiled rice will probably clear them. It should be laid in stiff rolls of paper open at both ends and fastened to the ground; any other tube of sufficient calibre for the mice to enter will do. This is a necessary precaution as a protection to birds and pets. This plant is quite a pest here. It has a pond to itself, and is carefully excluded from the others.—J. M.

Saxifraga Burseriana.—What a little beauty this is! Mr. Barron has had it in charming condition at the Chiswick Garden in pots—interesting little tufts covered with large white flowers. It is the earliest of all the white *Saxifrages*, and certainly one of the most beautiful of the genus. The growth is of the most compact character, and the leaves of a slightly silvery hue. The flowers are singularly large for a *Saxifrage* and pure white, borne on scarlet stalks. This must be a delightful and most useful plant on rock-work, while for pots, cultivated in a cold frame for flowering at this season of the year, it is invaluable. It simply requires to be known to be appreciated. *S. valdensis*, also white-flowered, but much later, may be mentioned with it on account of its dense rigid tufts, which in spring are quite silvery. The pretty *S. oppositifolia* must not be overlooked. It is difficult to say too much in praise of it, especially for planting on the ledges and slopes of rockwork, where, when established,

it forms masses of brilliant purplish rose-coloured flowers quite early in the season. Plants of each of the foregoing will grow and flower freely in the smallest of pots.—R. D.

Clove Carnations.—By way of supplementing "R. D.'s" notice of these popular flowers, permit me to name a few varieties which are alike prolific of flower and grass, and so robust in habit that they flourish equally in the bed or under pot culture: *Crimson*, *ruby-crimson*, or *maroon* of varying shades—*Landie Dinmont*, *Dora*, *Ernest Wilkins*, *Ida*, *Mary*, *Little Harry Bertram*; *rose* or *pink*—*Dot*, *Euphrosyne*, *Mrs. Southgate*, *Mrs. Arthur Medhurst*, *Mrs. Welton*; *purple* and *purple-maroon*—*Arethusa*, *John Southgate*, *Mauve Perfection*, *Neptune*; *rosy salmon*—*Mrs. Dodwell*; *scarlet*—*Cardinal*, *Cinto d'Orion*; *white*—*Bride*, *Susan Askey*, *Virgo*, *W. P. Milner*; *yellow*—*Florence*, *King of Yellows*. Some of these are of recent introduction, but they are not expensive. *Florence* and *Mrs. Dodwell* I consider the two best selfs existing.—JOSEPH LAKIN, *Temple Conley, Owen*.

Iris reticulata out of doors.—I mentioned the other day that I failed to succeed in growing this beautiful harbinger of the spring out of doors. The following note, which I received from Mr. Burbidge, shows how success can be wooed and won: "I am acquainted with two varieties of this *Iris*, *I. r. cœrulea* and *I. r. Krelagei*, and find them to do admirably in a sunny border. On cold soils make a hole 2 feet deep, put in a foot of crocks, brick-bats, or other drainage, over that a sod of peat, and then fill up the hole with coarse sand, in which plant the roots in July or August, say 9 inches deep. Thus planted, I never knew this *Iris* to fail. In pots the bulbs soon lose their vigour." I am sure those, like the writer, who prefer to grow this and similar flowers in the open air to coddling them in frames or pots will feel grateful for these instructions.—W. J. M., *Clonmel*.

Anemones, though blooming less freely during the winter than usual, are now throwing up flowers in great abundance, and a big bed is fast becoming aglow with rich scarlets, blues, and other colours. That the plants bloomed less than usual during the winter, especially as the winter was so open, must be attributed to the long drought of the previous summer and autumn, which prevented that deep roothold the tubers make as a rule in the autumn, and their consequent upward growth. The same results are seen in *Primroses*, *Polyanthuses*, and similar spring flowers where the drought was more than usually evident. The recent rains have now given a remarkable impetus to the rooting of these things; indeed, all kinds of plants are feeling the benefit of the much-needed moisture, and are making root rapidly. Because of this action many plants may bloom later than usual, but they will doubtless presently bloom all the more profusely.—A. D.

A shot-silk flower.—If I wished to supply an English name for that pretty spring-flowering plant generally defined as *Pulmonaria saccharata grandiflora*, I should term it the *Shot-silk Flower*. The blooms open of a pleasing blue tint and turn to red as they age, so that whilst some flowers are red and others blue, others again are in that peculiar stage which so resembles shot silk, that it is difficult to say whether the ground is red shaded with blue or *vice versa*. This form of *Pulmonaria* is one of the finest and most serviceable of its class. I use it for the formation of an edging to a broad roadway, and although in winter it gives no great effect, yet its defects so far are of short duration. Already the flower-stems are coming up profusely, and a more lovely spring flower, especially such an early one, can hardly be found. As soon as the bloom is over, up will come the beautiful marbled leafage, and then for some eight months a more striking or useful hardy foliage plant can hardly be conceived. For the margining of big beds in which subtropical or, indeed, any kinds of strong-growing plants are planted, a better edging can hardly be desired or one more in keeping with the surroundings.—A. D.

Chlonodoxa Lucillæ.—It was, I think, "J. S. W." who stated in THE GARDEN last year that he could see nothing in this plant to go into ecstasies of delight about, as some people had done, and I myself fail to see in what way it is superior to *Scilla sibirica*. Some inventive genius also called it the Glory of the Snow, but I cannot see in what way it deserves to be associated with snow more than many other early spring flowers, which it is not at all unusual to see peeping through the snow early in the year.—J. C. C.

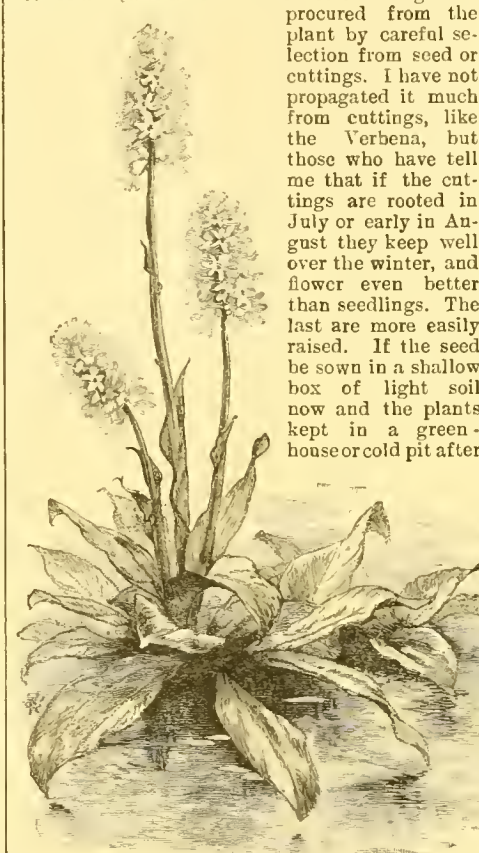
Single Dahlias from seed.—The sporting character of single Dahlias was well illustrated here last summer. In 1883 a solitary plant stood in the herbaceous border and seeded freely, scattering its seeds on the ground in all directions. Last summer they produced plants, and those that escaped being cut up by the hoe had flowers of the following distinct colours, viz., white, yellow, lilac, and crimson. The parent variety had pale red flowers, and no other single Dahlia stood near it. This shows that single Dahlias cannot be relied upon to reproduce themselves true from seeds.—J. C. C.

Old tree roots in lawns.—In forming lawns or Grass plots, nothing is more important than seeing to the removal of old tree roots and stumps. If this is not done, they will give much trouble in years to come. I could point to lawns made thirty years ago, on ground where trees had previously grown, that are yet constantly subsiding in parts where old roots have not been thoroughly dug out, sometimes sinking quite suddenly, and leaving a hole sufficiently deep and awkward to break a horse's leg if it happened to get into it. Old roots decay very slowly, but when they finally give way they drop and leave a hole or hollow which spoils the lawn, and it has to be filled up with fresh soil, causing a "spot" on the place, owing to its being greener than the rest of the sward. Another consequence of leaving old roots are the masses of offensive fungi which they produce annually, and which persist in coming up as long as the spawn is there. In making lawns, therefore, at this season, remove every bit of wood thicker than one's finger, and do not bury the chips, as is usually done.—S. W.

Gazania splendens.—This, once a favourite in our flower gardens, is now seldom seen anywhere in the southern parts of the country, except in a few cases where its beauty and usefulness are still appreciated. In the north of England and Scotland it is yet a favourite. In September last it was a conspicuous object in the well-furnished flower garden at Illopetoon House, Queensferry, where Mr. Muir uses it somewhat largely and with excellent effect. It seems to possess or exhibit one peculiarity, namely, that during dull weather in July and August the flowers close up; they open again immediately the atmosphere clears, but in September and onwards, so soon as moist, dull weather sets in for a time, the flowers do not close as they did earlier in the season, but remain open. In addition, this *Gazania* has these good qualities: It is a plant of the most easy culture, being dwarf and compact in habit, abundant and long continued in bloom, and being of close growth may be used for carpet purposes in large beds. It is easily propagated also. Some who use it strike cuttings in autumn and spring both, and the tops of the autumn-struck plants are often taken off and struck in heat in spring, and it is generally considered they make the best plants for bedding purposes. It should have a rich soil. It was at one time supposed that if planted in a poor soil it would bloom more abundantly, but such is not the case.—R. D.

Phlox Drummondii.—Those who remember this plant, with its rather coarse, straggling habit and generally purplish-coloured flowers, about twenty-five years ago or more, will hardly recognise the same plant in the modern varieties now grown. The beauty and usefulness of this *Phlox* are not half so well known as they should be. Now when the season has arrived for the sowing of flower seeds, I recommend all flower gardeners to procure it, especially amateurs, who will find it

an exceedingly easy plant to grow. So far as my experience with it goes, it grows and flowers in any soil and situation, flowering both long and well, but it is in light soils and warm situations that it is most effective. Last summer I saw it in a garden close to the seaside, in Lancashire, and it was, without exception, the most effective subject there, the plants being dwarf and one mass of brilliant flower. I know of no other annual that so well takes the place of a bedding plant, blooms so freely, and produces such a variety of rich shades of the most intense crimson up to pure white, with all shades of red, lilac, and purple between. Quite a host of rich colours might be



Stnd Flower (*Helonias bullata*) See p. 209

they are fairly in growth, they will do well for planting out in May and June, the plants being singled out in little bunches for planting. They grow away quickly and are soon in flower. A too rich soil, especially in a cool climate, does not suit this *Phlox*, because it encourages a too rank growth, and the flowers are then few. To flower well the plants should not grow above a foot high, and they should be pegged down like *Verbenas* early in the season.—J. S. W.

RANUNCULUS LYALLI.

A PHOTOGRAPH now before me of a large group of this plant in a garden in Christchurch, New Zealand, shows the large size and peculiar form of leaf and the flower-beauty of this distinct *Ranunculus*. It also shows that there has been some error started here by someone at the time this plant was first introduced by the Messrs. Veitch, now about seven years ago. We were told that the plant was an aquatic and required shade. Messrs. Veitch treated their plants in accordance with these instructions, and lost them. Now the group represented in this photograph is apparently growing in an ordinary border with a path along its front and a board-fence at the back. Possibly this fence is intended to afford shade to the *Ranunculus*, but in respect to moisture the position does not appear to afford any more than an ordinary garden border in a shaded corner in

England would do. To me this photograph comes as a revelation, and as I have two healthy young plants of this *Ranunculus* growing in a cool Orchid house, I shall alter the treatment to which they have been hitherto subjected to one which will be more in keeping with the conditions under which these photographed plants appear to be growing. Full sized plants of this *Ranunculus* have erect peltate deep green leaves, reminding one of the *Nelumbiums*, and tall flower-stalks, bearing as many as twelve flowers, which are 4 inches in diameter and a pure dazzling white. The height of the leaves is from 2 feet to 4 feet, the stalk being stout, and the orbicular concave leaf-blade is 15 inches in diameter and of a leathery texture. Sir Joseph Hooker says this is the most noble species of the genus, and, looking at the above description, there can be no doubt that it must be so. If we can but hit upon the right treatment for this beautiful and distinct plant, there is every reason for believing that it will prove hardy with us. Some of our New Zealand friends could no doubt give us some useful hints on the management of a plant which is apparently with them a garden favourite, thriving well without any special attention. A correspondent writing for a contemporary sends from New Zealand the following interesting note respecting this *Ranunculus*: "The first of these plants (*R. Lyalli*) was brought to Dunedin from the MacAndrew range of mountains, altitude 3300 feet, just seventeen years ago. It is found in different parts of the province of Otago, on mountain tops over 2000 feet in elevation, and passes among the settlers as the Shepherd's Lily. It is also plentiful on Mount Cook, and is called Mount Cook Lily by the residents around. Mr. Purdie (of the New Zealand University Gardens) has succeeded in producing the finest specimen

I have ever seen, and it is peculiar from the size of the flowers (nearly 4 inches in diameter), their semi-double character, the form and substance of each individual petal, the number on the stalk, and the colour, which is a dazzling white. The plant is deficient only in the number and size of its peltate leaves. It is a remarkable sight to see this plant growing in its native habitat in patches away up amidst the snows of winter, almost the only representative of vegetation—at least, such was the case when I first got it."

We want information yet as to whether these mountain plants grow in moist or comparatively dry places, and whether they are sheltered from the sun by overhanging rocks, or are exposed to full sunshine; also the nature of the soil in which their roots find nourishment. Particulars on these points would be specially valuable to the few English cultivators who have young plants of this *Ranunculus*. It is worthy of note that the seedling leaves are not peltate, but cordate, with a sinus down to the leaf-stalk. Our two seedlings are now developing leaves with only a slight sinus, and no doubt the leaves will ultimately come distinctly peltate. Possibly some who have seeds of this plant will be glad to know of this character in the seedlings, which might otherwise lead them to suspect that their seedlings were not of the right plant. Out of a pot of seeds—about 100—we got but two plants, which appeared above the soil ten months after date of sowing. A few

weeds came up in the seed pot previous to the appearance of the Ranunculuses, and it was by the luckiest chance that the man in charge of the house was prevented from pulling them out as weeds. He had been watching for peltate foliage, and seeing that these seedlings were exactly like the young leaves of a common Ranunculus which often comes up in the soil, he concluded that they must be weeds.—Moral, don't try to separate the Wheat from the Tares till it is possible to distinguish them. B.

KITCHEN GARDEN.

SHALLOTS.

Few vegetables are more neglected in private gardens than Shallots, though few are more valuable. There are no uses to which Onions can be put for which Shallots may not be substituted with advantage. By many they are considered to be even superior to the Onion in flavour, and they keep better after being stored. As a pickle they will be found equal to any Onion. Where the object is quantity, Onions may beat Shallots; but if flavour be what is most regarded, Shallots will be preferred. Their cultivation is by no means difficult; dress the ground heavily with rotten stable manure, digging it deeply and mixing the manure well with the soil; then firm it well by treading it with the feet, and rake it level. Procure strong bulbs with a large portion of embryo offsets attached to them. Stretch a line, and plant with a dibber 6 inches from bulb to bulb and 4 inches deep, allowing between the rows from 12 inches to 15 inches. When once planted they require no further attention beyond keeping the ground free from weeds and the surface open, which will be found to be advantageous to the crop. When the leaves turn yellow and die down, the crop is ready to be harvested; dig the bulbs up with a small fork, put them into a basket, and place them in an outhouse or open shed to dry. When perfectly dry, which may be hastened by spreading them out thinly and turning them over several times, they should be freed from soil, and all loose offsets should be removed. Use first those bulbs to which the fewest offsets are attached, and lay the others in the seed room. Towards autumn or early in the spring the latter may be planted; some prefer autumn planting, and I agree with them, as the bulbs have plenty of time to root well before they show signs of producing green tops. When planted late in spring i.e., when the bulbs show signs of growth, they form tops before the roots get established, and the produce is often smaller than that from autumn-planted ones. I have known one pound of bulbs produce from six to seven pounds of good sound produce. WM. CHRISTISON.

Homewood.

Mushrooms at Lythe Hill.—Mushroom spawn would appear to be unusually prolific this year if we may judge by what I saw while on a visit to Mr. Hodson's garden at Lythe Hill, Haslemere.

I was struck with the quantity of Mushrooms which I saw there. We know that success in Mushroom culture depends to a great extent upon the quality of the spawn used, and I think Mr. Evans, who is gardener at Lythe Hill, informed me that he purchased his spawn from two different (but both very old) firms, and which of the two kinds is producing the best crop it would be difficult to say. There are two beds in the Mushroom cellar, each 20 feet by 6 feet in full bearing, each bed being spawned with a different kind of spawn. There are also two others of the same size from which several dishes could now be gathered, and which have been in bearing from two to three months. In the Mushroom house, which is on the rack system, there are two beds 16 feet by 4 feet in full bearing, and others are coming on for succession. Outside, in the shrubbery, with just a covering of Fern under galvanised sheeting fixed to a gable, is a bed 22

"Veronica" among the rest—by the spring of 1886. Would it not be an encouragement to do so if at some horticultural shows prizes were offered for the best basket of *Lactarius deliciosus*, *Chantarelle*, or other kinds grown at home and not gathered wild?—F. H. G.

GOOD MUSHROOMS V. POOR ONES.

FROM time to time much has been written about Mushroom growing, yet seldom is there much stress laid on the great difference that exists, when they come to be eaten, between big, well-grown examples and such as are poor and puny, or in the intermediate condition between the two extremes. Still, there are few things in the way of edible vegetables wherein there is greater difference than in Mushrooms when in the opposite conditions named. There are not many things in the way of garden produce so generally liked as

this fungus, which nevertheless often gets the name of not being easily digested, and which to some extent it no doubt deserves, but its indifferent reputation in this respect is traceable to the ill-grown examples sometimes eaten. For when in the poor and leathery state sometimes met with when produced by beds that are too dry, nothing in the vegetable way, except possibly cork, could well be more indigestible. The lines of cultivation essential to success in Mushroom growing are pretty well known, and from the fact of stable manure being the leading ingredient in the beds from which they are produced it goes without saying that they like rich feeding, a matter understood by those who apply manure water to their beds when they need moistening. But all do not seem to fully realise how much Mushrooms will bear in this way.

One of the most successful growers I have met with goes further in this direction than most people would be inclined to look on as safe; he grows them in unheated sheds of rude make, and

after the beds have given their first crop he soaks them with water to which is added sulphate of ammonia and salt, at the rate of a good handful of each to three or four gallons of water, moistening the beds more than many would think necessary. The effect of this is that the after crop, besides being plentiful, comes of a size and quality such as are rarely met with, and so far as my own experience goes and what I have seen with others, cannot be approached where nothing but plain water or ordinary manure water, such as is generally given, is used. Fungoid growth does not admit of much in the way of comparison with that of other forms of vegetable life, yet there is one thing that appears to be in common—the quicker the growth of a plant, naturally the more food it can take, and in like manner the better it grows when the food it requires is at hand in a state that favours its being the readiest assimilated. It is often said that what may be food for one individual may be poison for another. But I think, in the matter of Mushrooms, when full grown, so that they have opened out flat and the gills begun to assume their dark colour, they are more wholesome than when in the button or half but-

Edible fungi.—I agree with "Veronica" that it is certainly risky venturing on fungi met with for the first time, even with Mrs. Hussey's splendid volume open before us, with marks for identification and recipe for cooking. But would it not be possible for the trade to supply us with bricks of spawn of *Lactarius deliciosus* and *Chantarelle*, or others mentioned in your issue of March 7, as easily as of the common Mushroom? Could not half a dozen varieties of Mushroom spawn be sold as easily as half a dozen distinct kinds of Peas? During the coming summer surely it might pay some enterprising manufacturer of Mushroom spawn to try the experiment and have a stock ready with which to supply a few customers—



Golden Club (*Orontium aquaticum*). See p. 209.

ton-like state preferred by many. There can be no question that in the condition named the flavour is fuller than whilst young. T. B.

EARLY AND LATE TOMATOES.

THE Tomato is reckoned such an important crop now in every garden of any importance, that every hint tending to help us to prolong the supply is worth recording. It is an easy matter for anyone to have Tomatoes in plenty from June to October, and even to have almost a sufficient quantity to spare for the market to pay the whole cost of the home supply, seeing all spare fruit finds a ready sale; but to have Tomatoes in spring and late in autumn and winter needs more management. Seedlings raised in January with sufficient heat come into fruit in May or June, and continue to bear freely till December or the new year, provided the ripe fruit is gathered as fast as it ripens, that the temperature of the house is kept up to 65° at least by day, and that the plants are permitted to grow at their points continually without stopping—a most mistaken practice, because pruning the tops of the shoots means cutting away the successional crops of fruit. The flowers are produced as on the Potato, at the extremities of the branches, and consequently the fruit also; hence the importance of prolonging the terminal growth as long as possible. The bearing power of the plant depends entirely on its power of prolonged growth, for without constant addition to the shoots there can be no flowers and no fruit, and this continual growth depends upon temperature and food. Outdoors or in a cold house, or, in other words, under natural conditions, the Tomato grows no higher than the Potato, and a field of Tomatoes very much resembles a crop of Potatoes, but under glass the plant grows 12 feet high, and bears its entire length. A long season of growth, therefore, early sowing, and sufficient food is the secret of a plentiful crop for eight or nine months in the year, beginning in April or May. Early crops are obtained most readily from plants propagated from cuttings of the old plants put in in November. These young tops root readily in bottom-heat at any season, and, if potted into 8-inch or 9-inch pots, they will produce fruit in March and April, when Tomatoes are worth 1s. 6d. or 2s. per pound. Plants in such small pots will not grow large, but they will bear almost from the beginning if allowed, and as they may be set thickly together in any corner of a warm house, stove, or pit, where they can get light, a large quantity of fruit may be had from them at the season named. We have had cuttings rooted in September in fruit nearly the whole of the following season, treated just like Cucumbers, only not so particularly. For midsummer and late crops, however, plants from seed sown at the beginning of January are best, as they bear heavier crops, and by far the most profitable sort to grow is the common red. S. W.

AMONGST THE CUCUMBERS.

I HAVE no wish to wholly condemn large Cucumbers; tastes differ; but I think the majority will agree with me that it is more profitable to grow sorts whose average length is from 9 inches to 12 inches than it is to cultivate kinds which grow twice that length. I entertain this opinion on economical grounds, because it is only when there is a large demand for Cucumbers that a long one is used up on the day on which it is cut, and the unused portion, if left for next day's consumption, is not so tender and fresh as one just cut from the plant. I therefore contend that for those who require cut-up Cucumbers sent to table daily it is much better to have one fresh from the plant than to depend upon what was left the day before, and the only way, too, in which one can be able to do this is cultivating short-growing sorts, which produce twice the number of fruit that very long sorts do. This is easily understood, as no more strain is put on a plant to sustain two short fruit than one very long one. By judicious management of a house or frame in which one of the short sorts is growing, a fresh fruit may be cut

daily throughout the summer; or rather, I should say, it is less difficult in a limited space to get a regular supply of short Cucumbers than long ones.

THE BEST amongst short Cucumbers is undoubtedly Masters' Prolific, an old sort, but properly named, for it is the most prolific of all Cucumbers for frame culture. Its usual length is from 10 inches to 12 inches, and the fruit is covered with a greyish bloom. It is not a handsome sort, but I have always heard it well spoken of as regards flavour. Sion House is another old sort that at one time was in high favour. It bears freely, fruit averaging from 10 inches to 12 inches in length, of a dark green colour, and is nearly if not quite spineless. If a short Cucumber can be said to be handsome, this variety deserves that character. Lord Keynon's Favourite I have not seen for many years, but thirty years ago it was a popular sort for winter growth. In external appearance it differs but little from Sion House, but it may be known from all other Cucumbers when the fruit is cut up for table, one being enough to give a room a distinct and not unpleasant perfume; the habit is spineless and of a bright green colour; average length from 7 inches to 9 inches. As an all-round Cucumber, probably a true selection of Rollisson's Telegraph is the best, but there are so many inferior varieties of this sort now grown that the true one is difficult to get. Two years ago all the so-called varieties of Telegraph were grown in a house at the Langport Nurseries, where the true form showed itself distinct from all others. It has a shorter neck, is smoother, and has a distinct shade of green, its average length being from 14 inches to 16 inches.

THE HANDSOMEST SORT for exhibition is Cardiff Castle, a rich emerald-green kind, which grows about 18 inches long. Very nearly, if not quite as good is Tender and True, the fruit of which is very symmetrical, with scarcely any neck. The longest of all Cucumbers, although not the handsomest, is Conqueror. It often reaches from 38 inches to 40 inches long; the skin dark olive-green and the plant vigorous. J. C. C.

BRUSSELS SPROUTS AND THEIR CULTURE.

THERE are few more popular vegetables than Brussels Sprouts, and they are decidedly the most productive winter crop that can be grown. As a rule they are available throughout the late autumn, winter, and early spring months, and it would be a very severe frost, indeed, that would destroy them. Those who fail with them now-a-days are much fewer than was the case at one time, this being principally due to the more widespread knowledge of the fact that the seed must be sown early and the plants well established early. They must have a long season's growth and plenty of room if success is to be certain or failure be rendered almost impossible. In some cases the seed is sown in the autumn about the end of August, the plants being wintered in the open or in rough frames, and this plan is to be commended in the case of those who either require a large number of plants, or have but poor convenience for rearing plants in spring. We usually sow on a slight hotbed about the middle of February, and sometimes as late as the first week in March. The seed is sown thinly, and directly it is up air is given freely whenever the weather permits, a chink being left on during mild nights, and a mat thrown over when frost threatens to be severe. Early in April the plants will be large enough to prick out, and plenty of air having been given them, they are usually sufficiently hardened off for it to be safely done. Those who have no frames to spare for raising early plants with or without bottom-heat may easily raise a good batch of plants in an ordinary bedding Pelargonium box, or even in a large freely-drained flower-pot, placing these either in a light position in a house or under a sunny wall. One gardener of my acquaintance annually raises hundreds of Brussels Sprouts, Broccoli, and Cauliflowers in a row of large pots set close to a south-west wall. Here the seeds germinate much more quickly, and are less liable to be interfered

with than when sown on open borders. No one, then, can excuse themselves for failure on the ground that they have no facilities for raising early plants, and no one should neglect to sow seed at once, that is, if they have not already done so. In most cases it is also necessary that the seedlings be pricked out, and that, too, before they become "drawn." Where plenty of space is given the plants in the seed bed, there is, perhaps, less need for pricking out, but I always find the best results follow our practice of pricking out the principal portion of our plants, and it is very certain those raised in boxes or pots must be pricked out. Our plants are pricked out on a fairly well-sheltered border, the soil of which is rather light, and from this the plants are transplanted more readily than is the case sometimes when pricked out on heavier soil. They are dibbled in up to the seed leaves and about 4 inches apart each way; they are watered in if the weather is dry, and in case of need a few branches of Evergreens are kept conveniently near, these, when disposed firmly over them, affording what little protection may be needed. When the plants touch each other the time has arrived for

PLANTING THEM OUT FINALLY, and this is at once done. By this it will be seen that this crop is considered to be of sufficient importance to have a quarter specially prepared and waiting for it, and I would strongly advise others to adopt the same plan, if not for the whole crop, at any rate for a portion of it. As a rule we practice double cropping as closely as the state of the ground or the character of the crops will permit, but after various experiments I have arrived at the conclusion that Brussels Sprouts must be favoured rather more than the majority of other members of the Brassica tribe. Too often they are planted between widely disposed rows of Potatoes, and here the necessarily loose state of the ground as well as the too close proximity of the Potato haulm, encourages a too luxuriant and lanky growth. Neither should the plants be kept waiting till the ground is cleared of any other crop, as in that case they become too large to move without experiencing a great check, and as a consequence the growth has not sufficient time to consolidate. It is the hard and woody stems that produce close, firm Sprouts, both these and the plants being fairly frost-resisting. We usually devote the heaviest portion of the garden to Brussels Sprouts, and in succession to Runner Beans, Peas, Strawberries, Turnips, or any crop that is cleared off early in the season. The finest crops we ever grew were produced on ground previously devoted to, and which had eventually proved to be too heavy for, Asparagus. Early in the winter the quarter intended for Brussels Sprouts is heavily manured and roughly dug. By the time it is required for the plants it has become in fairly good condition, and is then gone over with heavy hoes, levelled, well trodden, and raked down with coarse rakes; shallow drills are next drawn, and planting is proceeded with. For strong-growing sorts the drills are disposed 3 feet apart, and in these the plants are put out 30 inches asunder. For the dwarfier sorts the distances are respectively 30 inches and 2 feet. These distances may appear to some to be extravagant, but they are not, though on poorer soils the distances may be safely reduced by about 6 inches in each case. Our plants are well watered before they are moved; each is lifted with a good ball of soil about the roots and carefully and firmly replanted with a trowel and watered in. From the first they make good progress and generally touch each other all round long before the autumn is reached. If we planted them on loose ground or more thickly they would prove much less productive, and we, therefore, prefer to grow fewer plants on a given space with the comfortable reflection that all will be equally good. Before the plants tumble about they are heavily moulded up, this serving to steady them, as well as conserving moisture. According as the lower leaves decay they are removed, and more air being thus admitted to the stems insures greater solidity in the sprouts. I should add that we do not find it necessary to sow seeds for a successional crop, as by the time, and even before, the whole of the

first crop is gathered a second lot of small, but much appreciated, sprouts is being formed down the stems. This would not happen, however, if the first crop was roughly removed from the stems, as they form only on the short portion of the stalks left when the sprouts are first snapped or cut off. Neither do we adopt the old and wrong practice of removing the heads of the plants early in the season. I would rather see them run to seed than that they should be cut out before they have assisted the development of a useful lot of sprouts on the stems directly under their sheltering influence. At the present time, February 19, not a good top has been cut, nor will they be for some time to come, much as the "kitchen server" longs to be at them. We have occasionally found it necessary to crop between the sprouts with a row of Lettuces, Kidney Beans, or Turnips, but Broad Beans are too strong growing, and do much harm to the much more important crop on each side of them.

VARIETIES OF BRUSSELS SPROUTS are becoming numerous, but I am afraid the improvement effected is not so generally appreciated as those accredited with it might have anticipated. The produce is much too large, being in the case of the Aigburth, especially when well grown near the size of tennis balls; whereas we want them about the size of glass marbles. At the same time we cannot yet afford to dispense with the Aigburth, Sutton's and Veitch's Exhibition, and other similarly strong-growing, heavy cropping varieties, as there are none that I am acquainted with that can be so depended upon. Besides, the latest gathering, or say those Sprouts produced on the upper half of the plants are not nearly so large, and the quality, too, is also much better than at the commencement of the season. Veitch's Paragon does not grow so tall, neither are the Sprouts so large, and this variety we now grow to the extent of half the quarter devoted to Brussels Sprouts. Imported seeds vary considerably, as sometimes we are enabled to keep up a good supply with them, but more often they are much mixed and unreliable. This and Paragon are given the lesser distances as mentioned above. W. I. M.

FORCING FRENCH BEANS.

IN garden establishments in which forcing of vegetables is carried on extensively French Beans generally form an important crop, and where properly constructed houses or forcing pits are at command they are not difficult to manage. In such structures they may be successfully grown during winter, but if they do not exist forcing should be deferred till the middle of January or first week in February, when the days will be getting longer and less artificial heat will be needed. They like a steady temperature ranging from 50° to 55°; but they may also be grown in a temperature as high as from 65° to 70°. If in a house or pit in which that heat is required for the ordinary occupants, place the Beans as near the glass as possible; but better crops will be grown in a lower temperature. Where French Beans have to be supplied all the year round the seeds must be sown in pots about the middle of August and set in a cool pit or frame until the plants get well established; then place them in a forcing pit about the first week in October, when they will be coming into flower and will succeed the outdoor crop. Another sowing must be made the first week in November, and this should be succeeded by another sowing about the end of December or beginning of January, and one the first week in March to be followed by the last sowing for forcing in the third week in April, which will provide a supply until the earliest outdoor crop is forward enough to pick from.

The usual method of growing French Beans indoors is by planting them in pots; some prefer using 6-inch ones and others 8-inch ones, according to the space at disposal. Procure the desired number of pots, which must be clean, place some broken crocks in the bottom for drainage, covering the latter with fibry turf broken in pieces about the size of Walnuts, or some prefer rotten stable

manure instead; fill the pots about half full of a mixture of a rich turfy loam mixed with a portion of rotten manure and old mortar which has been sifted through an inch sieve. When the pots are ready, plant three or four Beans in each 6-inch pot, and when 8-inch pots are used plant six Beans in each, covering the seeds half an inch in depth with a portion of the potting soil. Place the pots in a genial temperature and water the soil at the same time, when the seeds will germinate in the course of a few days. An early vinery or Peach house at work is a suitable place in which to grow the spring crops. When the young plants have made a third leaf, fill up the pots with soil, just leaving enough room to hold sufficient water, of which they require a good deal when the soil gets full of young roots. When support is needed, stick a few twigs of some kind into the soil round the inside of the pots. If a Melon house or pit used for a crop of late fruit can be spared during winter and early spring for the Beans, they will give less trouble than plants in pots. The soil in which the Cucumbers or Melons had been growing in should be loosened up and drills drawn in it 12 inches apart and 1½ inches deep; in these plant the seeds 1 inch or 2 inches apart and cover them about the same depth. If the soil should be dry at the time of sowing give the surface a slight watering to induce the seeds to germinate. When free growth sets in give the soil a good soaking with lukewarm water, and put a few twigs of the height to which the Beans grow to each row to support them.

Later in spring Beans may be grown upon ordinary hotbeds covered with frames and sashes; put 9 inches of soil in the frame in which to plant the Beans, and care must be taken that the temperature does not exceed 60°; cover the frames at night with mats. French Beans under glass must be well attended to in the way of ventilation on all favourable occasions, in order to keep the plants dwarf. If kept too close and in a high temperature they grow weakly and the flowers often drop off. When in full bearing liquid manure or some artificial manure will greatly benefit them and encourage strong growth, when fine crops of Beans may be expected. Guard against attacks of insects, such as thrips. Should they make their appearance, fumigate with Tobacco and syringe daily to keep down red spider.

The following varieties are all suitable for forcing, viz.: Fulmer's Forcing, Osborn's Early Forcing, Sir Joseph Paxton, and Long Sword. The last is one of the freest growers and most prolific bearers I have grown for forcing, and it is suitable either for the earliest or latest crops.

Homewood, Chislehurst. WM. CHRISTISON.

FORCED RADISHES.

THESE may be had fit for table during the greater part of the year where a lasting temperature can be maintained; but where heating material is scarce and requires to be bought at a high price, the forcing of Radishes should be deferred until the beginning of February, when the days begin to lengthen and less artificial heat is required. A steady temperature is of more importance in forcing Radishes than a very high one, as the latter causes the plants to form more top than bulb or root. They may be either forced in brick pits filled with hot stable manure and leaves, or upon hotbeds, upon which is placed ordinary garden frames. Where forcing is carried on during winter and early spring, thick lasting beds must be made up, but later in the spring good crops may be grown upon beds having less than half the quantity of fermenting material required during December and January; then the beds should be made 5 feet high at the back and 4 feet in front. When made up, place 9 inches of sandy loam upon the manure after the frame has been placed upon the bed and make it firm. When the heat has sufficiently declined, sow the seeds broadcast and cover them lightly. If the soil is dry at the time of sowing, give it a good soaking of water, which will be sufficient until the seeds germinate, i.e., if the sashes are covered with a mat; afterwards

keep the surface at all times moist and ventilate as often as the weather will permit. Should the crop be sown too thickly, thin the plants out to 1 inch or 2 inches asunder, and in this way good Radishes may be expected fit for table in six or seven weeks from the time of sowing. Wood's Frame is one of the best for the earliest crop. It may be succeeded by the French Breakfast, and red and white Turnip Radishes may be sown later in the spring. W. C.

LETTUCES IN FRAMES.

WHERE Lettuces have to be provided for salading all the year round, and those in the open ground fail, a fresh supply may be had, if a warm greenhouse or pit is at command, by sowing seeds of any of the white Cos varieties in boxes at intervals of from three to four weeks. Procure some shallow boxes, or large seed pans, and fill them with soil in which there is a good portion of leaf-mould and sharp sand. Sow the seeds thinly upon the surface and cover them with sandy soil; water through a fine-rosed pot, and place the boxes or pans in a temperature of about 55°. When the young plants have made a third leaf, fill as many boxes with loamy soil as will be required to hold the number of plants needed for one crop, planting them 3 inches asunder and watering them in well. Then place them in the same temperature, viz., 55°, and keep them as near the glass as possible, in order to keep them dwarf and from damping off. In six weeks' time they will be fit to cut and ready for use in salads. It must not be expected that they will have hearts, but when grown quickly in this way they are crisp and tender, and will be found extremely useful to cut up with Endive and other blanched leaves of plants used for salads. During the spring months crops of green Lettuces can be successfully grown upon hotbeds in which there is some slight warmth, and from which all rank steam has escaped. If there is the least steam in the frame the young plants will damp off. Put 9 inches of sandy soil inside the frame and tread it firmly, keeping it about from 12 inches to 15 inches from the glass. Young plants which have been growing in boxes, and having from three to four leaves, will be found most suitable for planting in such frames. Plant them from 4 inches to 6 inches apart, give ventilation on all favourable occasions, and if the temperature rises above 55° leave a little air on by tilting the lights about half an inch at the back. I have found Cabbage Lettuces most suitable for giving quick returns in frames. Tom Thumb is the variety which I grow in this way upon fermenting materials, but other Cabbage varieties will do equally well, and I have no doubt will be found equally good when ready to cut, which may either be in a green state or they may be allowed to heart.

Homewood.

WM. CHRISTISON.

Pea Ne Plus Ultra.—I believe I am right in stating that this Pea originated with a Mr. Payne, who resided in the neighbourhood of Northampton, and was a selection from Knight's Tall Green Marrow. It was named Conqueror, and the stock was purchased by Messrs. John Jeyes and Co., nurserymen, of Northampton, who sent it out as Jeyes' Conqueror; but by whom it was named Ne Plus Ultra I cannot say. Except in Northamptonshire and a few other places, the earlier names are scarcely heard of. It is now generally known as Ne Plus Ultra. I regard it as one of the very best Peas in cultivation.—R. D.

Dwarf and tender Savoy.—These who want a nice, tender, and small Savoy early in the autumn before the larger kinds are ready should grow the Marcellin or the Early Elm—two varieties perfectly distinct from the larger and coarser kinds—very tender and good, and large enough to use in September and October, or earlier, only most people like Savoy to have a touch of frost before cooking. The larger Savoy is much the later and hardier, and to make large heads they have to be sown the autumn previous; but the dwarf sorts just mentioned, if sown this month and planted out in June, will make little hearts as

hard as bullets and come in very useful. By November and December they crack and burst, and are soon killed by frost; hence they are only fit for early use and till the Dwarf Green and others come in.—S. W.

Peas all the year round.—We have now in Peas so many kinds, that all requirements and tastes may be easily gratified. See also how long a Pea season may now be ensured from the little American Wonder in pits or frames to the Latest of All, carrying fine crops far into the autumn. Such a season seems to be long enough for anything, but probably some would prefer to have Peas all the year round, and if they live twenty years hence there is no telling how far they may find that wish gratified. We have not a single Pea in commerce that is not relatively good, but some kinds thrive in certain soils better than others, a circumstance for which ample allowance should be made.—A. D.

Asparagus at Killerton.—We hear from Mr. Garland that the fine old Asparagus beds at Killerton are still vigorous and in good bearing. They are, he says, 4 feet wide with 2-foot alleys between them. The plants are now irregular from their crowns, developing in different directions. Originally there were three rows in a bed probably more than forty years ago, certainly not less. I enclose specimens of our forced Asparagus, which we put in in January on a bed consisting of nearly all leaves, with a little long stable manure to hold the bed together. The crowns were covered with light rich soil, chiefly leaf-mould. They are watered with tepid water, and are given plenty of air in fine weather.

* * As perfect and fine as Asparagus should be at any season.—ED.

Mushrooms in sawdust.—I send you a clump of Mushrooms taken from a bed made up of sawdust and a portion of sand, the bedding of our horses. In making up the bed I mixed about one-third of burnt earth with the sawdust, sand, and droppings. The Mushrooms were longer in coming up than usual, the bed being in a close shed without any heat whatever. They have, however, far exceeded my expectations. Good spawn has, nevertheless, much to do with the matter. Mushrooms grown in cold close sheds far exceed those grown in heated houses. I intend to try pressed Moss after it has been used for bedding horses. I hear that it has been used successfully near Chilwell, but I should be grateful for someone's experience on the subject.—GEO. BOLAS, *Hopton, Wickenworth.*

* * Mushrooms in every way excellent—quite as good as from beds made up in the usual way with ordinary materials.—ED.

Forcing Seakale.—It has often struck me that your correspondents in advocating the system of taking up and forcing Seakale roots fail to do justice to the old-fashioned plan of covering the crowns where they grow with fermenting material. The lifting system is certainly less troublesome and saves much litter in the garden, but growers desirous of obtaining the best Seakale will do well to give the old plan a fair trial. I was the other day cutting Seakale from the open, and the heads being extra fine, I weighed four and found them to be 1 lb. 8 oz., 1 lb. 1½ oz., 1 lb. 7 oz., and 2 lbs. 1 oz., or a total weight of 6 lbs. 1½ oz. The quality, too, was all one could desire. My Mushroom-house-grown Seakale is not comparable with it, and I question the possibility of producing Seakale in that manner of equally good quality.—F. S. WOODFIELD, *Hurst Side.*

When to sow Brussels Sprouts.—These are most useful from November until April, and all should try to have a supply of them during that period. Many small growers of Brussels Sprouts when they see our finely furnished plants late in autumn think that because theirs are not so finely developed they must have been too late in sowing, but for main crops very early sowing is not necessary. We never think of sowing any of our Brussels Sprout seed under glass. The seed to produce Sprouts in November and onwards is

sown on an open border from the middle of February to the beginning of March, and we would never think of sowing earlier or in any other way. To sow in heat in January or February, and then harden off and plant out in the early spring months, will cause many of the plants to flower prematurely. Forced plants are quite unnecessary in the south, and in the north, where the soil may be too wet and cold for sowing until April or thereabouts, they may be raised in a cool frame. We know of one place in the north where excellent Sprouts are grown by annually sowing in a cold frame about the same time as we sow out-of-doors. In all cases the seed should be sown thinly either in drills in the open or broadcast in frames, and the plants should always be thinned out and transplanted before they become crowded. Timely attention to this will often be the means of producing better Sprouts than can be had by very early sowing.—CAMBRIAN.

New Celeries.—I have read Mr. Cornhill's note on new types of Celery with interest, as I have some plants of the new golden kind *Celeri Chemin* growing here, though only for the production of seed. Sown late, it was, because of the long drought, very late before the plants could be got out; hence they had no chance to make growth, but I was struck with the creamy yellow hue of the leafage; indeed I should think stout unearthened plants might be used with advantage for the production of decorative effects. Not only has the variety proved quite hardy, but it looks as if it would stand well. In relation to this kind, as also to the new American variety *White Plume*, the chief point for consideration is how far the absence of blanching artificially militates against flavour and taste. Ordinarily, any green or red Celery unblanched would be in the raw state quite uneatable. Blanching artificially not only produces whiteness, but removes hardness and astringency. With the new kinds the whiteness may be naturally present, but are the tenderness and pleasant crisp flavour seen in good blanched Celeries also present in them? I am not sure that this matter is to be fairly tested by French tastes, as these in many respects differ from ours. If Celeries can be found the which will give us, without the trouble of earthing, edible matter equal to the best of kinds now needing blanching, then the gain will be great. Mr. Muir, I see, classes *Sandringham White* as a comparatively new Celery. Has it ever been shown that this so-called new kind differs in any way from the comparatively old dwarf white *Incomparable*?—A. D.

Tomatoes without manure.—I agree with Mr. Muir (p. 134) that it is a mistake to feed Tomatoes too liberally; they are voracious feeders, and if good food is within reach they rush into leaf growth, and make long-jointed, fruitless wood; while if planted in hard, rather poor soil the growth is short-jointed, and fruit is produced in abundance. In this locality Tomatoes are grown extensively, and ripen heavy crops on low walls that would be of little service for fruit culture. The heaviest crop I ever saw out-of-doors was produced by plants put out on a narrow border close under a boarded fence facing the south; they were planted in rows and tied to stakes as growth progressed; the soil in which they grew was little better than gravel, by far the greatest proportion being stones, and at the time when I saw them they were completely loaded with brilliant fruit. Nearly all other crops were dried up; the protracted drought and strong solar heat were too much for Peas, Beans, and nearly all the Brassica tribe; but the Tomatoes revelled in the sunshine, and I was assured that no manure or manure water had been given until the plants were finally swelling off their crop. I cannot give the exact weight of the crop, but I know that it equalled three ordinary crops. Anyone wishing for heavy crops cannot do better than sow early and plant in good sound loam without any manure; if the plants do not grow strong enough, stimulants can be given after the crop is set. I may add that the variety of Tomato that produced such good results out-of-doors was *The Conqueror*.—J. GROOM, *Gosport.*

GARDEN FLORA.

PLATE 483.

CHINESE BELLFLOWER.

(*PLATYCODON GRANDIFLORUM* MARIESI.*)

UNDER this name has been distributed the beautiful plant represented in the accompanying plate, which Mr. J. H. Judge, who kindly sent me seeds, informs me is much hardier, dwarfer, and showier than the type. The seeds reached me with the varietal name of *pumilum*, but I am informed by Messrs. Veitch that they have introduced but one plant, which they call *Mariesi*, and that they know nothing of the same *pumilum*. Therefore



Flowers of the original *Platycodon grandiflorum*.

that name should be discontinued, and that here given retained in honour of the collector, Mr. Maries, who has sent us so many fine plants from Japan. This variety of Bellflower is a compact growing plant, and one that flowers freely in a small state. Some of its flowers measure more than 3 inches in diameter, and the shade of blue is similar to that of the ordinary *P. grandiflorum* introduced by Fortune. We have in this variety no doubt a very valuable addition to Bellflowers. There is but one species, to which belong all the several forms. The first introduction of *P. grandiflorum* was in 1782, and it is figured in the *Botanical Magazine*, t. 252, as *Campanula grandiflora*, where it is said Linnaeus the younger expressed his doubts as to whether it was

* Drawn in Messrs. Paul's hardy plant nursery at Brompton in September.



PLATYCODON GRANDIFLORUM MARIESII

not a variety of *C. carpatica*, and it is added that "The blossoms of this plant, when in perfection, are very large, nearly twice the size of those of *C. carpatica*, whence its name of *grandiflora*." Previous to their opening fully they somewhat resemble an air balloon, from which circumstance it has been called by some the "Balloon plant." *Platycodon* differs from *Campanula* particularly in the fruit, but also in the flower, which is more widely expanded and less bell-shaped. The most distinct variety is *P. autumnale*, known also as *P. chinense*, from China and Japan. It differs from the type in being larger in stature, reaching a height of 3 feet; in its narrower, but more closely arranged leaves; and in its smaller, but more numerous flowers, distributed pretty evenly along the upper half of the stems. Besides the double blue there is a white form of the type named *album*, and of it a semi-double, known as *semi-plenum*. A semi-double form of *P. grandiflorum* is illustrated in "The English Flower Garden." Various forms have been raised on the Continent, and Messrs. Krelage, I observe, offer several, one of them having striated flowers. By crossing and seed raising it is no doubt easy to obtain different shades of colour, and this matter appears to be still worth attention, a fact confirmed by the fine variety now under notice. The colour in its different shades is, I think, blue-purple, and not strictly blue. Mr. Stevens, of Byfleet, has been very successful with the ordinary kind; on his light, sandy soil he has produced stems bearing upwards of 20 flowers.

CULTURE.—The ordinarily cultivated forms are by some thought to be somewhat tender, but on the light and rather dry soils to which I have been accustomed I never knew a plant to perish from cold, though during the severe winters of a few years ago I happened not to have any kind under observation. In damp and undrained situations, however, it is said that the thick, fleshy roots are sure to perish, sometimes from below upwards, but more generally from above downwards. A well drained, rich loamy soil is best, and in soil of this character the variety *Mariesi* has done well with Mr. Paul at Broxbourne. The ordinary varieties frequently, but not always, require the support of sticks, though the subject of our plate perhaps never does. This support, when required, should be given early, as the branches are liable to break when drawn from the position they have naturally taken. Propagation is best effected by raising seedlings, as some risk attends dividing the old plants. It may be done, however, in spring, and cuttings about 3 inches long made of the early growths will strike root. All the forms are natives of Eastern Asia, and that here represented came from Japan. It flowers from June perhaps to August, as the other kinds do.

R. IRWIN LYNCH.

Botanic Garden, Cambridge.

Chrysanthemum seeds.—Those who are fond of the *Chrysanthemum* should lose no time in obtaining seeds if they wish to rear plants to flower this season. Sown now in a gentle heat of 50° to 55°, the seeds germinate as freely as Cress, after which they should be hardened off gradually. It cannot be too widely known that the *Chrysanthemum* may be flowered at ten months from the seed sowing even in England. I received a packet of choice seeds from an American raiser only last week, and it is now up quite thickly. What is most desirable, however, is that we should raise home-saved seed for ourselves. Of course, I know that to a certain extent this has been achieved,

but what we want is that every good grower should acquire the knack of obtaining a few good seeds annually. Now that the National Chrysanthemum Society has made a special class and offers a prize for English raised seedlings, no doubt some attempts actually will be made. I am very glad to see that Mr. Laxton and other professional seed growers have taken this important matter in hand.—F. W. B.

WORK DONE IN WEEK ENDING MAR. 10, 1885.

MARCH 4.

THOUGH fine to-day, the ground was too wet, from the heavy rain of yesterday, to attempt any kind of work that necessitated treading on the soil, but it was just right for redraining terrace garden walks, because the heavy rain shows the defective parts, so this work has been done, and the whole of the surface gravel is now being pointed over and a sprinkling of new added to give it brightness. This light fork over and sprinkle of fresh gravel we do to all walks once a year, and it is labour well expended, for there is little or nothing else but an occasional roll required the whole year round. Salt or other weed-killers are not in favour here, and that for a very good reason, which is that they often kill more than is intended—namely, the turf edgings, Box, &c.; and moreover they, salt in particular, soon as it has killed the weeds, act manurally on the following crop of weeds. Hedge clipping—Privet and Yew—and forking over shrubberies have been other of our doings to-day. House work has been tying down shoots in early vinery, cut off all the small "shows" and every duplicate from all shoots. They are now in flower and the atmosphere is kept rather drier and the night temperature ranges from 65° to 70°. In very severe weather we should not mind the mercury receding as low as 58°. The house in question is principally Hamburgs—Muscats we keep several degrees higher. The latter we finished disbudding to-day and stopped a few of the longest shoots. Thinned fruit on Strawberries, as they are now throwing up much stronger; from eight to ten fruit is left on each plant, and clear cow manure water is given each day after the fruit has been thinned. Sowed *Petunias*, *Celosia pyramidalis*, *Cinerarias*, and Chinese *Primulas*. Put cuttings of *Alternantheras* in manure frames; over the manure is a layer of half decayed leaves, and on this are put from 3 inches to 4 inches of light soil, leaf soil, and sandy loam, the whole being made firm, and the cuttings dibbled in about 3 inches apart—a mode of propagation that gives but little more trouble till they are needed for planting out in the beds.

MARCH 5.

As it continues fine we have been able to get the whole of our winter bedding shrubs transplanted to their summer quarters. Our stock has taken many years to get together, and it may be of service to some if I name those kinds that I have found to best bear the rather trying ordeal of transplantation twice each year for several years in succession. I name them in the order of merit, or rather those that suffer least are placed first: Common, golden, and Irish Yews, *Thujopsis borealis*, *Cupressus Lawsoni* and *C. Lawsoni erecta* viridis, *Cedrus Deodara*, *Berberis Aquifolium* and *japonica*, *Ivies*, *Portugal Laurels*, *Aucuba japonica* variegata, *Retinospora squarrosa*, *Retinospora pisifera aurea*, *Vincas* or *Periwinkles*, green and variegated *Euonymus*, all the kinds, and green and variegated *Hollies*. The latter are almost indispensable, giving as they do such refined colouring in the winter season, but they suffer so severely that they have to be replaced every three or four years. Hardy Heaths are invaluable for edgings to the shrubs, and they bear the removal very well. They are now being divided into pieces about 3 inches across, and planted on a border, the soil of which is a light sandy peat, and by the time they are needed for next winter's bedding they will be nice plants, at least double the size they now are. Potted singly out of seed boxes into 3-inch pots *Grevillea robusta* and *Chamepeuce diacantha*. We use these two plants extensively for hedging, and

generally make them central plants in small designs of foliage colouring. They are comparatively hardy; indeed the latter always stands the winter, though it often gets crippled. *Grevilleas* we have known to stand, but that has not been the case the last winter, as the few sharp frosts at end of December killed them. Pricked out seedling *Centarea*s, *Salvia argentea*, and *Solanum robustum*. They will be kept in strong heat till well established in the soil. Put in more cuttings of *Iresines*, *Lobelias*, *Agathæa cœlestis*, and *Verbenas*. The stock plants of the latter have been planted out in boxes and placed in a cold pit. Partially disbudded second Peaches and intermediate Vines.

MARCH 6.

Bitterly cold, but dry, though the ground is not yet sufficiently so for seed sowing; we ventured, however, to make another sowing of Peas and Broad Beans, and earthed up the Peas just coming through the soil to prevent birds injuring them. Finished re-gravelling on terrace garden and rolled the same and repaired turf that had got bare in places over which had been heavy traffic. Cut Ivy on mansion. This is an annual affair and is requisite to keep the Ivy close to the wall, free of vermin and birds' nests, and, not least, a bright green throughout the year. Divided and replanted variegated *Iris foetidissima* variegata, an invaluable plant for our winter bedding and for planting in shrubby clumps and near the margins of woodland walks, as rabbits will not touch it and its bright variegation and Reed-like aspect make it in every way appropriate for such a position. Reported more tuberous *Begonias*. The tubers intended for the flower garden have been planted in shallow boxes in leaf soil and loam and are placed in a cold pit, that growth may, as it were, take its own time, as it is not desirable to have them too large when first planted out. They make a splendid bed when planted thinly and are carpeted with the green *Herniaria glabra* or the sulphur-coloured *Sedum acre elegans* variegatum. Gave Tomatoes a shift into larger pots, and the plants for outdoor growth potted up from seed pans. Wireworm having destroyed some of our Melon plants, others have been planted in their stead, and the depredators trapped with pieces of Carrot buried in the soil. This is a bait that never fails of success, and our loss is solely attributable to forgetfulness to apply it when the soil was first put into the house. Watered Pines; the beds and walls of the fruiting and first succession apartments are now kept regularly syringed, but in doing this care is taken to keep the water out of the axils of the leaves. Temperature of both divisions now ranges about 68° by night and 8° or 10° higher by day, unless the weather is exceptionally cold; then, of course, it is allowed to fall proportionately. Late succession and newly-rooted suckers are kept at a rather lower temperature, and are given air more freely to induce a stocky growth. An over-moist high temperature with little ventilation would cause a quicker growth, but the final results at fruiting time would bear no comparison with those of plants that for the present are allowed to make growth of a more stocky nature.

MARCH 7.

Prospects are as yet but little brighter for getting in kitchen garden seeds. The ground being so wet, it is better to wait a few more days than risk failure by unkindly working of soil, and meanwhile labels, seeds, and seed Potatoes are all being got in readiness, that the work may be expeditiously accomplished soon as weather conditions are favourable. We have still a lot of shrub trimming on hand, and this, with the general weekly round of sweeping and clearing up all and sundry, has kept outdoor hands in full employ. It will only be a repetition of former notes to allude in detail to the doings in and about the houses on Saturdays, so it must suffice to say that all have had the usual attention in the way of scrubbing and washing, other duties being putting another batch of Strawberries into forcing quarters, also Roses, Lily of the Valley, and *Deutzias*. Cleared Moss off surface of soil in Violet

frames, and the plants of bad foliage and seedy flowers, and bedding plants in frames have also been tidied up, and such as required it watered. Another batch of Seakale has also been put in, and other supplies of Mint and Tarragon provided for by boxing more roots. Rhubarb now grows sufficiently fast in the open garden with pot coverings only, that lifting of roots is no longer necessary, and from the present time Seakale will also be left in the ground, the crowns being thickly covered with sifted coal ashes, a plan that produces Kale of a sweeter quality than when Seakale pots and leaves are used for forcing it on the open ground.

MARCH 9.

A dry north-easterly wind prevailed all day. Renovated herb beds, shortened back straggling shoots of Sage, clipped Thyme with shears, leaving the plants about 4 inches high, cut off dead stems of Mint, Tarragon, and Balm, weeded, and then gave the whole a couple of inches of new soil as a top-dressing. Planted out Sweet Peas that have been raised in pots in heat and staked them at once, which will help to protect them; made another sowing in the open border, and also a first sowing of Mignonette in small patches on Rose borders. The ground being still unfit for the trampling necessary in the sowing of general crops of seeds, hedge and shrub cutting has again been the principal outside work. Flowering plants in stove, so far as our collection is concerned, are now at a low ebb, and we have, therefore, had a re-arrangement, old plants of *Euphorbia jacquiniæflora* being taken out to partially rest them; from a plant or two that were cut down early cuttings have been taken and put in strong heat, as it is from young plants that most and finest flowers are obtained; soon as the young stock is struck most of the old plants are thrown away. The same remarks are applicable to *Bonvardias* and *Plumbago rosea*, and of these also cuttings have been inserted. Early batches of *Calanthes* have also been shaken out and repotted, feely-broken crocks, rough pieces of turfy peat, a small proportion of fibrous loam and Sphagnum being the materials used, three moderate-sized bulbs in 6-inch pots being the size we find most useful, and the finest bulbs are planted singly in 5-inch pots. Plants of *Oclogyne cristata* that had got root and bulb-bound have also been parted and repotted, Sphagnum being the principal ingredient, small pieces of peat, crocks, and charcoal making up the remainder. *Chrysanthemums* have been assorted into numbers of each kind that it is intended to grow, and those intended for growing as bush plants have had their points pinched out, and those for the production of large flowers have been given more space between the plants, and also additional head room, as by no chance should the points be injured. Gave early Muscat Vine border a watering with water at a temperature of 90°. This will suffice till the fruit has set, as the "shows" are now rapidly unfolding.

MARCH 10.

A fine, though sunless day. Sowed Parsnips, Onions, and a small plot of Carrots. All are sown in drills and filled in by hand; raking over or beating down with spades after sowing we never practise. Pruned greater part of Roses, and pressed firmly into the ground spring-flowering plants that are planted between the Roses. Begon to trench vacant beds on terrace garden preparatory to planting edgings and various kinds of hardy plants for summer bedding. We are still busy with shrub and hedge trimming, this work being followed up with the clearing up and out from under the trees and hedges all cuttings, leaves, &c., in a thorough manner. Tied down and stopped shoots in early vinery, and being now in flower, atmospheric moisture is limited to damping down and syringing walls once a day, and that is done at closing-up time. The rods are gently shaken to disperse the pollen about twice in the course of the day, at about 10 o'clock and at noon. Second Peaches are also in flower, and to make sure of a good set most of the flowers are gone over with a camel's-hair brush, and a tap

on the stems of the trees helps to disturb the pollen of any that may have been missed with the brush. Pricked out seedling *Streptocarpus floribundus*, or *biflorus*, a plant that is of the easiest culture, and yet it is seldom met with. We grow it for furnishing small vases and baskets in the mansion, and the seedlings now pricked out will be ready for that purpose in September and will continue to flower right up to the end of the year. Greenhouse or cool pit treatment is all that is required after the plants are established, and up to this stage heat is necessary. About two-thirds peat and one of loam is the best compost to grow them in, and in this the old plants have been shaken out and repotted, and have been given space on a shelf in the plant stove till new roots are being made.

HANTS.

FRUITS UNDER GLASS AND OUT OF DOORS.

FIGS.—Although Figs have been grown in this country through a period extending over many centuries, the attempt to cultivate them under glass does not date back far beyond the memory of the oldest inhabitant; and it is only within the last few years that a small minority of gardeners have made an effort to force the trees contemporaneously with early Pines, Peaches, and Vines. But now, thanks to cheap glass and an acquired taste, the finest fruit, in what is termed a green state, forms one of the most telling dishes in every first-class dessert throughout the London season. Within the last few years a great number of excellent varieties have been introduced from France and Italy, and many of them are well adapted for early forcing, but, taken at all points, it is questionable if any of them are superior to our oldest friend, the Brown Turkey, as it is alike suitable for growing in pots or training over a large trellis; it is early, prolific, and the fruit is unsurpassed for flavour. Add to this White Marseilles, Negro Largo, and Osborn's Prolific, and a selection consisting of two white and two black kinds will leave a good grower nothing to desire in the way of variety or quality.

Culture.—The best time to commence the culture of Figs is early in the spring, as well ripened cuttings put into small pots and plunged in a hot-bed, where they can receive the treatment usually accorded to Vine eyes, will grow into fair sized bushes in one year, or trees of all the leading kinds, thoroughly established in pots and fit for forcing, can be obtained from any of the leading nurseries. If properly grown and the roots and wood are well ripened, a batch of trees started in November will give ripe fruit in April, and a second crop will be secured from the young wood that is made during the time the first is ripening; indeed, by constant high feeding the trees may be made to produce three crops in one year, but it is not advisable, as it spoils them for a second year's forcing; moreover the third crop comes in at a season when outdoor fruit is plentiful and cheap. Unlike the Vine, the Fig can be grown in pots for an indefinite number of years, and the older it gets the better it bears, that is provided cultural directions, so often detailed in the columns of this journal, are properly attended to. It is a gross feeder, revels in light rich calcareous soil, submits to annual root-pruning, and, although bottom-heat is not absolutely necessary, it succeeds best when plunged in a fermenting medium composed of Oak leaves or spent tan. Young trees can be shifted on from year to year until the roots have filled 16-inch or 18-inch pots, a size that is large enough for pyramids 9 feet in height and 3 feet in diameter. When these dimensions have been attained tubs should be used, or the trees may be turned out of the pots as soon as the second crop is gathered, when the balls can be reduced by paring down with a sharp edging iron to make them small enough for repotting in fresh compost. As soon as the trees are repotted they should be replunged in a brisk bottom-heat to induce the formation of new roots, and the house should be kept close and moist until they have recovered from the check. The temperature must not, however, range very high, otherwise a latent growth will set in and the

embryo fruits formed at the axils of the leaves will get too forward; therefore as soon as the leaves show by their crisp appearance that new root action has set in, more air may be given, the pots still remaining in the gentle bottom-heat, which will decline with the season. When there is no longer any danger of the terminal buds starting, more dry heat will do good service in maturing the roots and wood, as it is important that the trees have complete rest from the beginning of September until they are again started into growth.

Manipulation.—Assuming that yearling trees are taken in hand early in January, those with straight leaders and one or two sets of side shoots will be selected for growing into pyramids, the best of all forms for forcing purposes. If the first set of side shoots have been pinched at the sixth leaf of the preceding season and fresh points have been formed, all that will be needed is straight sticks for guiding the leaders, which must be incessantly pinched as soon as they have made 12 inches of growth. This will induce as many side breaks as will be required to form the framework of the trees. These in due course will also require pinching, but not more than once; otherwise they will not be furnished with well-ripened points at the end of the season. As growth proceeds it may be necessary to thin out the weakest breaks and tie the others out in a horizontal position for the twofold purpose of throwing sap into the bottom tier and causing it to ascend to the leaders upon the principle that is observed in the formation of a specimen *Fuchsia*. The result will, however, be different, as the *Fuchsia* is expected to produce as many flowers as leaves in the autumn, while the Figs well furnished with short spur-like points will go to rest with embryo fruit at the base of every leaf ready to swell to maturity in the course of the following spring.

Potting.—Unless the trees have been wintered in very small pots and the soil of the first year is quite exhausted, it will not be necessary to pot before they are taken into heat in January, as it is well understood that all deciduous fruit trees that require a season of rest take most kindly to the soil when the autumn sap is descending, or after the heat and moisture have started them into new life. When the trees get older and are expected to ripen full crops of fruit, autumn potting should never be neglected, but young ones, like these, in course of formation, need not be potted until the buds have started into growth. Assuming, then, that they have been placed on a bed of fermenting leaves and the buds are on the move, each plant must be turned out and divested of all old crocks, inert soil, and straggling roots, preparatory to a shift into a clean, well-drained pot large enough to support it throughout the season. If the plunging bed is satisfactory as to heat and moisture, the pots may be let in up to the rims, plenty of room being allowed for future development and the admission of light. Good syringing will now form an important item in the daily management of the young trees at all times subject to the ravages of red spider, particularly so when grown in close proximity to hot-water pipes. Overhead syringing must not, however, be too freely indulged in during dark, dull, or cold weather, when the ventilators cannot be opened and there is danger of the foliage remaining wet all night. At such times the foliage can be kept fresh and healthy by the aid of atmospheric moisture, which can be produced by damping the walls and paths and syringing over the surface of the bed. As days increase in length and the sun gains power, the trees, which should never be allowed to root through into the bed, will derive benefit from being turned round, so as to expose every leaf, not only to light, but also to the full force of the syringe. The evaporating pans must be kept constantly supplied with diluted liquid or pure water, as may be suggested by the strength of the young growths, and an occasional under-syringing with weak, clarified soot water, while giving colour to the foliage, will act as an insecticide in keeping it free from scale and spider. If all goes well and the pit is kept at

vinery temperature, the pots will be well filled with roots by the middle of May, when weak stimulants may be applied to weak growers; more air may be given through the early part of the day to secure a short-jointed, stubby growth, and a high temperature from early closing with sun heat will in a great measure enable the cultivator to dispense with sharp firing. By the end of June pinching will be practically, if not entirely, over, as every pinched shoot must make and ripen a fresh break before the tree goes to rest.

HARDY FRUITS.—Once more the tedious operations of pruning and nailing have been brought to a close, and never, perhaps, have fruit trees of all kinds given fairer promise of a magnificent crop of blossom. What the outcome will be remains to be seen by the anxious fruit-grower when he removes his blinds and screens two months hence. One thing in his favour is the certainty that the trees, down to the present time, are a month later than they have been in unusually early years, and although we have had a few fine forcing days, the wind at the present time is blowing up heavy snowstorms from the north, which will have the desired effect of still further checking the expanding of the blossoms. So far, then, the elements are with us, and a large amount of rough weather being now overdue, we may reasonably hope that the worst part of this debt is about to be paid off before our trees are again white with bloom. This prospect must not, however, be allowed to interfere with or retard the progress of the usual preliminaries to warding off sharp morning frosts, which may come upon us with the waning of the next moon. Next to the neglect of all means of protection is premature covering, as this course only weakens the blossoms and renders them liable to injury, where, under judicious management, they might pass unscathed the effects of a moderate frost; therefore, the better to steer clear of one or other of the two evils, I would suggest that all poles and framework for carrying nets, frigi domo or canvas, &c., be fixed at once; copings of glass or projecting boards be got ready for fixing as soon as the flowers show signs of opening; earlier would be premature, later would be courting disaster. From wall trees we turn to bushes, pyramids, and espaliers, at all times most difficult subjects to deal with, as, owing to their exposed position, they often suffer to a serious extent by the protecting material being blown against the blossoms in windy weather. If the trees are not over large, many favourite kinds can be protected by means of stakes placed around, but not touching them, to which haybands can be attached, from 6 inches to 12 inches apart, from the apex downwards. These will, of course, remain until the fruit is safe. They cannot be made too rough, as every projecting bent catches up moisture, and they should be sufficiently wide apart to admit of a free circulation of air. Where espaliers cannot be entirely covered at night, stakes firmly driven on each side and topped with laths running longitudinally, and a little higher than the top bar, will form an excellent framework for a breadth of tiffany or scrim, which can be quickly turned aside on fine days. On such trees the old-fashioned hay or strawband will also do good service, as they check radiation without impeding the passage of air and light.

STRAWBERRIES.—As the crowns of these are now showing signs of returning life, advantage must be taken of fine, dry days for weeding and raking over the beds. If they have been well mulched this process will work the finely pulverised manure in amongst the crowns, where it will act as a stimulant to the surface roots, and prevent the escape of moisture until after the young leaves appear. In old gardens subject to snails and slugs it is a good plan to dress the beds with soot before the mulching is raked over; a dry calm day should be selected for its application, and it should be lightly and evenly sown with the hand between the rows, as it is a powerful stimulant and liable to do injury if too freely used.

Grafting.—Pears and Apples that were headed back last month may be grafted when the sap in

others adjoining them begins to rise and force the buds into growth. If not already done scions should be taken at once and laid in in the shade of a north wall or hedge until they are wanted for use. Pears should be taken in hand first, as they are earlier than Apples, which may be grafted up to the end of April, but the end of March is the best time unless the trees are very large and deeply rooted in a cold subsoil. Remove the spray from trees that were grafted last year. Shorten back growing scions where there is likely to be a scarcity of young wood through failures, and thin out others where too great a number have taken kindly to the stocks. These remarks of course apply to old trees carrying from one dozen to thirty grafts each. Young nursery stock may be shortened more or less, or not at all, to fit the trees for the various purposes for which they are wanted. At the present time we are preparing a large number of clean healthy cider Apples of thirty years' growth. The heads were cut back early in February, and two-year-old wood of choice kinds will be used for scions. W. COLEMAN.

Eastnor Castle, Ledbury.

INDOOR GARDEN.

LILY OF THE VALLEY FAILURES.

IN THE GARDEN (p. 120) a correspondent solicits information as to the cause of his Lily of the Valley crowns failing to start, and unless I am much mistaken a considerable number of other readers have been equally anxious to have the mystery cleared up. One season the imported clumps or crowns, as the case may be, refuse to grow both when forced and when given the chance of starting naturally, while at another time those first placed in heat will not start, but the later ones may flower satisfactorily. If they refuse to start when forced, they will not grow later on, and yet the crowns retain their fresh and plump appearance for fully twelve months. One thing is certain—it is not the fault of the cultivator that the crowns refuse to grow, and however vexations it may be to those who anticipate a supply of this, the most beautiful of all spring flowers, to learn that there is a likelihood of failure, they must yet sympathise with rather than blame the grower. If the crowns force readily either in pots or boxes, with or without the assistance of a hotbed of leaves or other heating material during one season, they ought, under the same conditions, to do equally well the next. According to my experience, it is only the imported crowns that fail, and we have never any difficulty in flowering plump home-grown crowns. It is true the latter very rarely produce such fine spikes of bloom as those imported, notably single crowns, but then they more than compensate for this by throwing up their beautiful green leaves more freely and earlier. The finest spikes from imported crowns will have as many as twenty or more flowers, but the spikes on the home-grown plants in our case frequently carry about fifteen. Better, however, feel certain of a supply of moderate sized spikes than run the risk of failing with imported crowns, and all who have ground to spare for it may well grow their own stock for forcing. A fairly cool position suits them, and the ground should have a good surface dressing of rotten manure or good leaf soil, forking this in and mixing it with the surface soil rather than burying it deeply.

THE CROWNS may either be planted thinly in patches, or singly in lines about 9 inches apart. If the bed is formed this winter or spring none should be lifted for forcing next winter, but in the following autumn a considerable number of plump crowns may be lifted and potted, all the smaller ones being separated and replanted. Our plan is to lift one-third of the best each autumn, and they well repay for the extra year's grace. Not only do those lifted flower well, but many of the crowns, especially in that part of the bed that has been replanted two years, also afford a good quantity of bloom. In one garden under my charge we were able to annually lift enough crowns to

fill twenty bedding Pelargonium boxes, and there was but little necessity to pull the clusters of crowns to pieces, as they invariably flowered as well as the imported clumps. These boxes were placed on a hotbed of leaves and manure in the early vinery, and with very little trouble abundance of bloom was secured. If pot plants were required they were made up after the flowers were opening, and they were apparently uninjured by the rather rough treatment. Lilies of the Valley will also flower abundantly every year if planted out permanently in old brick pits or frames not wanted or of no value for other purposes, and many of those forced or grown in pots in a greenhouse if not neglected will flower freely the next season. In fact, those retained in pots and given liquid manure occasionally are the best for early forcing. Those who lift their roots from crowded and exhausted beds, however, must not be surprised if their crowns do not flower well. Not only should they be occasionally lifted and replanted more thinly, in the same site if need be, but they should also have liberal mulchings of decayed manure every spring before active growth has commenced. Many seem to think they should remain undisturbed, and it is quite true they succeed fairly well in a wild state, but lift, replant, and liberally treat these same wild plants and mark the results. This brings me again to the

IMPORTED CROWNS. All must be aware that these receive very liberal treatment, at any rate while they are in the ground, but unfortunately this would appear to cease directly they have attained the desired size. If this is not the case, why do they fail? Let me advise both the growers and our own retailers to exercise more care in their methods of packing and storing these crowns. If the crowns in their constitution resembled Hyacinths and other bulbs, it would not matter much if they did remain a few days or weeks exposed to all weathers short of severe frosts, but as it is, exposure for a long or short time may be the sole cause of their failing to start into growth at the proper time. From the time they are lifted till they are potted the roots should never be exposed, and if packed in moist Cocoa-nut fibre so much the better. Neither should they be packed in large masses, or over-heating may be the result, the consequence of this also being the ruin of the crowns. A paying price is given for the crowns, and both growers and retailers, if they study their own interests, will act wisely if they pay a little more attention than they do to the numerous complaints made concerning the non-starting of imported Lily of the Valley roots. W. I. M.

TACSONIAS.

OF these one of the best is T. Van Volxemi. It has light elegant foliage and long pendent branches that flower at every joint; the blooms, which are very large, measure some 4 inches across, and are of a violet-crimson hue and suspended by thread-like stems from 1 foot to 18 inches in length. The next in point of merit is T. exoniensis, a hybrid between the kind just mentioned and T. mollissima. T. mollissima has blossoms of a delicate pink, with tubes 6 inches long, and the plant is a very strong grower. Now is the best time to plant these Tacsonias, and, indeed, all greenhouse or conservatory climbers. Borders should be prepared for them by well draining the bottoms with broken bricks, which should form a layer 6 inches thick; on that sods freshly cut should be placed with the Grass side downwards to prevent the soil from settling down and filling the interstices of the drainage. The most suitable material with which to make up the border is peat and loam, in about equal parts, chopped up rough and mixed with a little sand to keep the whole open and porous. This done, the next thing is to turn the plants out of their pots and disentangle the roots, which should then be spread out carefully in the border and covered at depths according to the positions at which they emanate from the balls of earth they are in; a good watering will then settle the soil about them and give the plants a start. To

encourage them to grow freely they should be syringed every afternoon, and it will be necessary to train the leading shoot of each up and to stop the laterals by pinching them out till the roof is reached. After that the side shoots should be allowed to run out and hang down in their own natural way. Thus treated they look far better than when tied or trained; but though that is so, they require thinning and the occasional cutting away of growths that have bloomed to let others down in their place. The only drawback to Tacsonias is the fact that they are rather subject to scale, which gets on the bark of the main stems, and if not eradicated soon throws the plants out of health. The best way of dealing with these insects is to get some nicotine soap and mix six ounces of it in a gallon of soft water to dress the bark with, which may be done quickly by the aid of a paint-brush, or if clear below, the plants may be syringed with the liquid, as all that is necessary is to wet the scale, soon after which it leaves its hold and falls off. D.

LAPAGERIAS.

It is not everyone who can succeed in growing these satisfactorily, the failures that occur arising chiefly through the borders being improperly prepared, or not prepared at all, thus causing the roots to get unhealthy. As the plants require heavy and frequent waterings, drainage is of the first importance; without it the soil is sure to become sodden and sour when the great fleshy roots rot. The way to start with the border, which should be about 2 feet 6 inches deep, is to place 6 inches of broken soft red bricks below, and on them sods of tough fibry peat, packed one on the other, sprinkling sand in the interstices till the border is nearly full, when the ball of earth should be shaken from the plants and the latter planted in peat, chopped up and pressed down over the roots. Managed in this manner, the soil will remain sweet, free and open for many years, as it is impossible for it to become close or waterlogged, and the feeders will be able to ramify without any check. The time to begin to water Lapagerias is as soon as they commence to make their growth, after which they will be benefited by having a good soaking twice a week till they have finished flowering, when they should be kept a little dry for the winter. The situation that suits Lapagerias best is a cool, shaded one, where the atmosphere is somewhat moist, as they dislike sun and a dry air, conditions that are sure to bring about thrips and red spider, and if these insects get on the plants they soon ruin the foliage. For the first-named parasite fumigations or syringings with tobacco water are the only safe remedies, and the latter can only be held in check or got rid of by clear water put on with force, to wash the insects off and break up their webs. The way in which I think Lapagerias look best is when the red and white varieties are planted side by side and allowed to grow up and commingle together, as then the contrast between the purity of the one and fine red of the other is most charming. In growing the plants great watchfulness is required, as slugs, woodlice, &c., are very fond of the young succulent shoots, which they eat off as soon as they are through the ground; and if these are lost the plants are weakened for years. To protect the shoots there is nothing better than old broken lamp glasses, which can easily be slipped over them and left on till the shoots get long and hard at the base. S. D.

Two distinct Primulas.—Several varieties of Chinese Primulas are being grown by Mr. Pratt, at Longleat, this winter, and two of them, viz., Snowdrift and Reading Blue, are strikingly attractive. The former is a Fern-leaved kind, very early, and free-blooming, the trusses of flowers, which are rather small, being very full and compact, and the colour a pure white. Altogether it may be said to be a good companion for Rosy Queen—another Reading Fern-leaved variety; both succeed remarkably well in 4-inch pots. Reading Blue appears to possess a fairly good constitution,

and when grown in a fairly warm greenhouse, as at Longleat, it flowers freely, the large, well-formed blooms being of what I should term a deep lavender shade of colour.—W. I.

Bees and blossoms.—Last summer I remarked that on several plants of zonals the whole of the flowers were eaten away at the edges. For some time I was puzzled to account for the damage until I saw what is commonly called a wood bee flying away with a portion of a petal. About a score of these were continually coming into the house biting off pieces of each bloom as it expanded and flying off with them. When I caught them the mischief ceased. Have any of your readers witnessed a similar occurrence? I never remember having done so before.—J. C. B.

Primula marginata.—What a charming species this is, with its deeply toothed leaves covered with a dense meal, a pretty plant when out of flower, but when in bloom doubly attractive! Plants in pots are now opening their pleasing soft pale mauve or purple flowers, and quite small plants will blossom. There is a large-flowered variety which I have not yet seen in bloom, but I hope to do so before long, and a blue-flowered form also named cornelia. These two appear later than the type; the foliage is densely mealied and of a golden tint. Lovers of hardy Primulas should have all three.—R. D.

White-flowered zonal Pelargoniums.—Among the endless number of white-flowered Pelargoniums belonging to the zonal section, the best that has yet come under my observation is, amongst singles, Queen of the Belgians, a kind with finely shaped, large, pure white flowers, the plant itself being of good habit and the blooms freely produced. The other is a double-flowered variety called Le Cygne, a kind in which the petals are without either the green or pink tinge which is generally present in so-called white-flowered Pelargoniums. This was awarded a certificate by the Royal Horticultural Society last season, and both were several times exhibited in grand condition by Mr. Cannell. They are undoubtedly destined to replace many of the old sorts, that in most cases lack purity.—H. P.

Our one Hyacinth.—We, too, have to boast of one especial Hyacinth, I think, even more remarkable than the one described by "A. D." (p. 194). Here is its history: About ten years ago, in turning out my Hyacinths in pots, one, a single white, got somehow or other planted at the root of a small Rose tree in my Rose garden; there it flowered and was not disturbed. Year after year it has gone on growing and flowering and increasing. I have just looked at it; it is healthy and vigorous, and there are thirteen blooming stems on it, some small and some large; and, I have no doubt, in due time there will be some as good as those I am flowering in pots. It has had no special attention; the situation is an ordinary one, and yet how it has flourished! I may add that I never take up my Hyacinths; they are scattered all over my garden in various places; they grow well; some of the spikes are really excellent; they die down and there remain. My soil is a rich garden soil and they seem to thrive in it, and in the end of the month (March) and beginning of next make the garden quite gay and scent the air.—DELTA.

Sweet-scented Rhododendrons.—Several hybrid Rhododendrons, notably those of which R. Edgeworthi is one of the parents, are sweet-scented, and some, such as fragrantissimum, are extensively grown; but the loose rambling habit of this kind scarcely fits it for flowering in a small state, however imposing an object it may be when larger. A good sized bush of this sort is a grand sight when in blossom; it scents the air for some distance around, especially during sunshine. Between R. Edgeworthi and the small prolific flowered R. multiflorum some hybrids have been raised, which are both compact growing and very fragrant. They all partake of the same general character, but differ from each other to a certain extent in the size and shape of the flowers,

and also in habit. My favourite amongst them is Mrs. James Shawe, a kind which blooms freely in 5-inch pots, and forms handsome little bushes for decorative purposes. The flowers, which are sweet-scented, are cup-shaped, pure waxy white in colour, and the edges of the petals are prettily crimped.—ALPHA.

Shrubs in pots.—For indoor decoration these are most valuable; they are hardy, and when well established at the root, withstand an amount of rough treatment that would be fatal to the ordinary run of greenhouse plants. As far as appearance goes, too, a good healthy shrub is far more ornamental than a sickly, tender plant, even of a kind commercially ten times more valuable. In this locality for balconies and places subject to cold draughts that are more fatal to vegetation than low temperature, the following are largely employed, viz.: Euonymus japonicus, both plain and variegated, the latter being especially bright and cheerful; Laurustinus, the flowers of which open all the winter and spring; Aucubas, the mottled leaves and berries of which are very brilliant; Box bushes, plain and variegated; Cupressus Lawsoniana, Thuja Lobbi, the American Arbor-vitæ, Cryptomeria elegans, Juniperus chinensis, and Retinospora ericoides. These are potted in good stiff soil, principally loam, and, with attention to watering, last for several years without repotting; large bushes of them may be kept in perfect health for years by giving them a little liquid manure occasionally or a pinch of some of the artificial manures that are so valuable for pot plants full of hungry roots. For making up displays on a large scale these are invaluable for mixing with flowering plants, as plenty of luxuriant foliage to form a groundwork is quite as important as the flowers themselves, and these plants frequently save more costly ones from injury in positions where the latter are liable to be hurt.—J. G., Hants.

Cinerarias and their origin.—From what species of Cineraria did the progenitors of our fine garden varieties of the present day spring? Glenny classes the Cineraria under the head of Senecio, and states that the varieties so improved during the past fifty years sprang from such species of Senecio as cruentus, populifolius, tussilagines, &c. This is probably somewhat doubtful, but it is a contribution to the elucidation of this particular question. The gardening books of the seventeenth century mention Cineraria arnita, introduced from Madeira, and which flowered at Kew in 1790, and was highly praised. The same authorities speak of C. cruenta, from the Canaries, as being "a showy plant, having few equals;" and the woolly-leaved African C. lanata, which blossomed first in this country about 1793, is stated to "far eclipse all the others cultivated in our gardens." Yet all these were purple-flowered types of the most open and starry description. Mr. Cannell has during the past two or three years exhibited plants of C. cruenta, a pretty species, and probably an improved seedling; but at its best the flowers are loose and starry. A very carefully-prepared and thoroughly reliable list of plants published in 1817 gives about a dozen species as known at that time, among them C. cruenta. The improvement in the Cineraria was noticed as soon as it was taken in hand by florists; the petals increased in width and density until they overlapped each other; they became a perfect circle, and now there is no end to the shades of colour found in the flowers—maroon, crimson, purple, lilac, blue, mauve, pink, white, and variegations also. Among the earliest productions of our English raisers were such hybrids as Waterhouseana, Hendersoni, &c. These not only served to illustrate a new departure, but they became the progenitors of varieties of which the cultivators scarcely dreamed. There soon came a rush of new varieties, and though the Cineraria has ceased to be so much regarded as a decorative and exhibition plant as it was a few years ago, varieties are sometimes named now; but when so honoured it is more with the intention of designating the high quality of a strain than of perpetuating certain distinct forms.—R. D.

FRUIT GARDEN.

PINE SUCKERS.

Now is an important time as regards these. Two lots ought to be taken in hand: one those put in to root last autumn, the other those which are being taken off the plants now. The other day we had the whole of our autumn-potted suckers out of the pit and out of their pots. They were taken off plants which fruited late last summer, and were potted singly in 6-inch pots in October. The pots were well drained, and the potting soil wholly consisted of rough bits of loam. These were rammed very firmly into the pots, which were then plunged in a bed of leaves, where they had a bottom-heat of about 75°. Since the day of potting until now they have never been watered at the root. When turned out the soil was full of beautiful healthy roots and the leaves were dark green. For a number of winters past we have never watered our suckers, and they agree with such treatment uncommonly well. Indeed, were we to water them much, the plants would be ruined, as sometimes the temperature falls to 40°, and it is only by keeping them dry at the roots that their health is preserved. Those with the largest heads and most roots have been potted in 10-inch and 12 inch pots, and in these they will be fruited. The weakest have had most of the soil shaken from them, and have been repotted in 6-inch pots. These are plunged in a smart bottom-heat, and in two months or so they will be placed in their fruiting pots. All plants from which fruit has been cut since November have been thrown away, but suckers were taken from them previous to discarding them, and are being potted for rooting. Great care is taken when suckers are detached from old plants to secure them with a full length of stem. This should only be cut or twisted off where they join the old plant. The base of good suckers is hard and brown in colour, and young roots are generally seen issuing from it. When this is the case, the suckers are in excellent condition for potting. Rough fibrous loam is the best soil which can be used for them, and 6-inch pots are large enough for the best of suckers, as they root quicker in these than in larger ones, and when once rooted it is an easy matter to transfer them to their fruiting pots.

Suckers rooted in autumn and repotted into large-sized pots now will show fruit by August or September, and such suckers as are put in to root now will be ready for their fruiting pots in two months or so, when they will be repotted and grown on throughout the summer to fruit early next spring. Those taken off and potted now should have no water given at the root until the young roots are seen through the soil, and those just transferred should not be watered until they show signs of growing. A bottom heat of 80°

will soon induce root action. Very small suckers may be placed two in a 6-inch pot, putting them at opposite sides, but these will require to be divided and repotted before being placed in their fruiting pots; whereas those put in 6-inch pots now may be transferred to the fruiting pots without breaking the ball of soil or in any way disturbing the roots. Queen suckers are generally too plentiful, but those of the smooth-leaved Cayenne and Charlotte Rothschild are seldom too abundant; the smallest pieces of them should, therefore, be taken off and saved before the old plants are thrown away. In a very dry atmosphere rootless Pines or such as are newly potted

should always be syringed on fine days, but when plunged in beds of leaves, the latter, if kept damp on the surface, generally give off moisture sufficient.

J. MUIR.

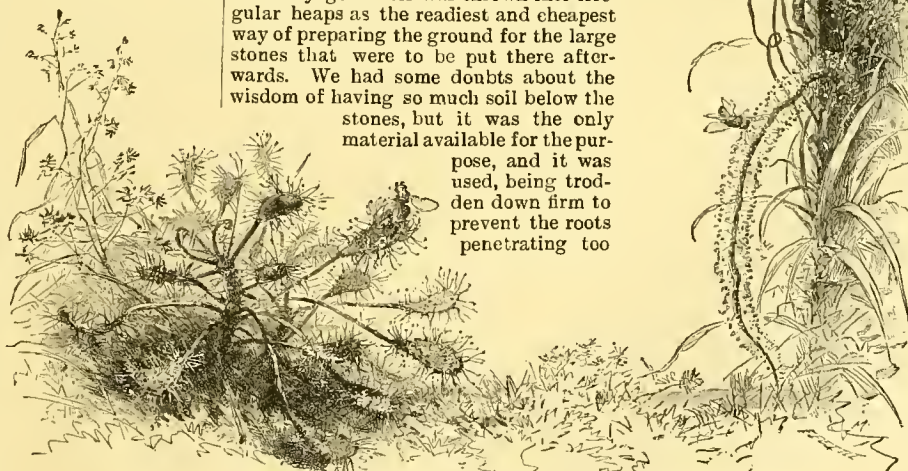
WELL RIPENED WOOD.

THE more experience we acquire, the more we become convinced that thorough maturity of not only one season's, but every season's growth is the main secret of a healthy constitution in plants and good crops whether of fruits or flowers. In the case of trees the signs are not so soon observed as in herbaceous plants and annuals that grow up and die down in one season, but in all cases they are the same and mean the same thing, affording the same lesson all round to those who choose to profit by it. There is not, at first sight, much connection between Wallflowers and Peaches, but when reading lately of the evils of deep borders for outdoor Peaches, a common characteristic of culture and one much to be condemned, it occurred to me that these evils were not half realised. We can see disastrous effects of cold upon tender fruit trees in our climate, and we realise the necessity of adopting some means of protection applied to the branches where the evil is wrought and where it is visible,

but we do not realise so clearly to what an extent the destruction is due to the previous condition of the growth and root treatment or how much both are under our control. This aspect of the question has been forced upon our attention very plainly during the past few years in the case of some hardy herbaceous and alpine plants, and notably of Wallflowers, which everyone knows are extremely hardy, withstanding our severest winters with impunity under suitable conditions. Two or three years ago in altering a bank, with the view of making a rockery, to be planted with hardy subjects only, a large quantity of tolerably good soil was thrown into irregular heaps as the readiest and cheapest way of preparing the ground for the large stones that were to be put there afterwards. We had some doubts about the wisdom of having so much soil below the stones, but it was the only material available for the purpose, and it was used, being trodden down firm to prevent the roots penetrating too

worst for them in the event of gales or severe frosts, and my fears were realised, for in spite of staking the wind broke many limbs off, and a ten days' frost and cutting winds, which came about the middle of March, completely killed nearly the whole of the plants to the ground, and to fill their places to some extent I ordered twelve dozen from a nurseryman who makes a speciality of such things. These flowered fairly well the same season, made enormous growth during the summer like their predecessors, perished like them in the winter time and from the same cause. Elsewhere in the garden and neighbourhood, where the soil is shallow and dry or poor, Wallflowers are not apparently affected by the weather, but all are as hardy as Curled Greens, and by and by, on our rockery, when the mounds have settled down to a firm mass, I have no doubt they will do better. It is the same with other subjects. The pretty little Saxifraga Wallacei, for example, of which we propagated a large quantity, does well enough on the stones, where, in dry summers, it can hardly do more than survive, the soil about the roots being necessarily scanty; but when it creeps over the rocks into the crevices where the roots can find unlimited scope, it grows much stronger, but perishes during the winter.

An almost endless number of examples of this kind could be furnished, but these are sufficient to illustrate, as well as anything could do, the evils of planting in soils that promote an over-luxuriant growth that never ripens properly, and therefore cannot withstand frosts and cold at critical periods. From such examples anyone can easily guess how much worse fitted a Peach tree or a Vine would be to endure a rigorous winter or a cold spring by being grown in a deep, rich border, compared with a tree that had been grown in a border that was shallow and poorer. Not so much objection can, however, be taken to a rich soil as to one that is both deep and rich, as all the conditions then tend to produce a rank growth that, under ordinary circumstances, cannot be properly ripened. In short, the practical lesson to be learned is, that in order to produce good crops of either fruits or flowers in a cool climate, it is first and foremost absolutely needful to place the roots in a shallow well-drained border, where they cannot well penetrate the subsoil. Under such conditions the roots will be numerous, small, and well matured, and so in



The Long and Thread-leaved Sundews (*Drosera longifolia* and *filiformis*). See p. 200.

deeply. Among other subjects planted the spring following, in order to fill up quickly, were a considerable number of Wallflowers. These had been sown on a dry piece of ground the year before, and were sturdy little plants that had endured the winter without mishap. They were simply dibbled in among the stones like Cabbages, and during the summer they grew into the largest Wallflower bushes I have ever seen, many of them being about 5 feet high and as much through. I pulled up one or two to examine their roots, which were like Carrots in shape, and they had penetrated the mound of fresh soil under the rocks about as deeply as the tops had been grown above it. I feared the

return will be the branches, and therefore more able to protect themselves, through being firmer in their tissues and harder. In outdoor fruit culture, and especially in the case of Peaches, choice Plums, Figs, Pears, and Apples, what gardener has not experienced the difficulty of curtailing over-luxuriant growth and rendering it fruitful? Over-luxuriance and barrenness are, indeed, a constant source of trouble to cultivators, who are usually told to root-prune as a corrective, and which is right, but the effect is not lasting if the roots have the same opportunities of running riot in the rich pasture that caused them to grow rank at first. In a shallow border—say a foot deep—a strong-growing Peach or Pear tree should never need root-pruning, because the roots would never grow too strongly. They are too much under the influence of the sun and air in such a depth of soil, which is soon warmed and soon cooled, and hence the branches respond quickly to the action of the roots, and are harder and better ripened.

J. S. W.

WINTER DRESSING FOR FRUIT TREES.

SOME little time ago I read with interest in THE GARDEN Mr. Groom's remarks on this subject. Doubtless many of your readers are rather timid as to the use of paraffin oil as a dressing for fruit trees, thinking it rather a strong remedy, and one that might prove injurious to their trees. My reason for writing is to testify to the good results of this dressing. My father, who has about 20 acres of fruit trees (there being 350 to the acre), had in the autumn of 1883 and again in the spring of 1884 the whole of his trees dressed with paraffin oil and soot. The *modus operandi* was as follows: To one gallon of paraffin add about a gallon of water, then add soot, and stir all these well together. It is then ready for applying to the trees. We applied this dressing to the stems and to about a foot of the main branches. Before applying the dressing see that every particle of epiphytic vegetable growths are thoroughly cleared off the stem, and also every particle of decayed bark with the eggs of various parasites cut clean out; this being done, the dressing may be applied. The best kind of brush with which to apply it is a small 3d. hand-brush, such as is used in the house for gathering together dust, &c. In using a brush of this kind one has greater power in thoroughly working in the dressing than could be got by using an ordinary white-washing brush. If this dressing is applied (and it is not yet too late), good results may be anticipated. If the above instructions are carried out the bark will become smooth, clean, and healthy—an all-important consideration. The other day I was passing through Chiswick and Isleworth and was much impressed by the fact that, although the gardens in these neighbourhoods are in the hands of practical men, yet the majority of the trees presented an appearance of neglect as regards the amount of vegetable growths that are allowed to grow upon them. The bark on the whole of our trees is as smooth and bright as an ordinary walking-stick, the cause of this to a large extent being the result of the paraffin oil and soot dressing. Two important points in our opinion of the dressing are as follows: First, the dressing destroys all the epiphytic vegetable growths that infest the bark, also various parasites that derive nourishment from the tree; secondly, the dressing assists the tree to maintain its temperature. The vegetable growths that thrive upon the bark all tend to absorb moisture, the result being that after sunset radiation of heat from the tree is increased by the aid of this rough dampecoating, while if the bark of the trees were smooth and bright there would be less loss of heat by radiation, a consideration of importance, especially when the blossom is setting and May frosts are doing their worst. I might say that although all around us for miles the fruit crop last season (especially Plums) was a failure, yet our Plum trees were laden with choice fruit, so much so that some of the trees had to be relieved a little of their burdens. Should any of your readers desire further information or confirmation respecting this dressing, I am sure our

gardener, Mr. Joseph Lindford, Hall Cottage, Solworth, Cambs, would be willing to furnish them with it. I might add that eight acres of the trees to which we applied the dressing had only been planted two years and are at the present time particularly vigorous.

J. B. WILKIN.

Over, Cambs.

OLD STRAWBERRIES IN POTS.

"J. S. W.'s" note (p. 170) reminds me that he has more than once challenged the accuracy of my remarks on this subject. I cannot help wondering why he has not put this matter to a practical test instead of merely expressing unbelief in a statement the correctness of which I have vouched for. As regards the prices obtained, I was careful to be rather under the mark than above it; and although "J. S. W." may be incredulous, I must repeat that 10s. per pound has often been obtained for fruit from plants several years in the same pots. Few I should think would doubt that old-established plants are likely to make stronger roots than young ones. Were it not so, Strawberries would be a striking exception to the general rule. It is not the feeding alone that causes stronger root formation, but the substance gained from age. One might just as well say that a young seedling or a newly-rooted cutting will make as strong roots as an established plant as to assert that the roots made by a young runner are equal to those pushed out from a crown eighteen months old. If Peaches, Pears, and other fruits will bear good crops year after year without change of soil, why should Strawberries not do so? It is a fallacy to suppose that young plants are absolutely necessary for the production of large crops and good fruit. In the open ground they are best the second year, but they want well feeding. The same with all plants in pots; feed them, and you will get plenty of good Strawberries. I am aware that young plants are easily obtained, but I know, too, that it is cheaper as well as easier not to have to get them. I wish it, however, to be understood that I do not recommend the retention of the old plants in a general way. The fact of its being possible to thus grow them was merely taken to illustrate my argument upon a different matter. If forced plants are set out in the open ground, they bear fine crops the following year, and young ones can, of course, be grown to take their place. This is probably the best plan in a general way, but it does not do away with the fact that old plants bear fruit as good and make stronger roots than young runners.

J. CORNHILL.

Chisel pruning Apple trees.—In Somersetshire we have a very expeditious way of pruning Apple trees, and seeing the large extent of orchards to go over the plan has much to recommend it. One man generally takes all the orchards to prune on four or five farms. He has a stout chisel fixed in a wooden handle about 7 feet long. A keen edge is, of course, kept on the chisel, and with a wooden mallet in one hand and the long-handled chisel in the other he stands on the ground and very neatly and expeditiously removes any branches not wanted on the tree. A light blow from the mallet on the bottom of this long-handled chisel is sufficient to remove a branch the size of one's thumb, and no trouble is made about removing a branch with a diameter of 2 inches. With this chisel a man standing on the ground can reach all but the tops of the tallest trees, and a great deal of time is thus saved compared with the use of a ladder—the usual mode by which the pruner gets at the branches. I may mention that the blade of the chisel is about 5 inches long independent of the socket for the handle, and nearly a quarter of an inch thick.—J. C. C.

5306.—**Woodlice.**—Amongst the many ways of ridding glass structures, Mushroom houses, &c., of these pests, none is more efficient than the very easy one of choosing a dry place or corner, treading the soil therein down firmly, and placing over such places neat wisps of hay. Where not

already dry enough, that difficulty may be overcome by a shovelful of dry soil, patted down firmly, making it somewhat hollow in the centre and placing the hay wisps thereon. These wisps should be prepared by first beating the seeds from them and making them into a loose bundle, so that they may be neat-looking and more convenient for use. Occasionally remove them suddenly, when the woodlice will be found to have congregated beneath them; then pour scalding water quickly over them from a small watering pot with a rosed nozzle, when total and painless destruction will be the result. The site may from time to time be shifted, as these scaldings will cause the soil to become too wet for the time being. Sliced Potatoes make a good bait for them.

—W. EARLEY.

TREES AND SHRUBS.

THE SWISS STONE PINE.

(PINUS CEMBRA.)

MOST tree lovers will, I think, agree with Lambert in considering the Swiss Stone Pine one of the handsomest of all the Pines. For its introduction to this country we are no doubt indebted to the Rev. J. Harte, who, in 1746, published "Essays on Husbandry," in which it was strongly recommended, for we learn that in the same year it was planted by the Duke of Argyll. It was not, however, until 1833 that Messrs. Lawson imported the first large supply of seed, although several years previous, in 1828, Mr. Lawson brought from Switzerland a small number of seeds which were distributed amongst his friends, the produce of these being, no doubt, about the oldest trees of this Pine in the country.

It is found in the Alps and Carpathian Mountains, as well as France, Italy, Austria, Hungary, and Syria, at elevations ranging at from 4000 feet to 6000 feet above sea level. In these, its native homes, it attains a height of 120 feet, and it is described as forming a magnificent object, and very pleasing to the eye from its rich, dark green foliage. The leaves, which are usually five in a sheath, though sometimes four or six, are from 2 inches to 3 inches long, stiff, although flexible, triangular, and serrated on the edges. Cone, from 2 inches to 4 inches in length, erect, of a bluish purple, and usually hidden amongst the foliage. The branches are short in proportion to the tree's height, somewhat tortuous, and decidedly erect and appressed.

Although introduced to this country nearly a century and a half ago, still, except in a few private collections, Pinus Cembra is, comparatively speaking, a rare tree, a circumstance which can only be accounted for by the high price of the young plants or the slow rate of growth, for it is seldom that a greater progress than from 6 inches to 9 inches is annually made, although in very good soil and a favourable situation the yearly growth has been known to exceed even 12 inches. It is a tree, however, that deserves extended cultivation, as, apart from its ornamental appearance, it is extremely hardy and well adapted for planting on a great variety of soils and various situations, from well-drained peat at sea level to thin poor soils at great elevations.

This Pine does fairly well at Penrhyn, although no specimen exceeds 40 feet in height, but better as a standard or single tree than for general forest planting. Grown alone, it forms a well-branched symmetrical specimen, but when planted amongst the general run of forest trees the growth becomes crippled, and the whole tree wears a by no means promising appearance. In maritime situations it also does well; our two finest trees grow within 100 feet of the Menai Strait at Port Penrhyn, although partially sheltered from the keen, saline blast by a narrow strip of trees. As regards soil, the most suitable is good loam on a porous sub-soil, although many fine examples of growth on poor gravelly soils are not wanting even in our own country. Here I have noticed that the most luxuriant growth of this Pine is on damp stiffish loam, although I do not mean it to be understood

that the soil is sour through stagnant water or want of drainage. Cones have been freely produced on one of the trees here and seedlings raised. The timber, as grown in its native country, is highly valued for carving and turning, being fine grained, soft, clean, fragrant, and durable. From it the Swiss peasants manufacture the various carved figures sent in such quantity to this country. It is also used in Switzerland for indoor carpentry and upholstery. The seeds are cooked in various ways, and form a very palatable repast; they contain a great quantity of nutritious oil, which is also used for lamps.

There are several varieties of this Pine in cultivation, notably *P. Cembra sibirica*, which may best be described as an unusually luxuriant and long-leaved form; *P. pumila* or *mandshorica*, which is, however, and justly we think, ranked by some authorities as a distinct species; *P. Cembra pygmaea*, a diminutive variety, which, it is said, attains a height of only 6 feet in 100 years. There are several other forms, including a variegated one.

In the *Edinburgh Review* of October, 1864, a writer in speaking of the comparatively late period at which this species was introduced into Britain, and which he thought was to be accounted for by its having been confounded with the Scotch Fir, relates the following anecdote: "The most important of the neglected species was the Cembra, a tree which, although it appears to our eyes distinct enough from the Scotch Fir, has yet sufficient general resemblance to render it probable that it may have been mistaken for it. True, its leaves are five instead of two in a sheath, less rigid, and of a darker green, with a beautiful silvery lining which gives a peculiar hoary character to the foliage when moved by the wind; the cone is also quite different, and the seeds are large, wingless, and good to eat, forming an agreeable, nutty-flavoured addition to the food of the inhabitants of the countries in which it grows. But we have heard of the two being confounded in our own times under circumstances which may make us very lenient to any similar mistake in the days of our ancestors. A nobleman in the west of Scotland, some twenty years ago, possessed a grove of Cembras of greater age and beauty than were to be found anywhere around. They had been planted along with Scotch Firs which had served as nurses, but were now mostly removed. Some, however, remained, and being of more rapid growth than the Cembras, had overtopped them. He had got a new gardener or forester just at the time when he was obliged to leave his country residence to attend to his duties in Parliament. Being, however, more of a country gentleman than a politician or statesman, he hurried home as soon as possible, and one of the first visits after his arrival was to his cherished grove of Cembras. Slowly and benignly he paced up the hill like one prolonging the pleasure of anticipated enjoyment. He came down more quickly and less benignly—not benignly at all, indeed—for when he reached the angle where he should have come in view of his grove he looked for the Cembras in vain. He started, stared, and rushed forward; not a Cembra was there; the Scotch Firs were left alone in their glory, and there stood the new gardener smug upon the spot with the well-satisfied smirk of one who had deserved well of his master—the *mens conscia recti* beaming on his countenance—ready to claim the meed of gratitude for having so well thinned out the grove. Believing the Cembras to be merely smaller Firs, he had cut them down and left nothing but the taller Scotch Firs. A little knowledge is a dangerous thing. The honest man had heard that in thinning it was wise to take the weak and leave the strong, and had acted upon it without suspecting that he was dealing with two different quantities."

Amongst the finest specimens of the Swiss Stone Pine in this country are those at Sudbrooke Holme, Lincoln; Bloxholm Hall, Sleaford; Linton Park, Kent; Aberton Hall, Nottingham; Castle Ashby, Northamptonshire; Rosdhu, Dumbartonshire; Coltoquehey, Perthshire; and at Gwydyr Castle, in North Wales.—A. D. WEBSTER, in *Woods and Forests*.

THE MURTHLY CONIFERS.

"M. C." in dealing with these trees (p. 115) says, "In no place in the kingdom, perhaps, can Douglas Firs be met with in such quantity as at Murthly, and, putting aside the giant at Dropmore, finer specimens do not exist anywhere from Penzance to Wick." Further on "M. C." again says, "the height of the Douglas Firs," forming what he says is unquestionably the finest Douglas Fir avenue in England or Scotland, "averages 70 feet, and that it took sixty four paces to walk round one of the trees." Now, these statements are by far too sweeping, and certainly not borne out by the testimony of the trees themselves, for at Penrhyn Castle, in North Wales, there are finer specimens than any as yet recorded from Murthly, and which the following figures will show. The tallest is fully 90 feet in height, and the girths of a couple of the largest at 3 feet and 5 feet are respectively: No. 1, 12 feet 4 inches and 10 feet 10 inches; No. 2, 11 feet 10 inches and 10 feet 4 inches, with a spread of branches covering 70 feet in diameter. These are not the largest specimens, several being from 12 feet to 20 feet taller than those whose girths are given. As regards quantity, I very much doubt if Penrhyn is behind Murthly, but as "M. C." gives no numbers, I am unable to form an idea. The famous Dropmore specimen to which your correspondent alludes, and upon which such care has been lavished, is only 9 feet 7 inches in circumference of stem at 3 feet up, or less than three-fourths the size of the largest one at Penrhyn. Will "M. C." kindly give us the dimensions of his largest Douglas Fir, and also an approximate idea of the number planted? A. D. WEBSTER.

Savin is a beautiful lawn plant when left to take its natural growth in an open space and kindly soil. A plant here, twenty-five years old, measures 22 yards in circumference. Its branches radiate from a single stem, which is invisible in the centre, feathering all round without gap or blemish down to the Grass, and rising only about 3 feet in the middle. It is at all times a pleasant object, but in the spring, when it has put forth its tender shoots, or in the autumn, when bespangled with dew, it is particularly beautiful.—C.

Chimonanthus fragrans.—This is one of the sweetest of our early flowering hardy shrubs—hardly at least in certain portions of the kingdom. In order to have it in perfection it should be planted against a wall, and it does on any aspect, especially on a wall facing the south or south-east or west. It is a plant of slow growth, and possibly this has had something to do with its want of popularity, for it is not often seen, at least not nearly so much as it deserves to be, and yet it should have a place in every garden, large or small, in which it can be planted in a proper position.—R. D.

Acer colchicum.—This Maple was first named by Hartwiss. It is indigenous to Abchasia, which lies between lat. 42° 30' and 44° 45' N., and between long. 37° 3' and 40° 36' E. The bark, particularly of the young shoots, has a greenish colour, resembling in this respect that of the *Negundo fraxinifolium*, while the leaf resembles that of the *Acer Lobeli*. Hartwiss and Steven agree in considering it a distinct species. Along with this species was imported a variety of it named by Booth, of Hamburg, *A. colchicum* var. *rubrum*. In point of appearance this is the more desirable tree of the two. From the beginning of the season till late in autumn the leaves are of a bright pinkish purple colour and the bark is brownish. The first plants that were sent to Europe were received by Booth from Professor Hartwiss. Both the species and the variety have proved hardy.—ALPHA.

The Winged Elm (*Ulmus alata*).—This Elm during winter is one of the most conspicuous of deciduous trees on account of the peculiar corky excrescence disposed on either side of the stem, and to such an extent that at a little distance the smaller branches appear to be at least two or three times their actual stoutness, which on closer in-

spection is found to be caused by the corky ridges on the bark. This Elm forms a medium growing tree with the head composed of long wide-spreading branches arranged more or less in a horizontal manner, its whole bearing apart from the winged branches being very distinct. It is a native of the Southern United States of America, and was, according to Loudon, introduced in 1820. He says also that its wood is finely grained, more compact, heavier, and stronger than that of *Ulmus americana*. The heartwood is of a dull chocolate colour, and always bears a great proportion to the sapwood.—ALPHA.

Thuja occidentalis pendula.—Among weeping Conifers this is very distinct and (provided it is not planted in too dry a spot) peculiarly attractive. If grafted some little distance from the ground and secured to a stake during its earlier stages, a clean stem can be obtained, and from it a few branches are usually pushed out which, as soon as they are a little distance from the main stem, take a downward direction, while the whole of the minor branchlets are very decidedly pendulous and clustered at their extremities. The whole plant presents a very curious appearance from the long pendulous branches, in many cases devoid of foliage except just at the tips, and there it is present in dense tufts. Like all the varieties of the American *Arbor-vite*, this is by no means difficult to strike from cuttings, the whole of the *Thujas* rooting much easier than their near allies, the *Biotas*.—H. P.

Biota orientalis Zuccariniana.—There is a great amount of variation to be found among the different forms of the Chinese *Arbor-vite*, from the type which reaches a height of 20 feet or thereabouts to the globose dwarf-growing kinds, *aurea* and *semperaurescens*. The variety under notice belongs to the latter class, but instead of the foliage being more or less of a golden tinge it is of a bright cheerful green, which colour is retained throughout the year. The branchlets are more slender than those of the golden *Arbor-vite*, but so numerous as to form an equally dense globose mass. Where dwarf growing shrubs are desired it should be made a note of, as the bright green of its foliage is very pleasing, besides which it is in my experience about the easiest of these small *Biotas* to strike from cuttings, the most difficult in this respect being *semperaurescens*, next to which comes *aurea*, then *ellegantissima*, and lastly the kind under notice.—W. T.

Cedars at Ragley.—After having carefully read Mr. Marnock's report (p. 180) on the Cedars planted at Ragley, it is necessary for me to give an explanation of the case, having had charge of the gardens there in August, 1875. In the first place, I consider it unfortunate that Mr. Slade should have replied to Mr. Marnock's enquiry respecting them, seeing that Mr. Kerr, who planted them and has had the management of them ever since, is still at Ragley. Deerings Hill does not form part of the pleasure grounds, but is an isolated promontory on the extreme south-west end of the park. The date of planting, which is given 1876, is not correct as regards the Cedars planted in the pleasure grounds, and I cannot bring it into my mind that Deerings Hill was planted after I went to Ragley. Is Mr. Marnock aware of the difficulty we had to contend with in establishing new plantations at Ragley, situated on a knoll of red rock marl, with hardly an average depth of 7 inches of soil in which to plant? The Cedars in the pleasure grounds when I left there, three years ago, were doing well, and likely at some future time to be an important feature in the landscape.—A. HOSSACK, *Castle Howard, York*.

—The Cedar of Lebanon ought to be a favourite with the planter, not only for its appearance, but also for the rapidity of its growth. Many people suppose that it is a slow growing tree, and on that account do not care to plant it. But where the soil is moderately good, it puts on a handsome appearance in a comparatively short time. One that was planted here in the year 1849 now measures at 3 feet from the ground 6 feet 10 inches in circumference, and one of its lower branches extends from the trunk to its extremity

no less than 37 feet. When standing alone, and its branches allowed to grow unchecked by other trees near it, this tree is liable to be injured by gales of wind of unusual severity, and also by the accumulation of snow on its densely sprayed branches. From both these causes my tree has suffered. It does not rank high as a timber tree, but I have found the wood of the broken branches cut up well for ornamental purposes. The colour is a delicate pink shade of drab, of a paler tint in the centre. It is harder and finer in the grain than any other of the needle-leaved trees with which I am acquainted. Of what value the trunk may be, to that my own experience does not extend.—B. S.

ROSE GARDEN.

EARLY MARECHAL NIEL ROSES.

OF the beauty and sweetness of *Maréchal Niel* Rose buds and blooms nothing need be said. Their general time for making their appearance in conservatories and under glass is about Easter, when roseless winter days are disappearing; but it is not its being one of the first Roses to bloom in spring which gives *Maréchal Niel* unusual value. No; *Gloire de Dijon* comes as early, blooms as freely, and is just as fragrant; but it is neither praised, valued, nor accepted in preference to the rich golden blooms of *Maréchal Niel*. The latter has no rival, and the earlier it can be had in spring the more deeply and sincerely is it valued. One March, some years ago, I had a fine plant of it, which gave five hundred blooms in four weeks. I was in raptures. Everybody was delighted with a sight of the tree and the gift of a bloom or a handful; and I thought to improve upon this by forcing, or trying to force, it out a month or so earlier the following spring; but from the commencement of that operation the plant went back, and in two years it was dead. Other big plants which I have tried to force into bloom early in the year have never given satisfaction for any length of time, and I am firmly of opinion that it is a mistake and a sacrifice to force big *Maréchal Niel* plants too early in the season. The best way is to have some plants in pots for very early forcing, and let the large ones produce their blooms in as natural a way as possible. In preparing pot plants for very early forcing, it is of the utmost importance that they be grown so as to form some long, robust shoots in summer, and these should be thoroughly matured through exposure to sun and air in the autumn. Where this cannot be properly accomplished in the open air, or against a wall or fence, the plants should be taken under glass, and have their shoots spread out on, say, the trellis work in a Peach house. I have seen good pot plants with shoots from 6 feet to 12 feet in length, and these may be put in to force early in December. By extra pressure a few blooms might be had out by Christmas, but they will not come so fine or freely

then as in January and February, and if a quantity of them can be brought out, then everyone ought to be fully satisfied. In putting them in to force, the pots and roots are benefited by the assistance of a slight bottom heat, and at first the branches should not be submitted to a greater heat than 55° or 60°, but as the buds burst into leaf and the shoots push forth and show bloom buds at the end, the temperature may be increased 10°. At first water should be applied sparingly, but when in full growth large quantities must be given at the root, but the leaves should not be kept very moist, as mildew may become troublesome. Plenty of light should be admitted to them at all times, and as the blooms begin to open, they cannot have too much of this as well as a little air, as it is light and air which produce that deep golden colour by which this Rose is characterised, and impart that rich fragrance to it which is so much valued at all times, but more particularly early in the season. Anyone with half a dozen or more good pot plants of this

WHY DO STANDARD ROSES DIE?

THEY do not, in my opinion, die from want of affinity between Rose and stock. The cause, I think, may in a great measure be traced to the conditions under which they are grown, although I grant it is not always an easy matter to say what will suit them, and what not. To give my own experience, I may say that I have almost given up planting them, because I cannot keep them alive more than five or six years, and many die even in less time than that; yet *Roses* on their own roots and on the *Manetti* and seedling *Brier* do fairly well in our soil, and promise to last a lifetime. Thirteen years ago I planted a line of standards, and at the same time I put several in a large unheated house. Those in the open were all dead at the end of six years, but those under glass are in the most luxuriant health. Therefore it appears that a covering of glass is all that is necessary to secure their thriving. That my experience is somewhat exceptional I am prepared to admit, for there is no county in England where *Roses* thrive better in the open, as a rule, than in Somerset. A walk through any of our country villages at the end of June will prove this. Our cottagers generally are great admirers of the Rose, and standards with heads 2 feet through, and stems nearly as large as one's wrist, are not uncommon. At the same time the number of varieties to be found in this condition is not great. *Aimée Vibert* is the variety of Rose most frequently met with. *Anna Alexieff*, *Maréchal Vailant*, *Mme Laffey*, *Jules Margottin*, *Duc de Rohan*, *Mme. Domage*, *Acidale*, *Souvenir de la Malmaison*, and *Gloire de Dijon* are frequently seen in a thriving condition. These sorts are known for the most part to be good growers, and therefore likely to do well under any conditions; but I cannot help thinking that the let-alone sort of treatment which they get has something to do with the matter. In the first place, the cottager brings home the *Brier* and buds it where planted, and there it is allowed to remain; therefore there is no mutilating of the roots. Then



Turkey's Beard (*Nero, hyllum setifolium*). See p. 209.

Rose may cut blooms from the middle of January onwards, as when these are over in March or thereabouts, they may be had from the permanent plants. Good plants for forcing may be grown in 10-inch and 12-inch pots, and if grown in a substantial mixture of turfy loam and *leeson's* bone manure, they will go on growing and blooming for many years. The manure just named grows *Roses* better than any other I have ever tried, and if a 4-inch potful of it is mixed with a bushel of loam, it is excellent for potting or top-dressing. Plants which have been growing in the same pots for some years should have the drainage put right before beginning to force, and at the same time a liberal top-dressing should be applied. A moist atmosphere will induce the growths to push forward, but when the flowers are expanding, and when they are fully out, a dry atmosphere, such as that usually to be found in an ordinary conservatory, will be preferable in almost every case.

CAMBRIAN.

It is all chance whether the tree is pruned or not, and if pruned, it is not so severely as a professional gardener would do it. This sort of treatment, I believe, is much more conducive, in the case of the Rose, to a long life than that accorded to it by professional growers. The behaviour of the plants generally clearly shows that all the varieties of *Roses* are not suitable for standards. The weakly growers are the first to die, but whether this is the result of weak root action or the changed conditions under which they are grown, is not quite clear. I am inclined, however, to think that both have something to do with the matter. The sort of weak root action I mean is caused by, first, the *Brier* being torn from its bed and then mutilated to suit the fastidious taste of the grower; then it is further weakened by being removed from the nursery and taken to some distant place; and further, the annual hard pruning which the branches receive only aggravates the evil. In a word, I believe we prune both top and bottom too much. I have noticed, in

many cases, that the stock dies upwards. This may be caused by one of two things—either the stock is hidebound and cannot expand, so as to maintain a healthy action between roots and branches, or it resents the artificial conditions under which we endeavour to make it grow. This is by no means unreasonable, seeing that many Briers are taken from warm and sheltered situations; and it is not at all improbable that their energies are so crippled by exposure that they dwindle away and die when exposed to the sudden changes of an open position, and no doubt the restricted conditions under which they are cultivated are in part answerable for the difficulty experienced in making them grow. J. C. C.

ASPHALTE GARDEN WALKS.

REGARDING walks made of asphalt, there will, doubtless, always be some who do not object to their defects. "C. D." (p. 165) approves of them, and says that when well made they do not smell. I have seen them as well made as it is possible to make them. More than twenty-five years since a company was started in Manchester to make them, and got a good deal of work. At the place at which I then was we had a carriage road made by them, and I believe it is in existence yet. For the first fourteen years it never required any repairs. Five inches of the bottom consisted of coarse material, with two inches of fine on the top; but, like every road or path that has yet been made with gas tar, it always smelt disagreeably when the sun came on it after rain and in hot, bright weather, although it was as hard as concrete. No better paths have ever been made of this material than those executed by the company in question, who did miles of them on the public roads in the suburbs of Manchester, but they went differently to work from the way in which "C. D." recommends, *i.e.*, they did not burn the material which forms the body of the asphalt, and pour the tar on it whilst hot, arroundabout, uncertain way of proceeding that may end in a substantial job or the reverse. There is no certain method, except boiling the tar for a sufficient time before mixing it with the gravel, clinkers, or whatever is used. It requires some practice to know when the boiling is sufficient; if not enough, the walk will always be more or less soft in bright sunny weather; if boiled too much it loses its adhesive properties, and breaks up in holes in a few years. Plenty of examples defective in each of these ways are to be seen. There is no accounting for individual tastes, and doubtless there will always be some who will use tar walks under the supposition that they will last longer than walks made of other materials; but this is not so. A walk or a carriage drive made of limestone, if the work is done as it should be, will beat them for endurance, with none of the objections attached to than that are inseparable from the tar asphalt.

"N." (p. 191) writes under a wrong impression in supposing that I object to these walks, through having had experience with badly-made examples. So far as being hard and durable they could not have been better; my disapproval of them rests on the indisputable fact that the objectionable appearance and other defects attached to them do much to destroy the desirable, cheerful, garden-like effect that goes for something in the estimation of those who look at the matter from anything above the utilitarian standpoint. Even in a kitchen garden it is no bad sign of the times, as indicative of better taste in gardening matters collectively, that most people now like the vegetable department of their places to show that there is a thought for something beyond bare use. That such is the case I can speak from experience; in a good many new places that I have made recently the owners have shown their appreciation of what a garden should be by requiring the hardy fruit and vegetable department to be made reasonably fair to the eye, and not an uninviting enclosure where anything in the way of appearance was not worth taking into account. In the remarks which I first made about these walks I gave them all that is their due when well made as to being hard and clean in

wet weather, giving no trouble in rolling or weeding, and lasting; against this I set their ugly appearance, their slipperiness in frosty weather, and the objectionable smell which they give off when the sun is on them either in dry, hot weather or after a shower, despite what has been said to the contrary.—T. B.

"N." in his brief remarks on asphalt walks, states that he finds water poured over the roller to be the best preventive of the fresh material sticking to it. Has he tried heating the roller? If not, the next time he has occasion to roll a newly formed asphalt walk he will do well to heat the roller. Our plan is to make a good wood fire inside the roller, keeping it burning, and occasionally partially turning the roller till the iron has become comfortably hot. It only requires to be heated once for each rolling, and an ordinary house faggot of wood is sufficient for the purpose. Thus treated, the roller does the work cleanly and expeditiously. Those who dislike the sombre hue of the walks may not object to them if a liberal sprinkling of crushed spar is rolled into the surface. Failing this, clean gravel may be substituted, and in either case the walks will be both strengthened and brightened. The best walks for pleasure grounds I have yet seen were made by Mr. Miller, the gardener at Rood Ashton, Trowbridge, Wilts. I am at present unable to state exactly how they are formed, but cement is one of the principal ingredients. They are apparently very durable, pleasant to walk upon in all weathers, and yet neither unsightly nor expensive.—W. I. M.

NOTES ON HELLEBORES.

H. ABCHASICUS.—"Argus" asks (p. 152) what Hellebore I referred to when I stated "that the varieties of *H. abchasicus* are all beautiful, ranging as they do from pale to deep red." I was not aware that there was any difficulty as to the identity of this plant. Barr's catalogue for 1884 has an excellent list of Hellebores, carefully classed after a conference upon the subject, held over his plants at Tooting, and is a useful standard so far as it goes. It states that the geographical varieties of the type *orientalis* are *antiquorum*, *guttatus*, *olympicus*, *pallidus*, *caucasicus*, *atrorubens*, *colchicus*, and *abchasicus*. Mr. Archer-Hind in his useful article "Hellebores, which do we mean?" (GARDEN, March 8, 1884, p. 184) makes No. 13 *abchasicus* and (*atrorubens*) the same—"Very beautiful with a profusion of purple and crimson flowers of different shades, and to be recognised by its waved and twisted sepals"—and he has also No. 14 *abchasicus albus*. It will thus be evident that I am well within the range of colours, as they also range to white and purple. On looking over my plants to-day, I find we have *H. abchasicus purpureus*, from Dr. Wallace, of Colchester, which is beautifully spotted; and *H. caucasicus punctatus*, from Backhouse, which is the same plant, with reddish purple flowers spotted internally with dark purple.

IN THE GARDEN (1878, p. 178) both *H. atrorubens* and *abchasicus* are described as being only slightly different, the latter being "a much superior kind, the colour of the blossoms, with a bunch of yellow stamens, and the yellowish green striated scale-like petals rendering them very attractive. It is said also that this is one of the parents of the fine hybrids by crossing with *guttatus*. It is a native of the Caucasus, and has been known about ten years." I hope this explanation will suffice for "Argus." I might have widened my paragraph by including also the varieties of *orientalis* and the many beautiful hybrids and varieties from the intermarrying of these Hellebores. A most beautiful pinkish variety has been sent me from Guernsey this week, having flowers 3 inches across, and there are a great many such in Mr. Archer-Hind's garden far superior to any of the species from which they have emanated.

H. NIGER VARIETIES.—During the past season of Christmas Roses I have taken every opportunity of visiting the growers of Hellebores in different parts of England, and many specimens

have been sent to me for identification. The result is that I have nothing to add to the list of varieties enumerated last year (Gard. Chron., Jan. 19). The grand form of *H. niger major*, which is grown in Devonshire, is one of the very best, and is the most sturdy grower of them all. Messrs. Veitch, of Exeter, have a very good example of this Hellebore. The same nurserymen have also found in an old garden, where it has been for at least twenty-five years, the exact counterpart of Miss Hope's, Wardie Lodge, variety of *H. n. angustifolius*, differing from our Lancashire variety in having slightly purple mottled stalks. They have also found a green-stalked Hellebore like ours, but with smaller flowers. This I also met with at Hannaford's nursery, Teignmouth, and they had obtained it from an old garden. I believe if the matter were considered afresh by Mr. Baker that he would be inclined to separate *H. n. altifolius* from the others as a distinct species. It is always the same wherever it occurs, and, with the exception of Mr. Poë's "hybrid," I have not seen even a variety of it amongst all the hundreds of plants which have been examined. Miss Hope also held this opinion; she says that wiser heads than hers believed it to be a species, and not merely a variety of *H. niger* ("Gardens and Woodlands," p. 24).

THE PROPAGATION OF *H. NIGER*.—In the volume above referred to Miss Hope gives some valuable information as to the best way of propagating *H. n. maximus*. She recommends the division of the plants to be made in July after the leaves have made their matured growth. My own opinion, after a pretty wide experience, is that this is too late, and that it practically loses a year. The best time is the early spring, just after the plants have passed out of flower. This is certainly the best time with our own variety—*H. n. angustifolius*—and no time should be lost in preparing a suitable bed and laying in a stock by those who desire to have Christmas Roses next winter. We always break up all large plants which have been flowered in pots, and any large plants which are getting past their best or are not thriving in the borders. The soil is shaken well from the roots of a large mass, and the rootstock is carefully examined. If it has a large woody centre, that is cut out carefully, leaving the foliage and the fibres proceeding from the bases of the stalks in every case. The mass is then taken and broken up into crowns, each with good roots, and these are prepared and planted just as one would do Primroses or Polyanthus. They will soon begin to strike out into the new soil. If you prefer to grow on the large plants, the root should still be overhauled, and any useless wood cut out before replanting. If this be not done you will lose a year, and the plant will not be vigorous. Mr. Stamps replied to some similar remarks of mine that he never experienced any difficulty in removing large plants, and he was quite right upon his own system, but I find he sent away one large plant of *H. n. altifolius*, with all the soil about its roots, weighing 3 hundredweight, and a fine plant of *H. n. major* which he sent here weighed 1 hundredweight. These plants would scarcely know they had been moved, but the carriage and packing added greatly to their cost.

When a large plant is divided you will have large pieces of root left, and on no account should these be thrown away. Not only will every bit make a plant if it has an eye, but even a woody mass without any sign of an eye is worth trying. We planted a bed with such pieces last year, and many of them are now good plants and in bloom already. One large lump especially, which had no signs of an eye, has nine flowers now in bloom and several leaves. I feel sure the growing of Hellebores will become popular when the right treatment of them is understood. At present there are very few who manage them properly. They are removed at the wrong time, planted in the wrong soil, and badly managed all the year round. A little attention to the actual requirements of the plants will soon enable the careful cultivator to surmount all difficulties, and when properly understood I believe they can be grown anywhere.

WM. BROCKBANK.

Brockhurst, Didsbury, Feb. 21.

ROT-PROOF SCRIM SHADING.

IN the course of the summer I visit many gardens, and it is usual to find in each plants suffering from insufficient shading. During the last few years I have been experimenting with a fabric called Willesden rot-proof scrim, a material which I find is not at present so well known as it should be. Good shading should so break up the rays of the sun as to prevent scorching, and yet permit light to pass freely through it, conditions secured by the material in question. I have used in all four textures, some more open than others, one being especially suited for roller blinds for green-houses, Orchid houses, and ferneries, others for covered frames for the protection of Tea Roses, tender plants, &c., from frost, wet, and wind. I have also used it to advantage for the protection of Chrysanthemum blooms and shading Rhododendrons when in flower, the colours appearing to great advantage under this shading. A great advantage also is its rot-proof character. It is metallised in some way, so that changes from wet to dry do not seem to affect it as other fabrics. I also make and cover with it rough framework panels, using rot-proof canvas hinges; these panels I find very useful about the garden placed over borders and plants. Many other uses, too, will suggest themselves.

E. S. H.

ORCHIDS.

CALANTHE BULBS IN SPRING.

THE ultimate success of *Calanthes* depends a great deal on the treatment which they receive in spring. We once had some fine plants ruined through being watered too freely before the roots were formed. A free start is valuable in the case of *Calanthes*. Most of them will have done flowering now, and as they will have been kept dry at the root, their blooming period may be regarded as their resting time, and they will begin growing immediately. In looking at some of our bulbs in their old pots the other day, I found signs of fresh growth coming away from the base of the bulb, and when this is the case it is high time they were taken in hand. The whole of them should be turned out of their pots; the old material should be shaken from the roots, and every one of the old roots cut off close to the base of the bulb. In doing this care should be taken that the young growth, if there is any, is not disturbed or injured. When all have been dressed they should be sorted. Where there are more bulbs than are wanted for planting again, select the largest for home use; the small ones may be acceptable to some one understocked. A shallow box 3 inches deep, 1 foot 6 inches wide, and 2 feet long or thereabouts should then be taken; put a layer of Sphagnum Moss or of leaves over the bottom, and then put a layer of bulbs almost as close as they will stand upright; more Moss or leaves should then be pressed between the bulbs to about half their depth; the box may then be placed in any hothouse. Water sparingly, and in a few weeks the young growths will be seen pushing up close to the bulbs. At this time young roots will begin to push forth, and then is the time to pot. The bulbs should be taken out very carefully. If a little of the Moss or a few of the leaves are taken possession of by the roots, do not disturb them, but pot with this attached. The pots should be at least one part filled with good drainage, and the potting mixture should consist of loam, peat, moss, and manure in about equal parts. It cannot be too rough. Some of it should be placed over the drainage; on this the bulb should rest, and then fill up without breaking any young roots. One good bulb in the centre of a 6-inch pot will give satisfaction, or from three to six bulbs may be potted in an 8-inch or 10-inch pot. About this time last year we treated our *Calanthes* in this way, and by October many of the bulbs weighed half-a-pound each—at least this is their weight now, and I do not suppose they would be lighter then when green. At first, and until growth at the root has fairly commenced, water should be given very sparingly indeed, but when in full growth they require

abundance of it. We start our bulbs after potting on a front shelf in the Pine stove, and in summer they are raised up to the back where they are fully exposed to the sun, which is an important matter.

J. MUIR.

Dendrobium nobilissimum.—On Tuesday at South Kensington Mr. Norman Cookson showed a remarkable variety of *D. nobile* as regards the colour of the flowers. These are not unusually large, but different in colour from the original; the lateral sepals have a broad mass of deep maroon-purple at their lower halves, and a similar tint is spread over the lip. Why such an exceptional variety was passed over by the committee is not clear, seeing that it honoured other plants on the same occasion with certificates, though their distinctive merits were not half so pronounced. Mr. Cookson possesses a really fine Orchid, and one that orchidists will in future have an eye upon. We consider it sufficiently different from the form which Mr. James has to justify a distinctive name.

A new Cattleya.—The latest addition to the now long list of cultivated Cattleyas is one which Messrs. Sander, of St. Albans, have just introduced and named *C. Lawrenceana*. We have before us plants and dried flowers of it, and have no hesitation in saying that it is a most remarkable plant. Its chief characteristic is its exceptional floriferousness, on one spike there being the remains of as many as eight flowers, each of which is 6 inches across, even in a dried state. The colour of the sepals is a deep rose-purple. The labellum, which is broad, with a sinus on the lobe, is of an intensely deep amethyst, while the upper part is yellow. These are the colours of the dried flowers; what they must gain in brilliancy in a living state may be imagined. The growth resembles that of *C. gigas*, the full grown bulbs and leaf measuring 18 inches high. The leaves are of very stout texture and tinged with vinous purple, as in the ruddy-leaved form of *C. labiata* and *Warneri*. The flowering of this novelty will be looked forward to with interest by orchidists, and no doubt the importation will be disposed of in the usual way.

NOTES OF THE WEEK.

The Lily List.—You asked my opinion as a Lily grower of M. de Hoop's alphabetical table of Lilies which you published in THE GARDEN. M. de Hoop was good enough to send me a copy of his pamphlet, and I had it bound, thinking it a useful little book of easy reference.—GEORGE F. WILSON, *Heatherbank, Weybridge Heath.*

Ghent Horticultural Society.—At the last monthly meeting of this society the following plants were exhibited and certificated by the committee, viz., *Imantophyllum* M. Ambrose Verschaefelt, from M. F. J. Spaec; *Begonia sceptrum*, from M. Ed. Pynaert; *Korthalsia robusta*, from M. Aug. Van Geert; *Cattleya Trianae*, Popayan var., from Mr. James Bray; *Odontoglossum Edwardi*, from the Compagnie Continentale d'Horticulture; *Phalenopsis Stuartiana*, from the Compagnie Continentale d'Horticulture; *Camellia General Stewart*, from M. J. Moentjens. Cultural certificates to *Cypripedium Boxalli*, from MM. Vervaeet & Cie.; *Anthurium ferrierense*, from M. L. Van Houtte; *Sparmannia africana* fl.-pl., from M. Van Driesche-Leys; *Imantophyllum miniatum*, from M. de Ghellinck de Walle; *Cypripedium Boxalli*, from Mr. James Bray.

Bulb show in Haarlem.—The great exhibition of bulbs which is to take place in Haarlem from the 20th to the 24th inst., to celebrate the fourth centenary of the General Society of Bulb Culture, promises to be an important affair and we hear from some Dutch growers at present in London that it is likely to be the best of the many grand Dutch flower shows that have been held of recent years. The prizes to be given consist of gold, gilt, silver, and bronze medals, and, in some cases, money prizes are to be awarded in addition. There are 141 classes enumerated

in the schedule, embracing all kinds of bulbous and tuberous-rooted plants. Of course Hyacinths will be a strong feature, no fewer than eighty-seven medals being offered in the various classes set apart for them. Medals are also given for artistic arrangements of flowers and plants. Although the date of the show is rather early for seeing the Dutch bulb gardens in their fullest beauty, visitors will see much to interest them at this, the centre of the great bulb-growing industry.

NOTES.

The greatest power in our gardens to-day is what we may call cultural, as different from natural, evolution, and yet how closely man must follow Nature if he would be most successful. Seminal or hybrid reproduction and variable climatic conditions are in both cases the moving cause, and the results as seen in the garden are becoming more wonderful every day. The Primrose as well as the Potato, the Onion as well as the Orchid, the Cabbage and the Carnation, alike bear witness to cultural evolution as a wonder-worker in the garden. Even when neither seed nor hybridising are resorted to we find that differences are produced in a merely vegetative, as opposed to a sexual, manner. Different soils and different climates give us different results, and different cultivators each and all select the fittest for their several wants. Nature's chief feature is variety—her empire often greatest—certainly more interesting, by reason of her versatility. So ever changeable, indeed, is plant life, that nothing is impossible in the garden.

Observation or evolution?—Are our cultivated plants gradually evolving new forms under our very eyes? or are our powers of discriminating differences becoming more acute? or, thirdly, are both causes at work together? I am led to ask these questions because the sooner we face them the better. It is now many years since *Calanthe Veitchii* was raised, and it may be that the stock sent out consisted of more than the produce of one single seedling. At any rate we have to-day three different forms—*C. Veitchii*, *C. Veitchii superba*, and the *Rangemore* variety having a white or very pale pinkish lip. Of course if several seedlings were originally raised, these slight differences are thus to be accounted for, but if one only, then we must look to cultural evolution as a probable cause. Again, a few years ago only the common *Helleborus niger* was recognised as the Christmas Rose; now we can see at least a dozen forms, a sliding scale, indeed, from the little *H. n. minor* to the great *H. altifolius*, which the late Miss Hope brought to the notice of gardeners. It may be that evolution has improved our plants, and our powers of discrimination also.

The lost Hellebore.—*H. lividus* of the *Botanical Magazine*, t. 72, is no great beauty in the world of flowers, nor is it likely to be so rare as some may think at present. We have now in bloom *H. graveolens*, which, so far as the flowers are concerned, is exactly like the *Magazine Plate*. Our *H. graveolens* has green scapes, however, while those of *H. lividus* are dotted profusely with red in the Plate just referred to, but seeing that *H. niger* as a species varies so much in the colouring of the scape and sepals, we may reasonably allow some little latitude in the matter to this and other species. Our *H. graveolens* has the trilobed bracts just as figured in the *H. lividus Plate* of the *Magazine*. Now comes the question of the leaves. The three-lobed leaf of *H. lividus* is peculiar, and not much like that of *H. argutifolius* either in colour or in the shape of the lobes. Our *H. graveolens* is a deciduous species, and the question is whether *H. lividus* is so, or whether, as one might infer from the Plate above cited, the leaves are persistent. If *H. lividus* is really deciduous, there is the chance of the leaf having been added to the Plate from dried plants, or even description. Are there dried specimens of *H. lividus* at Kew? One thing is quite clear—viz., that apart from the interest of hunting up a moot point in the plant's history,

there remains the fact that the plant itself is a sombre thing indeed.

Among sorts of *H. niger* sent by Mr. Barrare *H. niger maximus* of Backhouse (not *H. altifolius*), a tall-growing form with stems very sparsely spotted with red and a suggestion of pink colouring on the stigmas. This plant, if not like Mr. Poë's whilom supposed hybrid, comes very near it, and I have seen blooms from Cork and elsewhere. It has flowers as large as *H. altifolius*, but generally whiter, and is a fine bold thing. *H. niger scoticus*, or Miss Hope's "Christmas Rose," is a vigorous grower, bearing two-flowered red dotted scapes. The sepals are broadly imbricate and cupped, pure white when well grown, with a pale suffusion of rose behind the flower. I can see no difference between the true *H. niger* major and Miss Hope's variety except in the leaves. One of the prettiest in the series is the Bath variety of *H. niger*, with red-dotted stems and pure white flowers slightly suffused with pink behind. It seems to be the common Christmas Rose near Bath, where these plants luxuriate. Who will make a serious study of all the *Hellebores*? What we want now is a good monograph containing coloured plates of the wild species and best marked garden forms. Here is congenial work for a well-to-do amateur fond of these beautiful flowers of winter and spring. VERONICA.

SOCIETIES.

ROYAL HORTICULTURAL.

MARCH 10.

THE meeting on Tuesday last at South Kensington was an exceptionally good one, the conservatory being crowded with a numerous variety of attractive exhibits, including many of more than usual interest. Orchids, Camellias, and Cyclamens lent an air of brightness to the conservatory, while a good display of open-air hardy flowers attracted a deal of attention from visitors. First-class certificates were awarded to the following:—

ONCIDIUM BRUNLEESIANUM.—One of the most distinct and prettiest Orchids that has been seen for a long time. It is, moreover, extremely rare, and very few orchidists know it other than by name. It cannot be compared in flower with any other Oncid that we know, or indeed with any other Orchid. It has a bulb like *O. sarcodes*, and from this proceeds a tall, branching, slender panicle carrying crowds of small golden blossoms having dark brownish red lips. The contrast of colour, together with the shape of the flowers, renders them most striking. This plant, the most interesting in the show, was shown by Mr. Lemon's gardener (Mr. Adams), The Avenue, Beckenham.

ODONTOGLOSSUM WILCKEANUM GODEFROYÆ.—An extremely handsome variety, different from the rest in having the sepals almost entirely mottled with a rich chestnut-brown on a pale yellow ground. This variety stands out distinct from the numbers of hybrids now in cultivation. A fine plant of it, bearing a long arching spike, was shown by Mr. Ballantine, from Baron Schröder's garden at The Dell, Egham.

CYPRIPEDIUM SEDENI CANDIDULUM.—A pretty and distinct form of a well-known Lady's Slipper, having the flowers considerably paler in tone—in fact with the sepals almost white. Exhibited by Messrs. Veitch.

DAPHNE GENKWA.—A Japanese deciduous shrub, commonly known as Japanese Lilac. Though Fortune first introduced it to this country years ago, it has till lately been lost sight of. At this season its leafless branches are crowded with small lilac-tinted blossoms, which give the shrub a pretty appearance. It is, we believe, quite hardy. Messrs. Paul & Son, Cheshunt, showed a few admirably-flowered plants of it.

RHODODENDRON CARDINALE.—Another addition to the now numerous race of beautiful greenhouse Rhododendrons which have originated from the Royal Exotic Nursery, Chelsea. The present

novelty has large trusses of flowers of the richest scarlet-crimson imaginable, and as seen intermixed with luxuriant foliage have a beautiful appearance.

ODONTOGLOSSUM WILCKEANUM.—Another hybrid variety also from Baron Schröder's collection. It has very large, pale flowers, paler even than those of the variety pallens. The sepals are heavily blotched with cinnamon-red.

IMANTOPHYLLUM BARONESS SCHRÖDER.—An extremely fine variety having huge clusters of flowers, large, well formed, and of a vivid orange-scarlet. Shown by Mr. Ballantine, from The Dell, Egham.

DENDROBIUM ENDOCHARIS.—A hybrid variety, the result of intercrossing *D. japonicum* and *D. heterocarpum*. It is a sweetly pretty Orchid, combining the grace and beauty of its parents in a striking degree. The flowers are of ivory whiteness, with the lip tinged with purple. A very fine specimen, presumably the original, was shown by Messrs. Veitch, the raisers of it.

LACHENALIA ALDBOROUGH BEAUTY.—One of the late Mr. Nelson's seedlings, raised by him shortly before his death. It is most distinct from all the other kinds in gardens. The flowers are larger than those of any other, and instead of being pendulous, as in other large-flowered kinds, they are sub-erect. Their colour is a bright golden yellow, similar to that of *L. Nelsoni*. The foliage is broad and unspotted; in short, it is so different from any other *Lachenalia*, that it may prove to be a true species. It was shown by Messrs. Barr & Soo, King Street, Covent Garden.

CROCUS KING OF THE BLUES.—A grand new Dutch Crocus with great globose flowers of a rich purple-blue. It surpasses all older varieties of a similar colour. Exhibited by Messrs. Veitch.

ORCHIDS.—There was a more numerous gathering of these than usual, and we noted a few of the most interesting. M. Godefroy-Lebeuf sent a new hybrid *Cypripedium* named *C. Sallieri*; it is a cross between *C. insignis* and *C. villosum*, and presents quite intermediate characters, much the same as in *C. Ashburtonia*, which resulted from the same parents. The same exhibitor also had *Pleurothallis Roezli*, an interesting plant, having spikes of deep claret-coloured flowers larger than those of most other cultivated *Pleurothallides*. A few fine forms of *Cattleya Trianae* from Mr. D. B. Crawshaw, of Sevenoaks, were noteworthy, one named *Warszewiczii superbissima* being very remarkable for the large size of its flowers, particularly in its broad lip and delicate tint—a soft mauve-lilac. *Rosia* was another pretty form, having a richly-coloured lip. W. H. James showed his *Jamesiana* variety of *C. Trianae*, which is unquestionably a superb variety. Its lateral sepals are 3 inches broad and the whole flower measures 8 inches across. He also had *Odontoglossum cirrhosum grandiflorum*, a fine large form and well coloured.

Some noteworthy Orchids were sent by Mr. Pollett, of Bickley. These included the pretty little *Odontoglossum blandum*, *O. Sanderianum*, with a dozen flowers on a spike. The attractive white-lipped flowers of this species, combined with the delicate perfume, render it a desirable kind. There were also *Epidendrum xanthinum*, *Lycaste gigantea*, and some cut spikes of the rare white *Celoglyne cristata alba*, the snowy whiteness of which was the admiration of all who saw it. A wonderfully finely flowered plant of *Lycaste Skinneri*, a delicately tinted variety, carrying a score or more of flowers, was shown by Mr. Gaiger, from Burton Close, Bakewell. We do not remember seeing this *Lycaste* more finely bloomed. Messrs. Shuttleworth, Carder, & Co., Park Road, Clapham, sent three well-flowered plants of the new *Odontoglossum adpersum*, a quiet tinted variety of *O. Rossi majus*, with sulphur-yellow and blotch sepals and large white heart-shaped lips. Mr. G. F. Wilson exhibited a fine flowered spike of a superb variety of *Phaius tuberosus*, one of the most beautiful of all Orchids, but at the same time one of the most difficult to grow and flower well. In a large miscellaneous group of new or rare plants, Mr. W. Bull exhibited

some choice flowering Orchids, among them being some uncommonly fine specimens of *Dendrobium glumaceum* in huge pots and carrying scores of long and gracefully drooping spikes of bloom. There were also *Dendrobium crassinode album*, *Calanthe Regnierii rubra* and some richly coloured varieties of *Cattleya Trianae* and various *Odontoglossums*, the most remarkable being *O. decorum*, with large crispum-like flowers covered with blotches of pale chestnut-brown; *O. crispum Lehmanni*, *O. triumphans*, *O. sceptrum*, and others.

HARDY FLOWERS were in strong force, particularly Daffodils, numbers having been sent from various places, including some from Mr. Hartland, of Cork. Messrs. Barr's display consisted chiefly of their new *N. pallidus præcox*, the earliest of all the Trumpet Daffodils. The soft primrose-yellow of this variety was admired by everyone, and seen as here *en masse* the effect was charming. Some selected forms of *pallidus præcox*, remarkable for large size and fine form, are likely to prove more valuable than the original. The second early Daffodil, the Tenby (*N. obvallaris*), was also represented numerous, as also an early form of the English Daffodil and *N. minor*. The lovely little *N. monophyllum* was shown in quantity, as were also some forms of *N. Tazetta*. There were also *Iris reticulata* and *I. stylosa*, the big Snowdrop, *Galanthus Elwesi*, and others of less importance, together with glowing bunches of *Anemone fulgens*. Mr. Ware showed an interesting gathering of hardy plants, *Lachenalias*, *Freesias*, and others. Among the hardy flowers none attracted so much attention as the little *Cyclamen Atkinsi*, of which there were several varieties and good sized specimens. Various Saxifrages, Daffodils, and the new *Ranunculus anemonoides* were among the most noteworthy of the others. Hardy flowers were also shown well by Messrs. Paul, of Cheshunt. Among these were several alpine Saxifrages in great beauty, particularly *S. Burseriana*, *S. sancta*, and *S. oppositifolia alba* and major. The netted Iris, some miniature Roses, and various other plants made together a most interesting group. Mr. Rees, of the Tooting Nursery, sent good plants of *Saxifraga Stracheyi*, one of the most beautiful of the early Megasea section; and Mr. Barron sent from the society's garden at Chiswick some bright little alpine, all adding to the display. Mr. Hartland's *Narcissi* were interesting, inasmuch as they included, besides the better known forms, several wild Spanish forms, which may prove valuable. Some excellent Violets, *Comte Brazza's* white and Neapolitan, were sent by Mr. J. Crawford, from Coddington Hall, and Mr. C. Turner, of Slough, sent from his nursery a large display of the new Violet *Wellsiana*, which is unquestionably the largest of all the single Violets. It is of a rich deep purple and delightfully scented.

CAMELLIAS formed one of the leading features of the meeting. A beautiful gathering of single semi-double and double varieties was exhibited by Mr. Scrase-Dickins, of Coolhurst, Horsham, who has paid some little attention to raising new forms of single Camellias. The single whites and pinks were particularly admired in the Coolhurst exhibit, being so different from the symmetrical doubles. The graceful way, too, in which Mr. Scrase-Dickins arranged the flowers was admirable. Mr. W. Paul, of Waltham Cross, sent from his nursery a large display of Camellia plants in bloom, as well as a dozen boxes of cut blooms. This collection contained the chief of the leading varieties, both old and new, but some, such as the Old White, *fimbriata*, *Marchioness of Exeter*, *Countess of Rosebery*, and others, asserted themselves more than the rest by their exquisite forms or beautiful colours.

CYCLAMENS were again abundant, and no finer groups could be seen anywhere than that shown by the Cyclamen grower, Mr. H. B. Smith, of Ealing, every plant among the hundred or more shown being the perfection of good culture. Mr. B. S. Williams showed a fine group also of his noted strain of Cyclamen.

CINERARIAS were grandly represented by Mr. James, of Woodside, Farnham Royal, the well-

knower raiser and grower of these flowers. His plants were the model of what Cinerarias should be, and the varieties, as may be imagined, were matchless in point of size, form, variety, and brilliancy of colour. A bright display of zonal Pelargoniums came from Messrs. Cannell, of Swanley, and Mr. Todman sent again a series of his new early flowering hybrid Azaleas, several of which possess considerable merit.

Fruit and vegetables.—There was but little to engage the attention of the fruit committee, the chief exhibits being collections of Apples. A large collection of Apples in the finest state of preservation possible came from Mr. S. Ford, Leonardslee, Horsham. The fruits were as fine as those Mr. Ford frequently showed last season, and it was surprising to see how well some of the mid-season sorts had been preserved, all being as plump as the day of gathering. A large collection of sorts came from Messrs. Rivers, of Sawbridgeworth, a good number of little known and American varieties being included in it. A collection also came from Mr. Middleton, of Wynnstey. Several Apples were sent to name as well as a few seedlings for the opinion of the committee. These included Ford's Seedling, from Mr. Ford; High Cannons, from Mr. Thrower. Some fine fruits of Catillac Pear were shown by Mr. Lambert. Mr. B. Clarke showed plants and roots of the Japanese Gobo plant, which is *Arctium majus* var. *japonicum*. These roots, resembling those of *Scorzonera*, are edible and said to be much relished in Japan. It was introduced some years ago at Kew, but it was not considered of sufficient importance to trouble much about it.

Awards.—Silver-gilt Banksian medal to Mr. Bull for group of plants; silver-gilt medal to Mr. H. B. Smith for Cyclamens; silver Banksian medal to Mr. W. Paul for Camellias; silver-gilt Banksian to Messrs. W. Paul & Sons for pot Camellias, and a silver Banksian medal to the same firm for cut Camellias; silver Banksian medal to Mr. James for Cinerarias; bronze Banksian medals to Mr. B. S. Williams for Cyclamens; to Messrs. Barr & Son for Narcissi; to Mr. Ware for hardy flowers; to Messrs. Paul & Son for hardy flowers. A large silver medal each to Messrs. Rivers and Mr. Ford for collections of Apples.

Scientific Committee.—The following were among the more interesting points discussed:—

Mormodes.—Mr. Michael reported that the gall-like swellings on the leaves of *Mormodes* submitted to his examination by Mr. Smea were caused by an *Acarus* of the genus *Tarsonemus*. The species appears to be identical with *T. Buxi*, which nearly destroyed the foliage of *B. semper-virens* in the Botanic Garden at Padua.

Egg cases of mantis.—Mr. McLachlan states that the egg cases produced on a species of *Baeckea* were those of a mantis.

Phaius tuberculatus.—Mr. G. F. Wilson showed a spike of the lovely *Phaius tuberculatus* which had been grown in a close house kept at a temperature of 65° to 70°.

Dianella corulea.—Dr. Masters showed drawings of double flowers of *Dianella corulea*, the most remarkable point about which was the petaloid state of the ovules.

Knaur on *Taxodium sempervirens*.—Mr. Webster sent, from the estate of the Duke of Richmond at Gordon Castle, a fine specimen of *knaur* on the underground stem of this plant. These growths probably originate from injury to the root in its seedling stage.

Double Orchids.—Messrs. Veitch showed a flower of *Cattleya Trianae* with three lips, and one of *Odontoglossum Rossi majus* with a supplementary lip.

Spiny branches of Privet.—Mr. Greenwood Pim sent branches of *Privet* clothed with stout conical spines or abortive branches.

Miscellaneous.—Flowers of *Anemone fulgens hortensis*, *Tulipa biflora* with numerous flowers, *Rhododendron fulgens*, and *Iris stylosa* were also sent.

The Tower garden.—The Secretary of State for War has informed Lord Brabazon, as chairman of the Metropolitan Public Garden, &c., Association, that he regrets his inability to accede to its proposal for this open space, situated as it is in the centre of a very poor neighbourhood, to be thrown open to the general public for their use and enjoyment. That association had offered to bear the cost of maintenance, to provide caretakers, and to maintain perfect order. This garden is at present open to the outside public only on the annual payment of two guineas.

AMERICAN NOTES.

Liquid manure for house plants.—As a general rule, it is best to depend on a rich soil, but liquid manure is useful for rampant growers with full foliage, especially near their time for blooming. Failures result from using it too strong; it is better to be on the safe side and have it too weak. A spoonful of guano, or half a teaspoonful of liquid ammonia, is enough for a gallon of water, and it should be about equal in strength if made of other materials.—*Country Gentleman*.

Apple marketing.—We find the following paragraph in the *Rural New Yorker*, and it would be well if some of our own growers for market would attend to the advice which it contains: Our American Apple growers will do well to keep an eye on their competitors in Nova Scotia. The reports from that province during the last year show not only a rapid increase in production, but an exceptionally high quality in the fruit itself. And now come the reports of November auction sales in London, by which it appears that Nova Scotian Apples brought much better prices than the American fruit, and were sold in far larger quantity. It will not do to trifle with our Apple exportation business. The demand is not imperative. Our friends on the other side have learned what good Apples are, even a fine American production, and the sooner our shippers conclude to leave low grades at home and send only sound perfect fruit, the better for everybody. This fair land is blessed with nearly 200,000,000 Apple trees, and it occasionally happens that they drop fruits in our laps beyond our ability to use them. Then it is that we want this foreign market, which we, cannot afford to offend or insult.

Grape Vines in tree tops.—A correspondent says tree tops are often the best places in which to let Grape Vines run, a remark which leads me to state a few facts: Just north-east of my house is an Isabella Vine, put out in 1858, and for fifteen years I made that Vine keep to a trellis 6 feet high, but it never ripened a cluster well. A sap-runner, however, ran through the fence to a Lilac bush in the yard of a neighbour, and mounted to my Apple tree by the ends of the limbs that hung over my neighbour's grounds, and covered all the north side of the tree, where it could get no direct sunshine, but could fully ripen its Grapes as it did, or rather does yet, in its own way. About five years ago it reached the north top of that old Apple tree, which is now nearly 40 feet high, and that Vine just let itself out on a grand spread without the pruning knife or any care except a slash of considerable magnitude when it attempts to appropriate the south side of the tree. That Vine makes me climb every fall on a ladder, 25 feet high, much to the amusement of my neighbour, who comes along just as I am picking the sixth or eighth half-bushel basketful of the nicest ripe Isabellas, and says, "There! you are at it again; standing on the top rung of that ladder, picking those black clusters!" Or he says, "Yes, yes, yes! Can't give us a bunch of that ar'sky-raker Vine. You are particular to hang those Grapes up out of the way." But the bushels of ripe Grapes, when one is hardly ever edible on the trellis, makes me quite insensible to his laughter. Another, a Rogers No. 1, that is almost like a foreign Grape if properly ripened, I have let run up the north side of another Apple tree, and that gives its bushels of Grapes yearly. The tall Pear tree, too, that stands

in the south-east corner of my lot has got into the way of having a Vine in it. But the Vine knew enough to go up on the fence in the corner, and thus get into the Pear tree without my knowing anything about it, and has been joking me for several years over the exploit by the richest, blackest, largest Grape bunches I have on my premises. So my advice is, if you have tall trees that give you valuable fruit, let a Grape Vine loose in the corner of the fence, and it may give you your best Grapes; at any rate it will demonstrate the contrary of the usual rule that "the nearer the ground, the sweeter the Grapes."—S. J. P., in *Country Gentleman*.

* * Our sun is not liberal enough to allow of such stray gatherings of Grapes, but we have seen very graceful effects from allowing Vines to overrun trees in this country.—ED.

QUESTIONS.

5331.—**Double Gorse.**—When is the best time to put in cuttings of double Gorse?—C. T.

5332.—**Alexanders** (*Smyrnum Olusatrum*).—Will any kind reader of THE GARDEN tell me if this old vegetable is yet grown for use in that way in the United Kingdom, or anywhere else?—H. H. S.

5333.—**Turfing Pelargoniums.**—How is this done? Is it better than the old way of using pots? I should like an opinion on this matter from anyone who has practised the system.—E. J.

5334.—**Ivy on ferneries.**—Would it be advantageous to let a small-leaved Ivy grow all over a fernery which is in a rather exposed situation? or would the Ivy smother the more delicate Ferns and keep too much rain from their roots?—C. T.

LATE NOTES.

Forsythia suspensa on walls now makes a brave and attractive show, its yellow blossoms being unusually abundant.

Libum trigynum (H. H. W.).—Seedsmen are not likely to have it; but it may be had, we should think, at any large nursery.

Cedars at Hassobury Park.—Mr. Marnock asks us to correct an error in his note (p. 180) respecting the Lebanon Cedars at Hassobury. The trees were planted in 1870 instead of 1876, as stated.

Peach trees (H. F.).—We can find neither insect nor fungus on the roots of your Peach trees; but they do not look healthy. We suspect that the soil is at fault. Before planting fresh trees we would if possible renew it.

Plagioltrion Horumani.—We treat this exactly as we do *Eucharis candida*, with which it grows here and flowers most abundantly. We give both a slight resting season by withholding water for a couple of months during winter. We are now repotting it.—F. HORSMAN, *Colchester*.

Large vinerie (C. B.).—That at Chiswick is the largest with which we are acquainted. We have not heard that there is one in Perthshire filled with one Black Ham-burgh Vine 175 feet in length. Perhaps some of our Perthshire correspondents may be able to inform us where, if such a vinery exists, it is to be found.

Tomatoes without manure.—I agree with a recent writer in THE GARDEN that Tomatoes do not require much in the way of stimulants. Last year I saw a bunch of fruit cut that weighed a little over 6 lbs. This was produced by a plant growing in a box resting on a gravel walk. I should say that the box held about a peck of soil.—J. C. C.

Mushrooms.—Large clumps of Mushrooms seem to be cropping up everywhere this season. A very fine one measuring 3 feet round, and consisting of upwards of fifty Mushrooms, has been sent to us by Mr. James George, 10, Victoria Road, Putney. It was grown, we understand, by Mr. Fuller, Idsworth Park, Hordean, from Putney-made spaw.

Heating (R. R. S.).—I would recommend a boiler heated by gas. Last summer I had to discontinue heating by coke for the reason of which "Amateur" (p. 206) complains, and also because of the nuisance of smoke in lighting. I had the old "worm" arrangement taken down and one of Fletcher's (Warrington) patent gas stoves fitted up. It cost nearly £5, the gas having to be brought some distance, but there has been no trouble since, no stoking and no sadness over gone-out fires.—H. B. W.

Naming plants.—Four kinds of plants or flowers only can be named at one time, and this only when good specimens are sent.

Names of plants.—*R. J. Hopkins*.—*Narcissus tazetta papyraceus*.—*C. S.*—1, *Usnea* sp.; 2, *Lichen*; 3, *Grimmia apocarpa*; 4, *Marchantia* (Liverwort).—*S. Nisbet*.—*Bletia hyacinthina*.—*R. Cufis*.—1 and 2, forms of *Narcissus Pseudo-Narcissus Telamonius plenus*; 3, *N. Pseudo-Narcissus nanus*.—*Holme*.—Apparently *Rose Homere*.—*W. S.*—*Dendrobium Fierardi*.—*J. C. Kelman*.—Forms of *Narcissus Pseudo-Narcissus*: 1, *principes*; 2, *Telamonius*; 3 and 4, *obvallaris*; 5, *spurius*.—*F. J. H.*—1, *Narcissus Pseudo-Narcissus Telamonius plenus*; 2, *N. P. principes*.

No. 696. SATURDAY, March 21, 1885. Vol. XXVII.

"This is an Art
Which does mend Nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

TRIANA'S CATTLEYA.

WERE the opinion of Orchid growers taken as to which is the most popular of spring flowering Orchids, Triana's lovely Cattleya would doubtless head the list. For weeks past it has been in blossom, and in some gardens it is still in the height of its flower-tide. There is now such a wonderful range of variety in this Cattleya, that it is only in the very largest collections that one can obtain an adequate idea of its beauty. Such a collection is that which Mr. Lee has formed in his garden at Leatherhead, overlooking the beautiful vale of Mickleham. Here in one capacious house, built expressly for Cattleyas and *Lælias* a year or so ago, the finest collection of varieties of this Cattleya in existence may be seen; indeed such a wealth of Cattleya bloom has probably never been seen elsewhere under one roof. Every variety of *C. Trianae* that has won a reputation for beauty is here, besides a few that may be regarded as unique. Such famous varieties as *Leeana*, *Osmani*, *Dodgsoni*, *Backhouseana*, *Russelliana*, and others, which always command fabulous prices when sold, may here be seen side by side with a crowd of lesser lights, which, though very beautiful, lack the "points" which place the foregoing varieties in the foremost rank. The charming effect of this Cattleya house is most captivating.

First and foremost amongst the varieties is the wonderful *C. Leeana*, the talk of the Orchid world last season, when Mr. Lee paid the unprecedented sum of 250 guineas for it. Placed by the side of its finest compeers, it is a head and shoulders above them all. The immense size of the flowers is its remarkable feature. Across the sepals they measure nearly 9 inches, and each side sepal is $3\frac{1}{2}$ inches broad, while the lip is twice the size of that of ordinary forms. It has gained in size since last season, and it may still get larger another year. The colour of the sepals is a deep lilac; that of the lip a rich amethyst-crimson. Second on the list of select varieties we should place *C. Osmani*, still a wonderful form, standing out from all in having such a broad shallow lip and of such an intensely deep lilac-crimson. Until *C. Leeana* cropped up *C. Osmani* was thought to be the finest in its class, and therefore will always be sought after. The third place we should accord to one which Mr. Lee has named *Emiliae*. It is a sweetly pretty flower, not very large, but remarkable for fine colour. It has wavy sepals of a delicate white with just a faint suggestion of pink, and a glowing magenta-crimson and a frill-like margin of white render the lip unique as regards beauty. A very fine plant of this bore some two dozen flowers. After this comes *Emperor*, a grand flower, having a large lip with a decidedly goffered margin. *Backhouseana*, if it were as fine as it was last season, would probably rank before either *Emperor* or *Emiliae*; but this season the Downside specimens lack their most characteristic feature—viz., the feathered blotches on the sepals. The flowers this season are very fine, nevertheless; the lip unsurpassed by that of any variety in point of colour. *C. magnifica*

is another very large flower, the pale lilac sepals and richly-tinted lip of which make it distinct from all others. One of the York varieties, viz., *C. eboracensis*, is thought highly of by Mr. Lee, as is also *Victoria Reginae*, *Archiduc* and *Archiduchesse*, and *Normani*. In many cases these so much resemble each other, that a description of their differences is impossible; but it is well to enumerate the names, as they will doubtless all rank as standard varieties, for none are named here unless they strictly conform to a standard which Mr. Lee has set up for himself. A new variety was named on the day of our visit. The most appropriate name that could be thought of was *deltoides*; the wedge shaped markings on the lip being quite like a broad V at once suggested the name. No other variety showed such a well-marked character in this respect. Lastly, we must not omit to note the white varieties. There are real white *Trianae* and reputed whites, and the first genuine white we had ever seen was here. Its flowers are absolutely pure white, as colourless as the white *Cœlogyne cristata*. It is chastely beautiful, and as it is a well-formed flower holding itself firmly, it looks as if it were chiselled out of alabaster. The other albas (reputed whites) have in all cases either a suggestion of mauve on the lobe of the lip or an orange blotch in the throat. Still, they are lovely, but not so fascinating as the tota alba. Other Cattleyas and *Lælias* in this house in flower include the rare hybrid *L. flammea*, a cross between *L. cinnabarina* and *Pitcheri* and *L. elegans Turneri*. Of *L. anceps* there are still a few stragglers, but the beauty of the bulk is gone for the season, and the Cattleya *Percivaliana*, which has yielded such precious beauty since Christmas, is well nigh past.

FLOWERS OF SPRING.

BLUSTERING March is still cold betimes, but for all that the winter is past, and we feel that the cold now is only the coolness of a young hand instead of the chilliness of an old one! Every green thing even thus early seems conscious that rosy spring-time is here laden with her seasonable treasures. The budding hedges and the mysterious welling up of sap bespeaks the coming leafage and blossoming of a thousand trees and flowers, many of which have grown old in our gardens, and were old even when Shakespeare was a boy! And yet these are ever dear to us, fraught as they are with many pleasant memories. This Rose tree now budding by the porch came from "hungry Grafton," a village by the silvery Avon, and these purple Crocuses from the green sward of an old garden in Rome. Snowdrops from the Crimea flower side by side with the lovely netted Iris of richest purple and gold from the Caucasus, and with sweet Violets, both purple and white, and Primroses from an English hedgebank, now richly perfume the garden with their odour.

Here by the old sundial are Daffodils in all their "braverie," both single and double, in great variety, and we look on them as the heralds of many other lovely flowers of spring. They come with the song of the blackbirds and thrushes in our dear old sheltered garden and at the time when the rooks are disputing over their nest building high up in the tall Elm trees. Just now no other flower is more popular than are these nodding Daffodils in even the best of gardens. The other day I came across a well-preserved old folio volume in a dusty little book-shop, and was glad to buy it for a few shillings as a great prize. This work is Parkinson's "Paradisus Terrestris, or a Garden of Pleasant Flowers," published in 1629, and valuable as showing exactly what flowers were cultivated in English gardens during and immediately after the time of Shakespeare.

The book is written in the quaint language of the time, and amongst other things contains rude woodcut illustrations and descriptions of no less than ninety-six species and varieties of the Narcissi or Daffodils so popular at the present time. In a word, this volume of the early seventeenth century is full of interest and information anent old-fashioned flowers, such as Lilies, Irises, Roses, Pæonies, Auriculas and Primroses, Sunflowers, Cyclamens, Crown Imperials, and other plants, grown all for delight in English gardens of the golden Elizabethan age. But it is not books so much as the flowers themselves with which we have to deal, and just now when "golden Crocus crowns the green," it seems most timely and seasonable to speak of spring blossoms. An old gnarled Almond tree, trained on a sunny bit of old grey wall, is now most lovely, the buds gleaming like garnets and the flowers of a soft flesh pink, suggestive in colour of that rosy goddess who rose from the "salt sea foam." A plant of the Japanese Forsythia has its last year's spray covered with thousands of yellow bells, and its beauty, indeed, may be likened to "a swarm of golden bees" as its flowers daintily flutter in the sunshine of a warm March morning. The Snowdrops have, indeed, faded, but the Spring Snowflake is at its best, and the bells of the Rush Lily, both purple and white, dangle and sway on their slender stalks in a very pretty way. Seedling Primroses and Polyanthus are fully in bloom, and their shades of colour are infinite in variety. The Snow Glory opens its eyes to the sun; but most gorgeous amongst the early blossoms are the Anemones from Pau and Nice, as well as from Greece and Palestine. The Grecian kind has a pure scarlet, star-like flower much finer than the one from the sunny vinefields near Pau, but the forms from the Holy Land are most varied in colouring. Canon Tristram is of opinion that these last named most probably represent the "Lilies of the Field," so abundantly do they enamel the ground in Palestine in early spring. The lovely little blue Scilla and the Grape Hyacinths are pushing up their flower stalks everywhere in sheltered nooks and corners, and the large thick-leaved Saxifrage has Grape-like clusters of soft pink flowers and buds nestling cosily among its bronzy foliage. One is sorry to see the last of the pure white Christmas Roses, which are so pretty in water indoors, along with the great Russian or Czar Violets and dark bronzy Ivy leaves, but the Lenten Lilies now take their place. These last are the numerous kinds of Hellebores having white, purple, green, purple-spotted or mouse-coloured flowers, and are always welcome with the great deep yellow Daffodils both single and double. A favourite ornament just now in a little garden house wherein we keep books and drawings is an old brown jug full of long and graceful Willow wands each thickly set with soft silvery buds or "pussies," the same which children gather on Palm Sunday as our northern substitute for the Palms of Bordighera and elsewhere in the sunny south of Europe. Enjoyable as are the mild sunny days we now and then have in March, we get sharp frosts sometimes in the early morning, and the breath of the icy east wind is so keen sometimes that one longs for the warm nooks along the Riviera, and actually envy the robin redbreast, which has thus early made its nest in a hole in the greenhouse wall quite near to the hot-water pipes which yield warmth to our Tulips, Hyacinths, Azaleas, and other indoor flowers. There is a richer tint on the Grass, and the Flag Iris and white Lilies are growing apace, and the old bush of the Japanese Pyrus by the hall door is thickly set with its coral buds with here and there a stray blossom. Every afternoon a dappled thrush sings in the Azarole Hawthorn on the lawn, and we ourselves, despite all the vagaries of our climate, can at least enjoy the cropping up and vigorous blossoming of the spring flowers and the melody of the birds. When we look carefully through a good garden at this season it becomes noticeable that a large proportion of the most showy flowers are those having bulbous roots, and no plants are more easily cultivated than are these. In September you take a few shrivelled roots looking almost like

rough nodules of baked earth, and plant them in a rich, deeply-dug flower bed, and in the following spring come Anemone flowers in profusion. Or you take the brown fibrous-coated corms of the Crocus, the smooth-skinned Hyacinth, the glossy brown bulbs of any of the 500 Narcissi now known in gardens, or the prettily netted Iris roots, all different, all with varied potentialities of beauty concealed under their rough fibrous coats or glossy skins. These you plant carefully on a warm sunny border, surrounding each root not with manure, but with clean dry sand, and the result is floral beauty long ere one dare plant tender or half-hardy bedding plants in the open air. This brings us to the great central fact in connection with our flowers of spring, namely—their extreme hardihood and the perfect freshness of their beauty. One of the most noticeable of all the movements taking place in our gardens is the care and skill now being lavished on those old-fashioned and beautiful flowers which our great-grandmothers grew near the cosy old country houses long ago. In a word, a true floral renaissance has taken place, and not only are all the old flowers now cultivated with tender care, but the cold and temperate portions of Northern Asia, Europe, and America are now being searched for beautiful new kinds of the hardy flowers which are now so popular. In the culture of these flowers one is free from the labour and heavy coal bills which the growth of hothouse plants renders necessary, since if hardy bulbs are once well planted in sand on a well-drained soil, they require but little attention afterwards that may not be given to them by any intelligent amateur.

F. W. B.

PLANTS IN FLOWER:

Scilla taurica and *Iris persica*.—This *Scilla* has been unusually fine this year. Its blooms being thickly set on the spike give a clump of it a very rich appearance, and the blooms last well. *Iris persica* is so lovely, that it is difficult to praise it too much, and it is so easy to grow that everyone who cares for a special bit of beauty should have it.—H. STUART-WORTLEY.

Double French Anemones.—A charming gathering of the finest double Anemones has been sent to us by MM. Forgeot, of the Quai de la Mégisserie, Paris, who evidently possess a rich collection of these flowers. To describe the brilliant and varied tints of these Anemones would be impossible, ranging as they do through every subtle gradation from the deepest crimsons, carmines, and scarlets to the deepest blues, purples, delicate pinks, and whites. All the flowers are perfectly double; in every case an outer row of large petals encloses a rosette of small narrow petals, and sometimes the outer or guard petals are of quite a different colour from the inner ones.

Spring flowers reach us now every day from all parts, prominent amongst them being *Scillas*, *Narcissi*, and *Anemones*. The new *Chionodoxa sardensis* we find to be quite distinct from the now common *C. Lucilie*, and in point of colour it is one of the most noteworthy. Instead of the white centre the flowers are wholly of a deep violet-blue. Whether botanists regard it as distinct matters but little, so long as cultivators think it worthy of a distinctive name. Among some *Scillas* sent by Mr. Ware is the beautiful *S. taurica*, the finest of all the bifolia group. A pretty mauve-tinted one named *S. amena* variety is distinct from all the rest. It is from the south of France, and if not new is rare.

The Greek *Anemone fulgens*.—I send flowers of Mr. Barr's Greek form of *Anemone fulgens*, as well as some the stock of which came many years ago from France. The former is certainly sufficiently distinct from the type to be well worth growing. Its deep crimson-scarlet colour in sunlight is very beautiful, almost more so than the glowing scarlet of the French form. The leaves I send of *Pelargonium anemonifolium* have been grown out-of-doors, some turf mould round the collars of the plants being all the protection they received. A half-starved specimen grown indoors gives no idea of the beauty of foliage of this *Pelargonium*, but

its hardiness is not to be trusted here in a severe winter, so that it is as well to have a plant or two wintered in a cold frame.—C. M. OWEN, *Knockmullen, Gorey*.

* * The large Greek variety of *A. fulgens* is, indeed, a fine flower, larger in all its parts than the ordinary kind; the petals are very long and broad and of the most vivid scarlet imaginable. If the Greek form is as hardy as the French we should decidedly prefer it. The *Pelargonium* leaf which Miss Owen has sent is very handsome, larger than we have hitherto seen it.—ED.

Early Roses.—I send you buds of *Maréchal Niel* Rose cut from a plant twelve years old, grown in a house heated only by a chimney from the vineries running up the back wall 12 feet. I cut twelve flowers on the 16th inst. and some the week previous, leaving 150 buds partially expanded. These, I think, are quite sufficient for the first crop, for allowing more flowers to develop would seriously weaken the plant for another spring. I attribute the vigour of the plant to this moderate flowering, and to fresh roots formed from a warty protuberance. We give a good top-dressing of fibry loam, watering when the buds are formed with Clay's fertiliser; a little air is always left on the top of house, and we constantly syringe when the plant is in vigorous growth. I also send specimen of *Gloire de Dijon*. A plant of each (this and the *Maréchal*) so grown comes in very useful, and but moderate forcing is needed for early spring. The *Gloire de Dijon* is grown in the same house, the temperature of which this morning was 45°.—G. BOLAS, *Hopton, Wicksnorth*.

* * Very fine blooms at this early date.—ED.

Lachenalias.—A series of varieties of these pretty bulbous plants from Mr. Ware show what a diversity of colour there is now among them compared with what there was before the hybridist took them in hand. The late Mr. Nelson did more than anyone else in this direction, and he succeeded in raising some sorts which in every respect quite eclipse their parents. In the present series the finest are *Nelsoni*, a kind with long slender spikes furnished with from twelve to eighteen drooping golden blossoms. Another interesting plant is *L. tricolor Warei*, a variety which Mr. Baker, of Kew, recently named. It reminds one of *L. quadricolor*, and seems to be intermediate between that kind and *tricolor*. The flower-spikes are short, three-coloured—claret-purple, yellow, and red. The flower-stems are distinctly blotched with chocolate-brown. A variety of *L. luteola* also sent is distinct, inasmuch as it has large brown blotches on the foliage. It is named *maculata*. Recently these *Lachenalias* have been rising in public favour, and rightly so, as they are graceful, pretty, and easily grown in a greenhouse or frame.

NEW AMARYLLISES.

AGAIN *Amaryllises* are the chief attraction in the Royal Exotic Nursery, Chelsea, and this year the show surpasses all its predecessors, inasmuch as it is more extensive, and there is also a perceptible advance in the quality of the seedlings that have flowered up to the present time. The house contains some 3700 plants, fully half of which are flowering, and in many cases producing two and even three spikes. There is, therefore, quite a thicket of spikes in various degrees of expansion, and during the coming week the whole will be in perfection. Anyone who has seen the previous exhibitions may see at a glance what an advance has been made in the way of new seedlings with regard to colour and form as well as size. There is no comparison between them and the older kinds, say those exhibited eight or nine years ago. Between 1876 and last year no fewer than eighty certificates have been awarded to Messrs. Veitch's *Amaryllises*, but of course in some cases two have been given to the same variety.

The majority of the finest of the older-named kinds are still retained in the collection, but as these have been previously described, we will only give a short description of those of this year's seedlings that are considered to be the finest. First let us take as we think the best of all, viz.:—

CLIMAX.—A name aptly applied, inasmuch as it is the perfection of what an ideal *Amaryllis* should be. It is a long way the finest that has yet been produced in cultivation. The flowers are fully 8½ inches across, each sepal, except the lowermost, being very broad and overlapping those on each side of it. The lower sepal, always the smallest, approaches the others in size more than in any other sort. The colour is a brilliant scarlet, quite dazzling to look at, and it almost obliterates the greenish centre. It is a cross between *Empress of India* and *Leopoldi*.

JASON.—A very finely-shaped large flower, fully 7 inches across; colour brilliant red, flaked and pencilled with pure white. *Princess Ida* is similar, but scarcely so fine.

NAVARINA.—Not a large flower, but perfection as regards form; its brilliant colour, partaking more of scarlet than most others, is very striking.

CHARMER.—A most distinct-looking flower of a colour not before obtained. It is of a claret tint, broadly flaked and feathered with pure white. This is a decided break.

DUNHOLME.—A grand flower, quite 9 inches across. Colour, a vivid scarlet, with medial ribs of white. This is one of the *Empress of India* group, from which the finest sorts have originated.

EURIPIDES.—A large and finely formed flower, one of the finest of this year's seedlings. The flower is fully 7½ inches across; the sepals are white, heavily flaked with deep crimson.

VALIDA.—Remarkable chiefly for its splendid colouring. If improved in form, it would be a great advance. It is very floriferous, the spikes having four flowers on each.

MARK TAPLEY.—A large showy flower, the colour being arranged in a star-like manner; brilliant scarlet and greenish white.

PICOTEE.—Quite a new break; the flower (not large) is white, with a distinct feathery margin of crimson like a heavy red-edged *picotee*; hence the name. Others in this way would be welcome.

NUBIA.—A large flower, not remarkable for fine form, but the colour, a glowing carmine-crimson, is very striking.

RODERIGO.—One of the *Empress of India* group, characterised by large fully formed flowers of a vivid scarlet, striped with white. Sir Redvers Buller, one of the older seedlings, is a similar variety.

LORD OF THE ISLES.—One of the *pardina* section, having a small flower, but of marvellous colour, being entirely of a vivid scarlet with no pale centre; the exteriors of the sepals show the characteristic spotting of *pardina*. This we consider one of the prettiest of all and the forerunner of a distinct race. The older *Chelsoni* is in the same group.

BRILLIANT, a last year's seedling, is in the same way, but not so fine, as *Chelsoni*.

The above are a few of the finest that were in flower during the past week, but every day brings others that have not previously flowered. The most perfect of these are named; the rest are sold as unnamed seedlings.

Among the older kinds which may be seen in flower are *Empress of India*, the beautiful sort which was the forerunner of a group of varieties the finest of all in point of colour; Sir Redvers Buller, James Douglas, Ceres, with very fine tubular flowers of a deep crimson; *Clarinda*, large pale flowers, mottled with red; *Madonna*, light sepals, heavily flaked; *Royal Standard*, a sort similar to the original *Leopoldi*, but of higher colour; Dr. Hogg, a fine large dark flower; Prince Leopold, a smallish flower, but very rich in colour; and, lastly, *Lady of the Lake*, which many would consider the most beautiful in the whole collection, the flowers being very large and of a delicate creamy white, very chaste and refined in form. It is still the finest white, and probably it will not be surpassed; indeed, it seems a difficult matter to make any further advance in improving the finest of this year's seedlings.

DALMENY PARK AND ITS WILD FLOWERS.
A VISIT to Dalmeny, one of the seats of the Earl of Rosebery, is of unusual interest if for nothing else than that by it we utilise one of the few remaining links connecting us with "the good old days" of our forefathers—the stage coach. Here, in the finest street in Europe, one has to enter the "booking-office" proper, pay for inside, outside, or box-seat accommodation, and have one's name and destination duly registered on the way-bill of Howieson's coach, which is also the vehicle used for the conveyance of Her Majesty's mails. On we speed in the teeth of a keen north-west wind along the Great North Road (old Watling Street), stopping at each village post-office to leave the mail-bags, until Cramond Bridge is reached, where the Water of Amond, running into the Forth, divides us from Dalmeny Woods. A local Charon, however, is ready to ferry us across, and he is kept at the expense of Lord Rosebery for the convenience of visitors. For two delightful miles, by the tide-lapped margin of the Firth of Forth,

natural habitat. The gathering of Snowdrops is especially forbidden on an ancient notice-board, yet they are stolen in quantities to supply the city wants. On climbing a hill well clad with trees, we come at part of the way to a dell which is literally white with lovely Snowdrops; they are here by the acre, and it is only by the greatest care one can avoid treading them underfoot. The ruins of two buildings, probably several hundred years old, from which the white sheet of bloom seems to radiate and decrease in density, suggest the supposition that the bulbs have been originally garden stock, and have self-sown their seeds over different parts of the park as the wind listed. The nearest approach to such a pure white sheeting, next to snow itself, is a wood bedecked with Wood Anemone. The pinetum is very suggestive of the one at Kew, but of course much smaller. *Sequoia gigantea*, of which there are numbers of young trees, always presents the aspect peculiar to this variety—an appearance of having the lower half of the

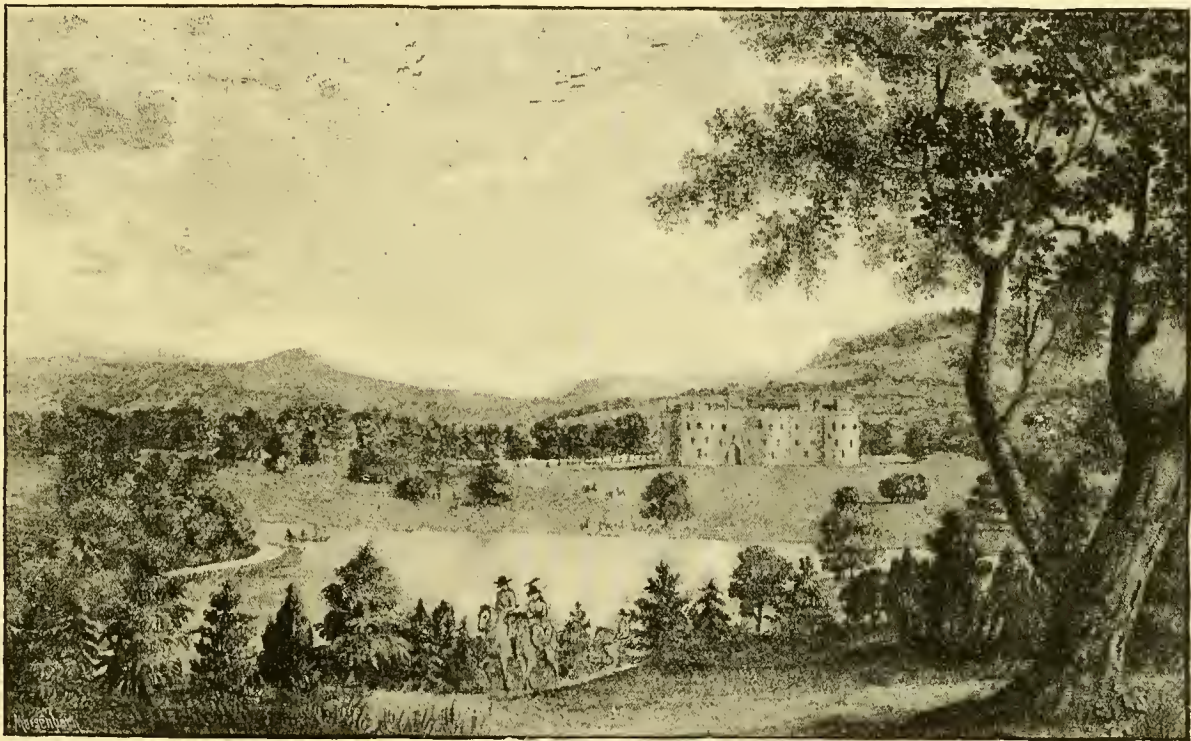
slopes and knolls, which latter occasionally rise to the dignity of a stiff climb, affording glimpses of distant snow-capped mountains far away in Fife, and it is an inestimable boon to the people of Edinburgh to have the liberty granted them of walking over this park and enjoying its beauties almost as much as if they were its owners. It is to be regretted, therefore, that they dig up and carry off its wild flowers.

R. A. H. G.

Horsforth, near Leeds.

CHIRK CASTLE.

HERE is a pretty little reproduction of an old copper plate of one of our famous old gardens. We are indebted for the copy from which this is engraved to Sir Watkin Wynn, whose place is not far distant. The little engraving shows well the pretty landscape that existed around the place at the time. We believe that from eighty to a hundred years ago people had a much clearer idea of what good landscape really means than at present.



CHIRK CASTLE. FROM AN OLD ENGRAVING.

with the picturesque Cramond Island on the right, the path winds along beautiful undulations, round sharp rocky abutments Lichen and Moss-clad; sombre and weird-branched Pines grow on either hand, whilst on the left woods stretch away into the distance. The trunks of Scotch Firs assume all hues, from silvery grey Lichens on the north side, through richest purples and browns, to the brightest emerald greens near the base of the boles. The walks in the grounds are of shingle, with a great proportion of seashell in it, and are soft and noiseless, yet unyielding to the foot; it is almost impossible to imagine a more perfect substance for garden walks. The wild woods, as the crowing of pheasants and the cooing of doves testify, abound with winged game, which find covert amongst Rhododendrons, Laurels, and Hollies, and these grow in great luxuriance. Daffodils under trees are at home and just coming into bud, showing, with Tree Peonies, which have new growths 6 inches long, a fair degree of forwardness. Snowdrops, in clumps under trees and in carpets of Ivy, look just as we ought to grow them in our gardens. But surely this is their

trunk buried and a too rapid tapering for its height. There is here a large herbaceous border, which even at this, the worst, season of the year is attractive; it contains Christmas Roses, white Hepaticas, and a large variety of sweetly-scented Snowflake, with bloom-bells an inch long and across, tipped with gold, which I take to be *L. carpathicum*; Primulas, and a bed of Czar Violet, large bushes of Lavender and twisted Honey-suckle, all add a pleasant perfume. The margin of this border is occupied by large tufts of Saxifraga Wallacei and others of various hues of green; seen in long line they give colour and warmth of tone, and will soon be masses of Hawthorn-scented bloom. Beds of own-root Roses are numerous, and there are large plantations of Carnations, Pinks, alpine Auriculas, and Primulas, and I am informed that the Earl and Countess of Rosebery distinctly prefer the old-fashioned flowers and perennial plants to the now rapidly-decaying craze of gandy bedding out. More picturesque or beautiful walks than those in the woods of Dalmeny can scarcely be imagined. Old and well-grown trees clothe the graceful natural

We visited Chirk Castle in the autumn, and were very much impressed with the fine tree-bordered avenue and general beauty of the situation, though we thought certain changes in the direction of geometrical gardening were not happy. They were made, we understood, in illustration of some ancient plan of the place, but the quiet disposition of the ground, shown in our present cut, is, we think, more beautiful.

The divining-rod.—When I visited Mr. William Ingram, at Belvoir, a year ago, he gave me an interesting account of the employment of the divining-rod in discovering the whereabouts of a spring of water on one of the slopes which he was converting from a rough woodland into a delightful spring garden. He suspected there was water somewhere at the top of the slope, and was desirous of utilising it, so as to have as near a resemblance as possible to an alpine waterfall. He was advised to call into requisition the divining-rod. Though quite sceptical as to its utility, he agreed to do so, and as the man who held it

passed over the spot the rod inclined downwards; the spot was marked, and water discovered a few feet below. Mr. Ingram confessed frankly that after that he thought more of the divining-rod than he had done previously. We had an interesting conversation in regard to the subject, and I wish he could be induced to give, in his own words, in the pages of THE GARDEN the theory he has formed in regard to the action of the rod. Anyone of your readers interested in the divining-rod will find an admirable paper on the subject in the Rev. Baring Gould's "Curious Myths of the Middle Ages." I may state that Mr. Ingram's conclusions favour the idea that the gift of using the divining-rod is confined to certain individuals. —R. DEAN.

PUZZLE-MONKEYS IN CHILI.

MISS MARIANNE NORTH writes as follows concerning these in a recent number of the *Pall Mall Gazette*: "My chief object in Chili was to paint the old forests of *Arancaria imbricata*, known in England as the Puzzle-monkey tree. It was not easy to make out how to reach these forests; some people talked of difficulties and even dangers; but, as usual, I found all impediments vanish as I got nearer the spot, and four hours of easy and delightful riding from Angole, the present end of the railroad, brought me to the comfortable farmhouse of the Irish family who now own the *Arancaria* forests, which could be seen from the windows fringing the tops of the hills some five miles off with delicate, long-stilted umbrellas. The house was very roomy, built as usual in one storey, with a verandah all round, on a bare little knoll rising from green meadows, and surrounded by hills covered with trees resembling Oak and Beech, growing separately and in groups, so that the sun could peep through and sweeten the Grass under them, which gives the best of food to some 2000 cattle which were straying over the property. The house might have been more picturesquely situated, but it was built at a time when the Indians were troublesome, and it was necessary to keep a good look-out, and have no bushes for them to hide in near at hand.

"A BOTANIST'S PARADISE.—It was a lovely ride from Angole and its terrible dust. First, we mounted over rocks and more dust for some 2000 feet, among *Puyas* and succulent and prickly plants (which prepare themselves for the long dry season by hoarding moisture and growing weapons of defence to prevent other thirsty creatures benefiting by it), and then leaving a glorious view of snowy volcanoes behind us, we entered the mixture of forest and pastoral scenery I have just described, passing stream after stream of clear running water and more lovely flowers than I had seen in all Chili before. The *Embothrium*, or Burning Bush, was in full beauty, growing in long sprays of 6 feet or 8 feet high, quite covered with the purest vermilion flowers formed something like Honeysuckle. But I saw none grow into such a tree as I saw in my cousin's garden in Cornwall last year; perhaps it may enjoy a new soil and climate, and treat England as our common weeds do Chili; they have quite driven the natives out on the great plain or valley of Santiago, and show unbroken masses of *Camomiles*, *Thistles*, *Turnips*, and *Cornflowers*, far stronger than those of Europe. Near the streams were masses of huge *Gunnera* leaves (whose stalks are eaten like Rhubarb), lovely Ferns with pink, furry stalks and young leaves, and a most exquisite scarlet flower, something like a *Mimulus*, which dipped its roots in the running water and grew nowhere else. A small Bamboo and many other graceful plants grew over these things, and overhead hung from the branches of the Oaks a most beautiful *Loranthus*, with bright green leaves and pale green buds, changing as they opened to yellow, then turning orange, and becoming deep red before they dropped. The flowers were often half smothered in the grey Lichen, commonly called "Old Man's Beard," which waved in every wind, and grew in masses on all the Oaks. The Beech had its own pet parasite—a tiny Mistletoe forming perfect balls of every shade of green and gold

and over the bushes climbed many species of *Pea*, *Lapageria*, and lovely pink Star flowers, which hooked themselves up by the long tendrils at the ends of their leaves, while some yellow Stars seemed to have no leaves, only tendrils. Tall *Fuchsias* were there, too, and *Buddleia* with its golden balls, sweet as honey. Another bush called the *Pinche* looks like a lilac and white Heath. The Grass was in flower, quite red and lilac, and sprinkled over with exquisite scarlet Lilies, *Alstroemerias* of many tints, *Tropæolums*, and four species of Orchids.

"A FOREST OF PUZZLE-MONKEYS.—Soon after reaching the first *Arancarias* we found ourselves surrounded by them, and all other trees gave way to them, though the ground was still gay with purple Peas and orange Orchids, and many tiny flowers whose names I did not know, and which I had not time then to paint—such flowers when picked die almost directly. Many hills and the valleys between were covered with old trees, occupying some miles of space, and there are few specimens to be found outside this forest. I saw none over 100 feet high or 20 feet in circumference, and, strange to say, they seemed all very old or very young. I saw none of those noble specimens of middle age which we have in some English parks with their lower branches resting on the ground. They did not become flat-topped like those in Brazil, but were slightly domed like those of Queensland, and their shiny leaves glittered in the sunshine, while their trunks and branches were hung with white Lichen, and the latter were weighed down with big cones, as big as one's head. The smaller cones of the male trees were shaking off clouds of golden pollen, and were full of small grubs, which, I suppose, attracted flights of parrots which I saw so busily employed about them. These birds search for a soft place in the great shell of the cone when ripe, into which they get the point of their sharp beak, and fidget it until the whole cracks and the nuts fall to the ground. It is a food they delight in, and men, too, when properly cooked like chestnuts. The most remarkable thing about the trees was their bark, a perfect child's puzzle of knobby slabs of different sizes, with five or six decided sides to each, and all fitted together with the neatness of a honeycomb. I tried in vain to find some system on which it was arranged.

"A TITANIC FLOWER.—The *Puya* or *Chaguale* was the other plant I wanted most to paint. One wretched specimen flowered at Kew last spring, and excited much attention, and I struggled to draw it in all the glare and discomfort of the Cactus house, not venturing to ask that so precious a plant should run the risk of catching cold by being taken to my room there. Here there are three kinds growing in quantities, each in its peculiar locality. The largest has a yellowish green flower, and is seldom far from the seaside. Its proportions are those of a London gas-lamp, the flower-head even longer than the lamp, often over a yard long; it is a noble object when seen standing above its rosettes of Pine-like leaves, among rocks and cliffs, with sky and sea behind it of that deep blue and purple which one only finds among volcanic rocks. The blue variety grows farther inland in the valleys and high up amongst rocky clefts; whole hillsides are often covered with it, and I have seen twenty-five flower-stalks rising from one mass of leaves, which are silvery and most beautifully curved like some of the *Billbergias*, its cousins. I shall never forget the first time I saw them growing when climbing in search of them near the Baths of Apoquindo; the clouds overtook me and hid everything for awhile till I saw those tall flowers like ghosts close to me, then a snow peak far beyond, and then I got into a new world of wonders, with blue sky overhead and a mass of cotton-wool clouds hiding all I had left below, and the strange *Puya* flowers for company and plenty of time to study them. About sixty branchlets are arranged spirally round the central stem, each a foot long and covered with buds wrapped in flesh-coloured bracts. These open in successive circles, beginning at the base; the three flower petals at first opening are of the purest turquoise blue; then they become darker,

a mixture of arsenic green and Prussian blue; the third day a greyer green; and then they curl themselves up into three carmine shavings, and a fresh circle of flowers takes their place outside, so that the longer the plant has been in bloom the larger its head becomes, and as the heads of the spikes or branchlets bloom last, it loses its form and looks ragged and disreputable. Its stamens shine like gold in their polished metallic blue caps, and it is marvellously beautiful at first. The third kind is smaller, and its flowers thin and of a very dark blue, but its bright pink stalk is very effective when seen against the grey stones. Near the *Puya* a tall Cactus generally forms pillars often 6 ft. or 8 ft. high, crowned with white trumpet flowers and buds, and ornamented with a parasite whose white and scarlet berries are eatable. I found that the flowers never faced the same side as the parasite; the former were as large as a German beer glass, and their footstalk was full of sweet juice, most refreshing to suck on the dry hillside."

FLOWER GARDEN.

DAFFODILS BECOMING DOUBLE.

I READ all that is written on this subject, but do not care to discuss probabilities or theoretical difficulties connected therewith. It is to me simply a question of sufficiency and credibility of evidence; and having quite satisfied myself a year ago on that point, I tell the *Narcissus* committee the sources of my evidence, as far as I am permitted to do so, and leave them to give their verdict, or adjourn the matter for further consideration, as they please. I fully approve of their conduct as a British jury in not admitting my *ipse dixit* on the subject, but in going through the evidence themselves; but till they have made up their minds on the case I can be of little further use to them; but when they have, I shall gladly join in further investigation of the cause. One very remarkable feature in the matter is this, I will speak of oils as inert or transforming, meaning those in which *N. pseudo-Narcissus* retains its typical form year after year, or in which after a year or two it becomes double, either retaining its size or becoming much larger. When Daffodils are transplanted from a transforming soil into an inert soil they retain the condition which they had when transplanted, whether single, or semi-double, or double, and the development which may have been in progress is entirely arrested. It is true, degrees of doubleness depend partly upon richness of soil and may vary from year to year, but the general character remains. I have received from two or three gardens typical *pseudo-Narcissus* which have been one year and others which have been two years in transforming soils. These with me vary from the single type to the large double generally called *Telamonius* and retain those forms. Out of at least twenty thousand single Daffodils flowering annually in my grounds, I have never known a double flower come from a bulb which has borne single flowers, and I predict that the same will be found at Kew, Chiswick, Tooting, and in all other places where the soil is inert. My friend Mr. Tyerman, of Penlee, in Cornwall, is so well known as a successful amateur gardener, that I venture to mention his name. He has a beautiful collection of what I may call natural varieties of Trumpet Daffodils in his garden, which reproduce themselves abundantly from seed, and he has kindly given me a most liberal supply, which have flowered here for several years. He cannot believe that the type *N. pseudo-Narcissus* changes by cultivation into double *Telamonius*, because it is contrary to his experience of it. He tells me that, as a rule, he observed that the seed of double *Telamonius* (which is produced freely there) produces double *Telamonius*, semi-double produces semi-double, single produces single, and the same with single and double *pseudo-Narcissus*. These grow all in the same soil there, and each retains its distinctive character, as the soil is inert; but send them to Alton, in Hampshire, or Warkworth, in Northumberland, and in a season or two the singles will all have changed. There are three or four questions

which I am now investigating in which I hope to get help. The first and most interesting is—What gives soil its transforming character? My friend Mr. Engleheart thinks it may be iron in some form, because he knows that in a part of Hampshire Daffodils double along the line of a vein of iron-sand. I should be glad to be told what is the most soluble form in which iron can be administered to plants. A second question is, how many varieties of trumpet Daffodils can be made to double? I know that at least one of the Spanish self-yellows doubles, though I am not sure by what name to call it.

Then, is the double Daffodil produced in the most transforming of the soils identical with the large double Daffodils found wild in Italy? I am not certain of this, though I call it *Telamonius*, on the authority of experts to whom I have sent it. I conclude by saying that though I am ready to give any information in my power on questions of fact, I see no profit in discussing the theory, as being *a priori* very improbable, which I quite admit; but many more wonderful things are now accepted facts in vegetable physiology.

Edge Hall, Malpas.

C. WOLLEY DOD.

P.S.—Mr. Baker seems to feel assured that high cultivation will turn a single Daffodil double. I can assure him that it is not due to this cause only. I have fed single Daffodils almost to death in my soil without ever having produced a double, whilst some of the soils in which they double spontaneously and rapidly without any special cultivation are described as sandy and poor.

PETUNIAS FROM SEED.

THE comparative ease with which seed of *Petunias* may be raised in a cool house or frame either in autumn or early spring should tend to make them more largely grown than they are. When it is constantly declared that seed of these and similar plants must be sown in heat, myriads of flower-loving amateurs are hindered from sowing, and yet, though I have raised large quantities of plants every year, I never employ heat; indeed I have none at my disposal. I have now in a cool unheated house a pan of young plants ready to prick out sown in November. In another pan the young plants are just appearing, and in a third seed has been sown a few days. All these will give plants strong enough to go outdoors in the month of May, for it is hardly safe to plant out earlier, and they will be stout hardy plants well able to endure a little late cold. My own experience is confined to single kinds, especially of the striped and deep self-coloured strains. Perhaps the double and semi-double kinds would need the coaxing a little warmth gives, but except for pot culture—and that too for a somewhat limited season—none of the doubles that come from seed can compare with the singles for endurance in long blooming. In the open ground the soil should be light and rather poor than otherwise. A dry autumn is also favourable to bloom, whilst excessive rainfall promotes excessive growth if the soil be rich. For bedding purposes it is well to select some dwarf wiry strains, and of these none are better or more striking than are the small-flowered striped forms. Of course there may be some monotony in having all striped flowers, but with the best strain that seldom results, as some blooms will for a time be self-coloured or more or less heavily coloured, so that whilst the true striped character is maintained slight variations will be constantly occurring. In planting out seedling *Petunias* for the making of a mass of growth and bloom it is well to have the plants strong enough to admit of pinching at once, so that all over the bed the further growth is all the more dense and compact. I have turned out plants from small pots well rooted, and also with balls of roots from a frame or shallow box, with about the same results. The latter plan is to be preferred, as giving less trouble, though it may not always be convenient. The soil should in planting be made firm about the roots and stems, as the plants are fragile and suffer if much disturbed by brisk winds. It is to be deplored that the *Petunia* is now so little seen decorating our summer

exhibitions. One of the easiest grown of specimen plants, and certainly when in bloom one of the gayest, it is yet almost ignored. That we have now so many beautiful kinds, both double and single, renders this apparent neglect all the more inexplicable. Many gardeners seem to have almost forgotten the existence of this beautiful summer flower. No doubt plants produced by cuttings produce the best pot specimens, if for no other reason than it is thus assured that certain kinds are obtained in variety. Still, seedling plants will also make beautiful pot specimens, being grown on in 3-inch pots first, then shifted into other pots a size larger as necessity demands, until 8-inch or 9-inch pots are filled. If during all the time of growth and shifting the plants have been kept well pinched, well exposed to the air, and freely watered, they should then be at liberty to grow away freely and make noble specimens some 3 feet across and literally masses of bloom; they would also continue to flower in rich profusion for a long time, and well repay for the labour involved in their cultivation.

A. D.

VIOLETS FROM SEED.

SOIL has, I think, much to do with success or otherwise in Violet culture. In one place they succeed, while in another skill is required to bring them to anything like perfection. One thing, however, is certain, viz., that growing Violets in crowded beds, where the crowns get but little light and air, is not likely to favour the production of flowers. Mark how Violets grow naturally, and you will gain a pretty correct knowledge of what they, in one point at least, require. Nature has given them the means of avoiding overcrowding, and of insuring to each plant a position favourable to its welfare. By means of the creeping stem, the young plant which is commencing life on its own account is removed far enough away from its fellows to admit of the enjoyment of a pleteous amount of light, air, and even sunshine, and seedlings continually springing up provide against deterioration of constitutional vigour. This leads one to think that Violets might be very easily grown from seed, and that, where the usual means of cultivating them is not satisfactory, this method of doing so might be worthy of attention. Everyone knows how Primroses and some other hardy flowers may be grown in much perfection on soils not naturally favourable to them when a practice is made of raising them from seed every year or so. Why, then, should we not grow Violets in the same way? For all I know, they may be thus grown, but I never remember to have seen the practice recommended. One objection to it is, that the kinds would not come quite true, but I believe that Violets are less liable to sport than many things; and even if they did, it would not in a general way matter much, and there would always be a chance of getting something new.

A CERTAIN AMOUNT OF SHADE from the hot summer sun would seem to constitute an element of success in Violet culture. At the same time, Violets thrive very well in certain places grown as a field crop and in the full blaze of the sun. This is, however, only where the soil is naturally favourable, being, generally speaking, a loam of a somewhat holding, but otherwise free nature. The greater amount of fresh pure air, too, enjoyed in an open field tempers the heat of the sun and robs it of its debilitating effect. The Violet often pines and dies in small gardens, because the atmosphere becomes overheated and deprived of its life-giving properties. It is, therefore, advisable in such places to select a position screened from the mid-day sun. Having my choice I would prefer a border where the sun came until about twelve or one o'clock, as in July and August, which are the most trying months for Violets, the most drying time of the day is during the early hours of the afternoon. Thus placed, and watered overhead about four o'clock, the plants are, in a great measure, guarded against the exhausting effects of a fierce sun and an arid atmosphere. The north sides of trees or of a building are often recommended as the most suitable position for Violets, and in the

southern counties they are probably very favourable places, as in warm districts and on light soils red spider is so difficult to grapple with in hot summer, when the plants are in the fierce sun throughout the day. In a north aspect, on the contrary, it is seldom troublesome. As a rule, however, I should be inclined to depend upon a deep root run in well stirred and enriched ground, in conjunction with a mulch of rotten manure and copious waterings and frequent sprinklings overhead to keep the insect at bay. If it does attack very vigorous plants, it rarely becomes their master. It is only debilitated specimens that are ruined by its ravages. Certainly in the northern districts of this country I would not preferably make Violet plantations in a north aspect, but rather where sun comes during the greater portion of the day.

THERE ARE TWO WAYS of making Violet plantations. Either the old plants may be divided after flowering or the young runners can be taken when they have become fairly well rooted. Where the plants have not become crowded, and there is sufficient space for the plants to form nice balls of fibres before removal, they will, if carefully transplanted, scarcely miss the moving, and, if well attended to, will grow into large specimens by late autumn. If, however, they are likely to be crowded, it is better to cut them off and dibble them in in fine soil in a shady position, keeping the soil moist until they are well enough rooted to go into their permanent quarters. Old plants should be divided and set out in rows 1 foot apart and 6 inches from plant to plant as soon as the blooming time is over, then they make good-sized specimens full of buds by autumn. When grown in frames they should be placed there early in October, so as to get good root-hold by winter. Violets in pots are very acceptable for the window and greenhouse; only a few flowers will fill a good-sized room with delicious fragrance. J. C. B.

WHICH IS THE BEST WHITE CLEMATIS?

THIS query was addressed to me a few days ago. The Clematis was required for planting in the open ground in a warm position to cover some ornamental ironwork in the form of an archway. There was no difficulty in giving a reply. Clearly it is Clematis Jackmanni alba, a variety with all the good qualities of C. Jackmanni which this new introduction is said to possess, and having also the additional value of being white-flowered, it must stand first on the list of white-flowered Clematises. Next to this I put C. nivea—the pure white form of the woolly leaved C. lanuginosa—not candida, mind. This last is often recommended as a white Clematis, but it is not pure in colour, while nivea is. Candida has a flush—a faintish one, I admit—of delicate bluish grey in it, and it is not pure; but nivea is not only pure, but it is a good grower when in a suitable position and in a good soil. I have a plant of C. Jackmanni on a low west wall, where it had thoroughly established itself and grew and flowered to perfection. It is every summer a perfect sheet of blue. But there was something monotonous after all in the splendid mass of blue, and by way of varying it I planted near it a plant of C. lanuginosa nivea, and one of the carmine-flowered Lathyrus Drummondii. Both these ran up among the Vines of the blue Clematis, which mingled its flowers with theirs. They were both earlier to flower than C. Jackmanni, but the later blossoms could be seen amid the sheet of blue. Passers-by wondered to see the white flowers of nivea among the blue blossoms, and imagined the blue had sported to the white. The Lathyrus is very free indeed of bloom, and year after year as the plant becomes thoroughly established, it increases the area both of its growth and flowers. I say, get the pure white form of lanuginosa; do not take candida for it; plant it in a fitting position, and treat it well, and it will be found to give great satisfaction. The amount of pruning given to it must depend upon the space it is required to cover. It should be borne in mind that it flowers in early summer from the young growths of the same year.

R. D.

HIBISCUS PALUSTRIS HARDY.

I WAS pleased and surprised at your recent account of this fine *Hibiscus*. Pleased to see your pretty plate of the flowers, and surprised to learn from the accompanying account of it that it is scarcely known, and that it will only flower by being kept in the greenhouse and removed to the stove in spring. I say your pretty plate, for although you call it *H. grandiflorus*, it is undoubtedly a poor variety of *H. palustris*, for in my grounds the flowers are fully 6 inches in diameter and quite 4 inches in length—a rosy goblet, indeed—a blossom much larger than that of the largest Hollyhock, but more cup-shaped. I consider it the handsomest of all the *Hibiscuses*, either native or exotic. You only need to catch a glimpse of the plant growing wild, always near some little rivulet emptying itself in a stream near the seacoast to realise its beauty. Though I cultivated the plant nearly fifty years ago, it was not until a very recent period that I found it in its native habitat, and surprised and delighted I was. It was very early one morning in August that when I looked from one of the windows of my house (at the seaside) across the lawn I observed what appeared to be a gigantic one, for I knew of no other plant in such a spot. I have passed by the same place two or three times every day, but never say anything of a flower there. I lost not many minutes in reaching the spot where the plant was growing, and lo! here was my old acquaintance of nearly half a century in this out-of-the-way spot, with scarcely a house within a mile—the placid waters of the bay one side and thickets of *Vacciniums* on the other, wasting its magnificent blossoms and its beauty on the desert air. I could not tip my beaver, because in my haste I had left it in the house, but I must say I stood looking at it with a feeling of supreme admiration and almost reverence. Daily and weekly from that time up to the end of September, it continued to open its grand flowers. No one was allowed to gather them. A daily joy they were indeed; and when I left my summer house, it was almost with pain that I cut off the stems close to the ground, covered at the top with unopened buds and seed-pods still unripe. These were hung up in an airy room at home, and fully matured every seed. These, in the approaching spring, I planted, and from the succeeding year I have had a display of flowers unequalled by any other plant in my grounds.

As it will stand without the least protection 13° below zero, which we had the other day, it will certainly grow outdoors in the climate of Great Britain. But if it will not bloom there, indeed you must have a colder summer than I thought possible. To say that it grows as freely as a weed and blooms in the greatest profusion is only what is true, and I cannot but think if plants are grown in any sunny position they will flower in your climate. That they should have failed at Kew seems marvellous; still, the remark, that “their flowering out-of-doors seems scarcely known,” would at once discourage any attempt to cultivate them. A plant so showy and ornamental should not be neglected; and as one means of bringing it into bloom I would suggest that the second year a frame 2 feet high should be put over the plants, keeping on the sashes to warm up the ground and afford the warmth which they enjoy in the months of July and August. I read of much greater care being bestowed on plants worthless compared with *Hibiscus palustris*. Every flower produces a pod of seeds, and as these do not fall out readily I gather a quantity every year. If they are to be cultivated in pots, which I doubt not is an easy plan, the plants should be kept out in a frame as cool as possible throughout the winter up to May 1. Then if put into a large pot or tub and grown on in the greenhouse, they would be in flower in August and may then be set out on the lawn where they would continue to bloom. It is evident they cannot be forced with any satisfactory results. When in flower they like plenty of water, or I might say they appear to do so, though I never applied a drop to my long row of over forty plants, each producing eight or ten stems termi-

nated by ten or twelve flowers on each. The plants must not be coddled, like many of our American plants; freezing the roots appears to be the only thing required for a successful bloom. *Lobelia cardinalis*, growing wild within a few rods of *Hibiscus palustris*, flowers so beautifully, that old Justice might well say it “Excels all other flowers I ever knew.” As regards the *Hibiscus*, if I recollect rightly, Gray does not mention it in his “Flora of the Northern States.” He gives us *H.*

nected with the petioles, geniculated towards the top; outer segments of the calyx about twelve, downy, linear; inner segments five, half ovate; petals very large; found in Newton on the banks of Charles River; perennial. An amateur botanist well acquainted with all the plants growing wild around Boston thus describes the *H. palustris* in the *Magazine of Horticulture*, vol. i., p. 377, 1835: “*Hibiscus palustris*, a superb plant 4 feet or 5 feet high, what at first sight might be mistaken for a



Full sized flower (English grown) of *Ranunculus Lyalli*; colour white, yellow centre.

moscheutos, and he considers *palustris* only a variety. Bigelow, our best authority on New England plants, describes it as follows: *Hibiscus palustris* (L.), Marsh *Hibiscus*, stem herbaceous, simple; leaves ovate, somewhat three-lobed, downy underneath; flowers axillary, wild; a tall handsome plant, stem erect, 4 feet or 5 feet high, somewhat downy; leaves ovate or three-lobed, green above, whitish and soft with down underneath, obtusely serrate acuminate; flowers nearly as large as the Hollyhock, showy, pale purple; the peduncles are long, axillary, and sometimes con-

necting with the petioles, geniculated towards the top; outer segments of the calyx about twelve, downy, linear; inner segments five, half ovate; petals very large; found in Newton on the banks of Charles River; perennial. An amateur botanist well acquainted with all the plants growing wild around Boston thus describes the *H. palustris* in the *Magazine of Horticulture*, vol. i., p. 377, 1835: “*Hibiscus palustris*, a superb plant 4 feet or 5 feet high, what at first sight might be mistaken for a

Boston.

C. M. HOVEY.

Transplanting Primroses.—My experience with these differs from that of Mr. Groom. In our strong, cold soil they will not bear annual transplanting. I tried it for several years and each

year they got less and less. The best way, I find, is to allow them to remain in the same position for several years and to mulch them with leaf soil in the autumn. On light, sandy soils annual planting may answer, but on strong soils it will not do. The plants do not make roots in sufficient quantity to enable them to succeed.—E. MOLYNEUX.

THE ROCKWOOD LILY OF NEW ZEALAND.
(*RANUNCULUS LYALLI*.)

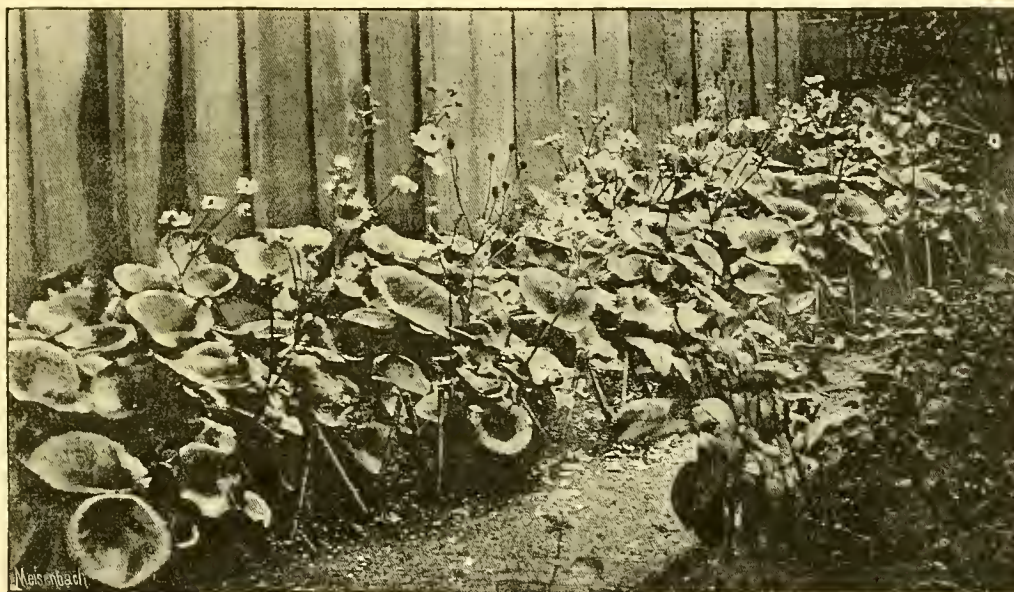
WE herewith reproduce the photograph of this beautiful New Zealand plant, to which "B." alluded last week (p. 212). The luxuriant growth of the plant as shown by the photograph is very different from the weakly plants which we have as yet been able to produce in this country. Time after time have seeds of it been introduced and seedlings raised, but for years it has baffled the attempts of our most skilful plant growers to cultivate it successfully. True, it has been flowered here, Messrs. Veitch being the first to flower it some five years ago, but these flowers, a sketch of

how anxious we are to learn how to cultivate so beautiful a plant, which, Sir J. Hooker justly remarks, is the noblest of the genus. So like a Water Lily is it, that the shepherds of New Zealand aptly call it the Water Lily. It looks uncommonly like a *Nelumbium*, with its big, shield-like leaves and large flowers. According to the "New Zealand Flora," there is only one other *Ranunculus* with peltate leaves. This is *R. Traversi*, also a very handsome plant, differing in one respect from *R. Lyalli* in having cream-coloured flowers.

Hyacinths in borders.—In answer to "A. D." (p. 194) I may say that we annually plant our Hyacinths in herbaceous borders after they have bloomed the first year in pots. They are placed in sandy soil, such as refuse from the potting shed or anything containing plenty of sand, because our soil is of a stiff retentive character. We plant the bulbs from 3 inches to 4 inches deep. The following season they produce good spikes of bloom, and annually afterwards they

they will grow 5 feet or 6 feet high, and bloom sparingly. A rather light, shallow soil suits them best, and in such soils they are dwarf and floriferous. The different varieties, however, present great differences in this respect, some sorts being far freer flowerers than others. These, when they are otherwise good, should be selected and propagated by cuttings, as they are worth keeping for massing, and, besides, cuttings grow to wood least and flower best.—S. W.

Helleborus abchasicus (p. 225).—Mr. Brockbank does not appear to have referred to his books, or he would have written with more care, and Mr. Archer-Hind, whom he quotes, I fear is open to the same charge, or I am sure both would have classed *H. abchasicus* amongst the missing Hellebores. *H. atrorubens* of the *Botanical Magazine* is a plant very generally cultivated, but *H. abchasicus* is quite different, and I advise Messrs. Brockbank and Archer-Hind to compare *H. abchasicus*, figured by Regel in "Gartenflora," with *H. atrorubens* figured in *Botanical Magazine*, and they will, I doubt not, find themselves wrong



The Rockwood Lily (*Ranunculus Lyalli*) in a New Zealand garden.

which is herewith given, were very inferior in point of size to what we are told the plant produces in its native locality. There the leaves measure 15 inches across and the flowers 4 inches across, and are as white as snow save a central tuft of golden stamens. The photograph is indeed a revelation, as our correspondent aptly observes, and we hope that it will tend to stimulate those who possess plants of it to do their best to grow it to perfection. Perhaps, as "B." remarks, we have all along been on the wrong track as regards its treatment, growing it, in fact, as we would a semi-aquatic; whereas the position indicated in the photograph would seem a dryish one. No doubt the late Mr. Anderson-Henry and others who have grown it most successfully paid attention to the accounts given of its native habitats by botanists. For instance, Sir Joseph Hooker, in his "Flora of New Zealand," distinctly states that it inhabits moist places at Milford Sound, in the Southern Alps, at elevations at from 2000 feet to 3000 feet. If this is the case, one might suppose that the plant needed wettest treatment. However, no doubt our New Zealand correspondent who kindly sent us the photograph will be able to enlighten us on these points when he sees

bloom equally well, and make an effective show in the borders in spring. Some of them have now been in the same position five years, and are quite as good, perhaps a little better, than when first planted, since which they have not been disturbed. I do not think that anything is gained by lifting the bulbs annually. We use all our forced bulbs, such as Tulips, Narcissi, Jonquils, Crocuses, &c., in the same way, and they all produce blooms which are useful.—E. MOLYNEUX.

Single Dahlias from seed.—This is the best way to get up a stock of these. We have been propagating both by seed and cuttings, but have had the best results from seed. Last spring we had seed of all the best colours and varieties from the best sources, and although the sorts did not come true—White Queen producing only one white, for example—they were mostly all good, and some were exceptionally fine. Seed should be sown now in a warm house. One pot or pan will hold many seeds, which should not be deeply covered. They soon germinate, and should be early potted off into 3-inch or 4-inch pots, which will hold them till planting-out time, when the plants should be a foot high. Single Dahlias should not have a deep rich soil. If they have,

both as to red and white *H. abchasicus*; and as missing Hellebores are now being considered, will the growers just named settle what *H. atrorubens* of Waldstein and Kitaibel's is, as Mr. Baker rejects what is figured in the *Botanical Magazine* under this name, and he further rejects the *H. atrorubens* figured in Paxton's "Flower Garden?"—ARGUS.

SHORT NOTES.—FLOWER.

Narcissus princeps.—I am now satisfied that the home of this fine showy Daffodil is Italy. On a former occasion I mentioned that I had good reasons for assuming this to be the case from roots specially collected in Italy for me, but to make doubly sure I again had some collected when in flower in the spring of 1884. Two of these are now in bloom; one is *Humbert II.*, according to Regel's plate, the other *princeps*.—P. BARR.

Hepaticas.—The single blue-flowered Hepatica is such an agreeable change in colour from that of the majority of hardy spring flowers, that one cannot help wondering why so few are to be seen in gardens. The single red is equally attractive, and so is the single white; but the last-named is still much scarcer than either of the others. To grow Hepaticas properly, they should have a position to themselves, and then few things are more beautiful in early spring.—J. C. C.

Crimson bizarre Carnation Black Diamond.—How long some varieties of florists' flowers remain in cultivation is well exemplified by this well-known crimson bizarre Carnation, which was raised as far back as 1817 by Mr. John Haines, of Hortley Heath, Tipton, from seeds collected the same year from a Carnation known as Ely's William Caxton, of the colouring of which flower it largely partakes. A small bloom was first exhibited, but not for competition, at a Carnation and Picotee show, held at Birmingham in 1848, when it was highly commended by the judges, but, unfortunately, the following year the stock was nearly all lost, or it would have been sent out in 1850. It was exhibited for the first time in 1851 and then sent out. In a select list of the best crimson bizarre Carnations, given by the late Mr. John Edwards in *The Florist* for January, 1851, appeared the names of Black Diamond (Haines), Jenny Lind (Puxley), and Lord Milton (Ely), and they are to be found in the catalogue published by Mr. Turner, of Slough, last autumn. It proves that there are still good things among old as well as among new varieties.—R. D.

Spring Squills.—*Scilla bifolia*, the two-leaved Squill, and the first to appear in spring, is a real gem in its way, and not sufficiently often met with. It associates well with *Galanthus Elwesii*, the little clouds of blue setting off the Snowdrop to good advantage. Not less beautiful, though probably less plentiful, is *Scilla purpureo-cœrulea*, the segments of which are purplish at the base, and gradually verge into blue, which becomes more intense towards the tips. The variety *carnea* is also a welcome visitor, the rosy segments of which rising from a deep red ovary are very handsome. *S. taurica*, one of the best, is now in full flower; with the exception of the white base, it vies in richness of colour with the *Chionodoxa*. The white form of *taurica*, and also that of *S. bifolia*, are both well worth growing, though later than the types. Another variety yet unnamed seems to come between *bifolia* and *taurica*. It has the floriferousness of the former coupled with the large flowers of the latter, but less intense in colour. *S. sibirica* with its peculiar and unique porcelain-blue flowers, is also now peeping from amongst the lank Grass. It seems to be a general favourite, a distinction which it well deserves.—K.

Hepaticas (red, white, and blue) are not nearly so much grown as they ought to be, seeing that they are amongst the brightest and most floriferous of hardy plants. They may be readily increased by dividing the crowns at this time of year, replanting in good soil in rows 1 foot apart, but, except for increasing the stock, it is not advisable to disturb them, as they make the best display in good sized clumps. In some parts of the country they are plentiful in cottage gardens. Like many other plants, they do not appear to advantage in bare wind-swept borders. They look most cosy and happy under the friendly shelter of a hedge or overhanging shrub, and in old-fashioned gardens, such as we find in some districts where Lilacs and Ribes bushes grow without pruning in company with Moss and Cabbage Roses, we find these old-fashioned flowers spreading out into large clumps of perhaps twenty years' standing, and making such a display in the way of bloom as is never seen in gardens where constant lifting is practised. As regards varieties, the single pink, white, and blue, and the double red or pink and blue are generally plentiful, but the double white is a rarity. In this locality these bright-looking flowers are in full bloom from the middle till the end of February, and throughout March they make one of the brightest bits of colouring in open-air gardens.—J. GROOM, *Gosport*.

Forced Dutch bulbs.—The question is often asked, what becomes of the enormous importations of Dutch bulbs that are distributed every autumn? That they are capable of a prolonged existence, there cannot be the slightest doubt. Hyacinths, Tulips, Crocuses, Narcissus, and the majority of bulbs that come from Holland are natives of temperate climes, and if sown in open-air beds would not only last f

many years, but many would increase rapidly. It is the treatment which they get under pot culture that destroys the majority of them; they are potted in good soil and treated well until in bloom at this time of the year, but as soon as their beauty is over they are set out of doors in any out-of-the-way place, and exposed to withering winds, the result being that the foliage, green and luxuriant, is suddenly arrested in its growth, and the bulbs, that can only be perfected by means of the foliage, receive a shock from which they do not recover for a year or two, even if well treated afterwards. Not even the hardest of our native plants could endure such treatment. Therefore, if bulbs are valued, protect their foliage under glass until the middle of April, and then plant them out in some open sunny position to finish and mature their growth. They may then be lifted and stored in boxes, and if replanted in beds or borders as soon as the summer bedding is cleared off a good display of bloom the following spring will be the result; or, better still, plant out where they can remain all the year round, and they will become strong established clumps, making a fine display every year.—JAMES GROOM, *Gosport*.

MEAT AND EGGS V. FEATHERS.

BY SIR HENRY THOMPSON.

[WE have had so much discussion in THE GARDEN as to the effect of certain arbitrary rules concerning the forms of flowers, that the following article condemning another set of rules may not be without interest even from our point of view.—ED.]

I have been frequently asked why, having very carefully and successfully bred "high-class" poultry on a somewhat large scale for four or five years, I have lately relinquished the pursuit. As it is difficult to answer the question in a very few words, and as I think the answer I am compelled to give is one that concerns other people—many others—far more than it does myself, I venture to ask a little space to make that answer.

No one will pretend to say that I desisted from any failure to breed a strain of birds which might be successful at the first-class shows. The highest prizes at the Crystal Palace, the Dairy, Birmingham, and many other shows were taken by birds hatched in my own yard, and from parents bred there. At all events it was not disappointment with the prize-achievements of the breeding pens of dark and light Brahmas at Hurst Side which occasioned my secession from the fancy. When I began to keep poultry, and constructed a new yard on the most approved principles for the purpose, my primary object was to rear the best poultry which could be produced. At the outset, having no previous experience or even knowledge of the poultry world, I naturally concluded that the most perfect birds were either those best adapted for the table and the most welcome when served there, or those which produced the largest number of the finest and richest eggs for the same purpose. These two separate results seemed to me to sum up the reasons for the existence of poultry. For what other purpose were poultry wanted if not for these?

Certainly in France, the poultry of which I well knew, at least on the table, their *raison d'être*, as Frenchmen would say, could be only so explained. But I very soon learned that in England, practical England, such were by no means the chief objects of poultry culture. And I further discovered that, spending infinitely more money on the rearing of poultry, and giving in prize money for the "best" (?) varieties, fifty times more than in France is so expended, we produce races inferior to those of France, cannot supply the moderate wants of our population, and pay enormous sums every year for the poultry and eggs of that country.

When I entered on the breeding and culture of the finest strains of Brahmas, I did so in the firm belief that I was really occupied in developing the growth and production of valuable food, and at least aiding in some humble degree to promote the progress of a great national industry. This admission will probably create among the initiated a

laugh at my extreme simplicity. Be it so; that laugh only strengthens my position. I soon learned, to my surprise, that the poultry fancy of the day, with very little exception, is an unreasoning competition in a keenly-contested race for the production, not of meat or of eggs, but of feathers. And thus I find it at length an uninteresting and profitless task to attempt compliance with artificial standards, liable, like the fashions of dress, to arbitrary change. Standards which stipulate that the birds shall manifest certain characters which are as unnatural, irrational, and absurd as the manufacture of the little foot for the Chinese woman, or the flat head by the Choctaw Indians. Judged by any canon of taste they are not more artistic, while they are far more detrimental, than is the tattooing of a South Sea savage.

Could the production of the required marks in the feathers, such as a demand that the plumage should pervade the entire leg and foot, and even extend to the tip of the second toe (!), as in a Brahma (which may be taken as the type of "standard" stipulations in other varieties), be accomplished without prejudice to the primary and sterling qualities of the fowl, I should have less reason to object to the system. But all these high qualities are sacrificed, and necessarily so, by competing to produce the plumage. The simultaneous association in one bird of certain marks and shades of feathering, and certain arbitrary distributions of the same, together with a peculiar type of comb, to say nothing of minor characters, can only be attained by carefully selecting for breeding purposes the strain or the individuals which notably manifest these external signs, and by sacrificing all other considerations. Are the chosen sires and mothers good layers? Are they prolific? Are they small in bone and big with meat? Such important qualities have no place in the choice of the birds from which the prize animal must be bred. And thus it happens, as I have too often had occasion to remark, when I have produced, with endless care and some good fortune, a splendid cock with abounding leg and foot feather in the highest perfection, that the animal is therefore so unwieldy, that his daily exercise, such as it is, is taken with painful difficulty.

Illustrations innumerable of the mischievous tendency of the prize-feather system might be furnished, as every fancier knows. I do not deny that weight and reasonable form of bodily development are demanded in connection with the plumage, but I contend that the conditions respecting the latter are so imperative, that the best qualities of poultry, for all practical purposes of the table, are sacrificed to the form, colour, and situation of the feathers, to the form and colour of combs, and to other slight external signs of no practical value whatever. Such is the result of our folly and short-sightedness in permitting the feather standards to dominate our poultry breeding, and hence our inferiority to France in the quality and abundance of poultry products.

Thus the meritorious fame of the prize strain or the prize bird spreads from the local centre when the winner returns from the popular show, and, unthinkingly dazzled by its prestige, the neighbouring farmer, or even the well-to-do cottager, will give a few extra shillings for a cockerel next year from the celebrated source. It does not occur to either to reflect that the bird, whose feathers obtained him that honourable position, may probably deteriorate even his flock of farmyard mongrels by introducing blood which is non-prolific, infertile, may be, associated with defective liver, not infrequently produced by the habits of birds bred for the prize show, and sometimes transmitted to their offspring. . . . I believe, until the whole system of breeding for prize birds from the present artificial standards is swept away, and all the energy of poultry breeders is directed towards the production of poultry good for meat and eggs, we shall be dependent on foreign growers for the supply of our tables. And I will not hesitate to affirm that these might be far more than amply furnished by ourselves, were it not for the grave faults in our mode of breeding which I have thus briefly endeavoured to indicate.

FRUIT GARDEN.

NOTES ON MELON CULTURE.

THERE are various methods of Melon culture in vogue, more especially since it has become the fashion to devote a house or houses to their production. Where they are grown principally in frames, certain rules have of necessity to be followed, but in houses the case is very different. Much of this variance in practice may be due to the construction of the houses. As a rule, I believe that the majority of Melon growers have a fixed routine from which they do not deviate any more than they can avoid, let the conveniences be what they may. Consistency is a desirable quality, I admit, but if we wish to keep pace with the times, we must occasionally change our old practices in favour of those which are more modern, and which have been proved to be the most successful. Some prefer to cultivate Melons in pots, not only the earliest, but also throughout the season. Others there are who plant in mounds of soil placed on a slate staging or iron gratings not far from the hot-water pipes, some of the latter, perhaps, being enclosed to afford bottom-heat, while many more, probably the majority of cultivators, make a good hotbed with fermenting material and on this place a continuous ridge of soil in which to start the plants. If all plans were alike successful, there would be no necessity nor room for criticism, but, as it happens, the reverse is the case, and really good fruits are by no means plentiful. Let those who doubt the truth of this assertion taste all the fruits in a well filled Melon class at any exhibition, and after that probably they will change their opinion. According to my experience, it is often a question with the judges which is the least bad, and very rarely, indeed, are there many really good fruits other than those to which the prizes are awarded. Several reasons for Melon failures may be given, foremost among which should be placed premature ripening; this may be brought about either by the drying process or by the actual collapse of the plant. The fruits may be well coloured and otherwise tempting enough, but unless they are cut from a healthy plant they are certain to be unfit to eat. If we treat Melons much as we should some species of Orchids, that is to say, almost stew them at one time and bake them at another, we ought to expect failure. Treat Melons as Cucumbers are generally treated, and not only will they yield a succession of crops, but the fruits will be certain to be good. One set of plants may be easily made to perfect three crops of fruit, or I might say a continuous crop, and the last fruits to ripen may be as fine, both as regards size and quality, as the first. Two, or may be three or four Cucumber plants are by many good cultivators considered ample for an average-sized house, and a similar number of Melons is also quite enough. Instead of this we often see them planted 2 feet and even less distances apart, and confusion is not unfrequently the consequence. If the cultivator is fortunate enough to set the first four fertile flowers, or at any rate a fair crop on the laterals thrown out by the main stem, the result may be satisfactory enough, but should he miss the chance it is very doubtful if another good one will offer. In the case of the plants allowed to extend freely and naturally, these will be constantly developing healthy, fertile, and easily-set blossoms. Melons grown like Cucumbers, and in a house with them if need be, will be continually gaining strength, and, almost incredible as it may appear to some, will set fruit naturally and at different times. Instead, therefore, of a glut we may secure a succession from the same plant, and this is one strong recommendation in favour of the practice which I recommend. True, these liberally treated plants are apt to produce rather large fruit, which for market purposes especially are not desirable, but this difficulty may be obviated, and need not deter anyone from adopting the plan.

BOTTOM - HEAT.—Many cultivators lay much stress upon the necessity for bottom-heat, this being afforded either by fermenting material or

enclosed hot-water pipes, or the two combined. I shall try to prove that not only are these not absolutely necessary, but they are also not infrequently a source of danger and a cause of failure. At the outset a bed of heating material composed say of stable manure and leaves will give the plants an excellent start, and they will be apparently altogether superior to those started without such bottom-heat. All the while the heat lasts and the material is still in good condition the progress is satisfactory, but when the mass of material is decayed and gets sodden with moisture the temperature is materially lowered, and other evils follow. When the plants stand in most need of assistance, viz., when heavy crops are being matured, they get much less than at the earlier stages. A collapse is frequently the consequence, and the plants are either necessarily "dried off," or the fruits are cut and placed on hot shelves to colour or ripen where the bottom-heat is principally afforded by enclosed pipes; these, with the assistance, perhaps, of a small bed of heating material, answer very well for a time, but later on the material, in contact with the gratings or slates, as the case may be, becomes very dry and non-conducting—the bottom-heat thus being wasted. This is by no means an imaginary case, as I have several times opened the chambers formed over hot-water pipes in order, if possible, to discover why we obtained insufficient bottom-heat, and they have proved unbearably hot. Then, again, unless the valves are so regulated as to admit of all the heat being turned on to the bottom-heat, the chances are that during warm weather they are not heated at all. In this case the difference between the top and bottom heat may be much too divergent for the well-being of the plant. A healthy root action should be maintained as long as possible, and the bottom-heat should be equal to the top heat. Without at present going into details, I may state that our Melons are planted in raised square mounds of soil enclosed by loose bricks. The bottom-heat is not enclosed or concentrated in any way on the mounds, but these being well exposed share more or less in the fluctuations of the top-heat. This plan entails more labour in the shape of very frequent waterings, varied with liquid manure, and the progress at the outset is rather slow, but in the end the stems become strong and woody and it rarely happens that they fail.

SOIL AND VARIETIES.—It may be a difficult matter for some to completely change their practice, even if they are disposed to do so, but there is nothing to prevent a modification, especially with regard to the disposition of the soil. Many seem to think that the poorest and heaviest loam procurable is the correct compost for Melons, this being placed in a rounded ridge on the top of the hotbed and heavily beaten down after the plants are in position. In this case the loam has but little to do with an ultimate success, but may be partly blamed for a failure. It cannot be kept properly moistened, and the consequence is the roots quickly leave it and find their way down into the too rich manure underneath. Given a square ridge of fairly stiff turfy loam, made tolerably firm (this will render watering an easy matter), and occasional slight top-dressings with good soil to which has been added a sprinkling of Beeson's or Clay's manure, and no difficulty will be experienced in maintaining a healthy surface root-action. The best varieties to cultivate ought in every case to depend upon circumstances—whether green-fleshed or scarlet-fleshed, large, medium, or small, ought to be settled in accordance with what may be required. Some think the exigencies of the case are met by growing as many varieties as there are plants, but this, although an interesting experiment, is far from being politic. At the present time I have seeds upwards of twenty varieties in a seed drawer, but of these only three varieties will be grown, and one of these only by way of experiment. Those that we rely upon, viz., Blenheim Orange and Hero of Lockinge, are in every way suitable for the place, being of good constitution, heavy cropping, and the fruits, which keep fairly well, are generally of

first-class quality. More than this we hardly wish for. W. I. M.

OUR BEST NATIVE FRUIT.

It is curious to notice how much cost and trouble govern people's estimate of our fruits. We think the Gooseberry the best flavoured fruit grown in England, either indoors or out; but most people laugh on hearing such an opinion. And yet, when we go into the very largest and best managed gardens in England, the owners of which have all hothouse fruit of the finest kinds grown in the best way, we find in these gardens that more attention is paid to the Gooseberry than in any others. Those who have the best means of making the fairest comparison among all our fruits, or a good many of them, think as we do of the Gooseberry. The very name and hardness of this fruit make it almost ridiculous to many amateurs, who do not minding spending a deal of time and trouble about Grapes. But my lord, who has the best of Grapes and Pines and Peaches, pleads for his Gooseberry quarter; and he is right. Moreover, we prefer his Gooseberries to his Grapes in nine cases out of ten, because Grapes grown in our gardens are not always of delicate flavour, and the gardeners for many years have sought the "rich" and "luscious," so energetically, that they have not had not much thought for finer qualities still. The flavour, indeed, of certain kinds of Gooseberries is, we think, only equalled by the Peach in its best state. How delightful to go into a Scotch garden on a warm autumn day and find bushes deep with strings of red berries of kinds that weeks before have passed away in the southern counties. Nothing grown in the garden is so refreshing as this fruit. The culture is so simple, that none of the questions arise in its case which are continually confronting the gardener in relation to other and, we think, less valuable fruits. The crops come regularly, the bush being a native of our own country, and any malady is practically unknown. North, south, east, and west, and on most soils it may be grown, rejoicing, perhaps most in the cool north, but also excellent on the Kentish hills, and only failing, oddly enough, in America and Australia. The Apple has taken kindly to American soil, and so it has to Australia; but the Gooseberry, which is so wonderfully vigorous and healthy with us everywhere, will not become a naturalised American; and Charles Moore, curator of the Sydney Botanic Gardens, has told us that in Australia it grows most vigorously, but under ground! In America the mildew is said to destroy the English Gooseberry, which is a great loss.

One of the best qualities of the Gooseberry is the long season in which it may be enjoyed. By growing the early kinds on a warm plot or border, and having some of the best late ones on north walls and north borders, carefully netted over when ripe, a good supply of this most pleasant fruit may be obtained for at least three months in the year. We have no doubt that with care, and where a skilful effort is made, their season might be increased by a month. Most people who like the Gooseberry will need no assurance of its wholesomeness. Like Asparagus, it has never been known to be guilty of creating indigestion. There are some people who cannot eat many of the rich ordinary Grape, and a great many more cannot face Melons, but it is not so easy to find anybody who could not enjoy good ripe Gooseberries. A famous London doctor told us that he never knew them to injure anyone—not even a child or invalid—when eaten in excess. This can be said of very few other things.

The best eating kinds are not the largest, and good sorts are the Early Sulphur, Langley Green, Red Warrington, and Red Champagne. It is one of those sorts that do well behind a north wall, where the fruit will hang till November; and as it ripens in the open quarter in August, it has a long season. From a number of communications made to us by growers of fruit in various parts of the country, we pick the following as excellent kinds for flavour: Pitmaston Green Gage, Green Overall, White Hedgehog, White Champagne,

Yellow Ball, Pitmaston Orange, Early Green Hairy, Green Walnut, Green Gascoigne, Red Crown Bob, Scotch Red, Glenton Green, Pilot, Moli-Row (said by some to be superior to the Warrington), Lancashire Lad, Cox's Late Red, Rifleman, Velvet White, Cheshire Lass, Yellow Sulphur, Soutar Johnny (late), Lord Derby, Jolly Angler, and Keepsake.

It is so easy to have the early and middle season kinds, that there is more need to speak of late Gooseberries. These should be either trained on walls facing north or be planted close to the north walls when they cannot be trained to them. Here the fruit will keep a long while on the trees, especially if matted up when nearly ripe. Gooseberries require good culture and free pruning, if good fruit is expected, but it is a bad plan to cut the shoots back much. We often leave one-year-old shoots of the Warrington nearly 2 feet long, and on such shoots we have counted nigh upon a hundred fine fruit in a good season. The common fault of Gooseberry pruning is allowing the buds at the base of the bush and on the stem to grow. These buds soon produce a thicket of strong shoots that choke up the centre of the bush. These shoots the pruner often wrongly cuts back to the base, instead of wrenching them out altogether. It matters little what shape a bush is trained in so long as it is kept "open" and free from suckers and snags, or rough spurs, that produce useless spray. All shoots removed should be cut clean off at the base, and most dependence should be placed on the young shoots for fruit. The caterpillar—that scourge of the Gooseberry—can only be dealt with in time, and hellebore powder, put in water and applied by a syringe or a good garden engine, is the best remedy; only hellebore is objectionable on account of its poisonous nature. Mulching the ground thickly with manure or short litter is useful, as it appears to keep the caterpillars from getting up out of the soil, where they hibernate, to the bushes. We have heard of mulchings of tan having the same effect, but any other mulching will do as well, provided it is thick enough, is tucked in close to the stem, and extends outward more than 2 feet. When the ground is wholly devoted to the bushes, the right way is to mulch the whole surface (*i.e.*, cover) with any light manure, tan, or other mulch that may be at hand; the mowings of the lawn will be better than nothing.—*Field*.

THE APPLE CONGRESS.

MOST people will, I think, feel some surprise at the result of the vote given by the collective body of exhibitors who sent fruit to the Apple show in 1883, in so far as relates to the varieties placed at the head of the poll in both dessert and cooking classes; in the former division King of the Pippins received 98 votes, Cox's Orange Pippin 89, Ribston Pippin 78, Kerry Pippin 56, Blenheim Orange 52; amongst culinary varieties Lord Suffield had 101 votes, Dumelow's Seedling 93, Keswick Codlin 84, Warner's King 70, and Blenheim Orange 65, whilst New Hawthornden, Cellini, Alfriston, and others followed. I have not seen the official report of the proceedings, consequently may be at fault as to what the vote taken was intended to mean. If, for instance, in the poll taken for dessert sorts the electors gave their votes from the market-grower's point of view, that is for the sorts that they consider will give the best return in money, it seems less strange that King of the Pippins was placed at the head of the list, although its merits for eating do not by any means entitle it to that position, for in no way except in appearance is it equal to several that will occur to anyone acquainted with Apples. On what grounds it was put before Cox's Orange Pippin will puzzle most Apple growers, or the old favourite Ribston Pippin, or Margil, and some others.

Turning to cooking varieties, no one will dispute the merits of Lord Suffield as an early sort—the earliest, in fact, on account of its being big enough to gather before its parent, Keswick Codlin, but in no other way is it better than that good old

variety. No short-season kind is equal from the point of general usefulness to several of the long-season late-keepers, such as Blenheim, which is in season for five months, and besides being excellent for cooking is a very fair eating sort; or Dumelow's Seedling (Wellington), that will keep right through until late on in the spring; or Tower of Glamis, Annie Elizabeth, Alfriston, ReINETTE Blanche d'Espagne (Cobbett's Fall Pippin), and several others that I could name, which for all-round properties are more deserving of cultivation by those who grow Apples for their own use than any early short-season variety. In saying this much I am not speaking disparagingly of Lord Suffield, which with me is an old acquaintance and a favourite variety that everyone should grow, but, nevertheless, its merits are not such as entitle it to head the list.

An election of this kind which goes to show those who may be desirous of growing Apples for market, yet have not the requisite knowledge as to the sorts that are likely to best answer their purpose, is so far useful, yet in apparently taking in only this side of the question, it is wanting in being a reliable guide for the immense numbers of people who require to know what kinds to plant that combine the properties of being free growers, free bearers, and good keepers. The last named essential is of much more importance than earliness to the general cultivator, for, although Apples are always acceptable, still in summer and early autumn there are plenty of other hardy fruits in season. Moreover, late-keeping sorts always command much higher prices than early ones.

T. B.

Muhlenbeckia complexa.—To the lover of quaint and uncommon subjects this Polygonaceous plant will at once commend itself, while at the same time when in a thriving condition it is a really beautiful object. It is very suitable for planting on the exposed parts of rockwork or on sunny banks, where it generally forms a tangled mass of blackish wire-like stems furnished somewhat sparingly with small round leaves of a peculiar greyish green tint. If treated simply as a climber and employed for covering a wall or a trellis it will succeed perfectly, but in such a situation it does not seem so much at home as when furnishing a sunny corner on the rockwork, taking possession of some low-growing bush in its immediate vicinity, or, better still, rambling over a dead one, and thus converting it as it were into life and beauty. It appears to be quite hardy, for though cut to the ground during the severe winters of four or five years ago it quickly recovered, and soon attained its original dimensions.—*ALPHA*.

Passiflora ccerulea—This good wall plant is not sufficiently often met with; true, it is somewhat tender; in severe winters it may even be cut down, but, as a rule, it breaks up again as strongly as ever. If not, it is easily raised from seed, and is well worth all the trouble that may be bestowed on it. It is very accommodating, growing among Ivy, Virginian Creeper, &c., and holding its own with most plants with which it may be associated in that way. We have some here growing with Ivy that have been most charming for several years. The flowers are very beautiful, but to my mind the large egg-shaped fruits in autumn and winter are the most attractive; they hang a long time and keep their colour—a golden yellow—all through the winter, or at least until Christmas has passed some time, unless the weather is very severe indeed. We have several fruit of this Passion flower hanging now, and the foliage is as fresh and green as need be. Ours are planted in a border about a foot wide, bordered by a gravel walk, so that there is very little room for the roots to get far in search of food, and the plants seem to do all the better for it. Now is a good time to sow the seed. If the young seedlings are grown on and planted out in May they will make fine growth the first season, and will flower and fruit well the second, provided a good sunny position is chosen for them.—*W. H., Redleaf, Penshurst, Kent*.

GARDEN FLORA.

PLATE 484.

THE SEA HOLLIES (ERYNGIUMS).

(WITH A FIGURE OF *E. OLIVERIANUM*.)

THE Eryngos, or Button Snakeroots of the Americans, belong to the Umbellifer family, and consist of plants almost unique in general appearance. There are about a hundred species of them altogether—chiefly natives of warm and temperate regions—about twenty of which are confined to the Southern Atlantic and Gulf States of America.



Flower-heads of *Eryngium amethystinum*.

Most of these latter go to form what is termed the Pine-apple group, and, although belonging to a temperature vastly different from ours, they may, with careful management and proper attention to drainage, &c., be preserved through our most trying winters. They are essentially ornamental-foliaged plants, and, apart from their flowers, which are almost without exception whitish or dull coloured, they supply a want long felt in gardens during the dull months. Isolated on lawns, they look bold and striking, and are altogether better than when planted in clumps, in beds, or borders. In their cultivation drainage seems to be the most important item, and the more exposed the position, provided the



Eryngium alpinum.

drainage is good, the greater the success. In pure river sand *E. Lasseauxi* sometimes attains a height of 8 feet or 10 feet, a circumstance which goes to show their preference to a soil of a light porous character. Some of the varieties are well suited either for mixed borders or rockeries. In a

* Drawn from specimens sent by Mr. Wolley Dod from Edge Hall, Malpas, in September.



ERYNGIUM OLIVERIANUM

cut state the flowers keep their colour for a considerable time, and are useful in bouquets of Everlastings and Grasses. They may be increased



Eryngium bromeliæfolium.

by seeds, which most of them ripen in warm summers, failing which division of the root may be resorted to, disturbing the plants in the operation as little as possible.

ALPINE ERYNGO (*E. alpinum*), an illustration of which is here given, is amongst the oldest of our garden Eryngos. It was first introduced about a century and a half ago, and although far from being a scarce plant, is rarely seen in that perfection which it is capable of attaining under proper attention. It seems to thrive best in a stiffish, deep soil, as its roots go almost straight down. It is one of the easiest to increase, as it emits buds from the root-stem, and these soon start into growth in a little heat. It is well suited for mixed borders, and although partial to sunshine, it is not averse to a little shade. The flower-stems grow from 1 foot to 2 feet in height and carry on the summit large heads of beautiful blue-coloured flowers and involucre leaves. The lower leaves are produced on long stalks, roundish in outline and toothed, with a deeply cordate base; the upper stem leaves are palmately lobed and slightly serrated at the margins. It is a native of Switzerland and Piedmont, and flowers in July and August.

E. BOURGATI.—This has long been a general favourite in gardens where space is available for the curious as well as the beautiful. It is extremely well suited for clumps in the mixed border, its unique glaucous blue flowers harmonising well with the great majority of summer flowering plants. It is amenable to almost any soil or position, and is particularly well suited for rockwork. It grows from 1 foot to 2 feet high; its flower-stems are sparingly branched, and that only at the top; the lower leaves, which are nearly round in outline, are divided into three principal lobes, which are again pinnatifid and without spines between the divisions. The flowers, which are borne in umbels, are surrounded by about a dozen spiny involucre of a pretty sky-blue glaucous colour. They appear in June and last until the end of August. It is a native of the sub-alpine Pyrenees, &c.

E. AMETHYSTINUM.—This somewhat resembles *E. dilatatum* in general appearance and is often confounded with it in gardens; the latter may be easily recognised, however, by its pectinated petioles, more robust growth, and shorter floral leaves. The amethystine Eryngo, owing to its dwarf, compact, and neat habit, is essentially a plant for rockeries on sunny, dry spots, on which it forms little tufts of spiny leaves, crowned with bunches of the most beautiful amethystine blue flowers. It grows from a foot to 18 inches in height, the stems from where they are branched into corymbose heads being nearly the same colour as the flowers; the deeply-cut spiny lower leaves are borne on longish smooth stalks. It is not perfectly hardy, except in warm positions; it should, therefore, have a slight protection in severe weather, especially from wet, of which it is very impatient. It flowers from early July until September and lasts a considerable time in vases in a dried state. It is a native of Croatia and Dalmatia. (Syn., *E. australe*, Wulf.)

E. BROMELIÆFOLIUM.—This belongs to a group, many of which on account of their elegant habit are really desirable garden plants. In sub-tropical and summer bedding the majority of them might be used with advantage, either isolated or in effective groups of say from ten to a dozen. It is a native of the humid forests of Mexico, where its noble tufts of gracefully curved Yucca-like leaves are said to be extremely handsome; the flower-stems, too, which rise to a height of 8 feet or 10 feet, have an imposing aspect, and under good cultivation little short of that height may be attained in our own gardens. In a young state it is very useful in pots for halls, corridors, &c., and much preferable to the stiff-leaved Yuccas commonly used for such purposes. Behind or between stones on the rockery—the more exposed the better—this plant presents a charming appearance, and if left undisturbed will continue effective for a number of years; dry, well-drained slopes, however, should always be chosen for it, as it is liable to suffer during severe winters in low-lying undrained situations. It rarely if ever ripens seed in this country, but it may be increased by suckers which spring up round the parent plant. The lower leaves, which are



Eryngium eburneum.

often 2 feet or 3 feet long, have large teeth on the margin; those on the stem are narrower, prominently keeled, and arched over. The flower-

stems are ordinarily from 3 feet to 4 feet high, and bear numerous branched whitish flowers in the latter end of summer, but of no great garden value.

E. CÆRULEUM.—This handsome species from the Himalayas, is often found in gardens under the name of *E. amethystinum*, from which, however, it is easily distinguished by its being much taller, having larger flower umbels, and broader and longer spined involucre. With us it is perfectly hardy in the open border, requiring no protection whatever even in severe winters. It



Eryngium pandanifolium.

makes a pretty rock plant and is well adapted for cool shady corners where the soil is peaty. The flower-stems vary from 2 feet to 3 feet high, and carry large umbel-like heads of intense steel-blue flowers, surrounded by large and handsome spiny involucre of the same colour. The oblong, entire, or slightly crenated lower leaves are borne on long petioles, those on the stem being sessile and palmately divided. It is easily increased either by seeds or division; the seeds ripen well in warm summers, and germinate freely if sown in a little heat as soon as gathered. It flowers from June until September. (Syn., *E. planum*.)

E. EBURNEUM.—This also belongs to the Pine-apple section. It is allied to *E. bromeliæfolium*, from which it differs in having broader leaves and more branched flower-spikes. It forms handsome and very effective tufts of leaves, and will be found useful as a fine-foliaged plant apart from its flowers. It commences to flower about July, and continues until destroyed by early frosts. It is a native of South Brazil and the Argentine Provinces.

E. GIGANTEUM.—This is one of the most attractive amongst kinds generally cultivated; the unique glaucous metallic lustre surrounding the whole plant considerably enhances its value for flower-garden work. It seems to thrive best in light sandy soil of good depth and in a sunny position. It is averse to being disturbed, but its increase by division is rendered almost unnecessary by the freeness with which it ripens seed in ordinary seasons. It grows from 3 feet to 4 feet high, and is furnished with beautiful large heads of blue flowers, cone-like in shape and surrounded by a prettily spined involucre. The lower leaves, which are borne on long petioles, are cordate at the base, and their margins are handsomely crenated; those on the stem are clasping at the base, deeply lobed, and armed with long sharp spines. It is a native of the Caucasian Alps, and flowers in July

and August. (Syns., *E. asplenifolium* and *E. glaucum*.)

E. LASSEAUXI.—This belongs to the Screw Pine section, and differs but little from *pandanifolium* in foliage or habit of growth. It may be readily distinguished, however, as it is more upright, the leaves having a glaucous tint underneath, and the flowers are whitish, instead of having a violet hue. It grows from 8 feet to 10 feet high, and may be used for much the same purposes as that mentioned above. It may be readily increased by offsets, which root freely in small pots. Seeds of it, too, introduced from the Continent may be had in the trade. It flowers from July until September or October, and is a native of South Brazil.

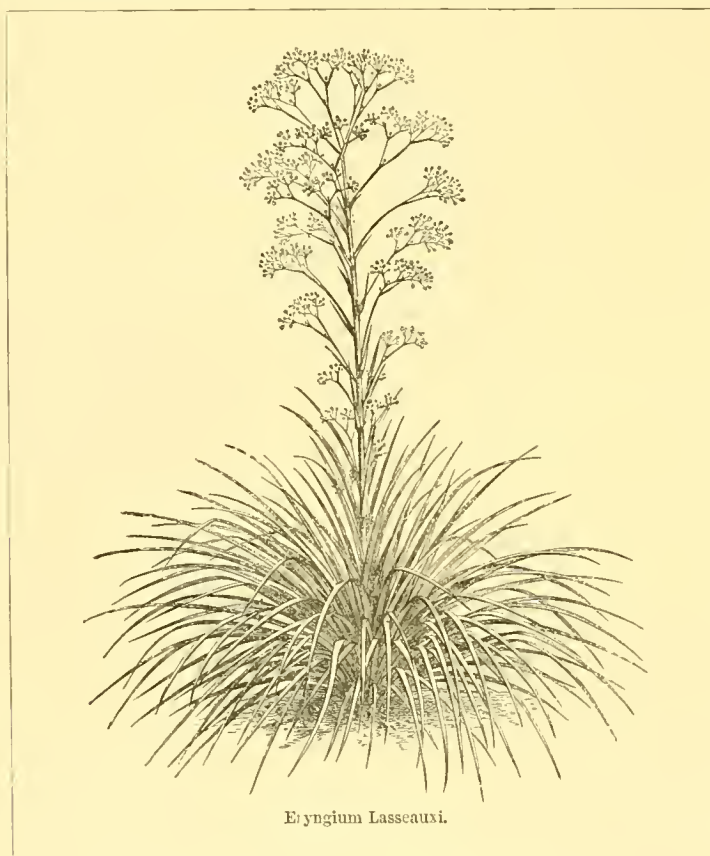
E. LEAVENWORTHII.—This a native of Texas. It is a strikingly interesting, comparatively new annual species. It grows from 2 feet to 3 feet in height and produces upright fluted stems, branched from above the middle into large umbels; the

are roundish, thorny, and of a beautiful white glaucous colour, as are also the stems and the involucre. It flowers from July to September.

E. OLIVERIANUM.—This, although probably grown on the Continent, does not with us seem to have been distinguished from *E. alpinum* or *E. amethystinum* until brought under notice by Mr. Wolley Dod last year. The plant represented in the annexed plate was received from some nursery as *E. amethystinum*, but not corresponding with the Kew plant bearing that name, a specimen was sent to the herbarium, and was found to be identical with the plant described and figured by Laroche as *E. Oliverianum*. As will be seen, it is nearly allied to *E. alpinum*. The characters by which it is distinguished are, however, constant; the principal differences are the much less cordate based lower leaves, stem leaves more dissected, the involucre larger, more rigid, and armed with longer spines, and the altogether more ro-

partial to exposed positions, where it thrives better, and produces higher coloured flowers than in places more sheltered. It rarely grows more than a foot high, and is furnished with thick sparsely branched stems, supporting heads of charmingly coloured flowers that in poor soils are often pale or nearly white. The radical leaves are divided from three to five times, the lobes being deeply toothed or forked. The involucre at the base of the flowers consists of nine or ten very stiff pinnated leaves a little longer than the flower-head. It is a native of the Dauphiny, Provence, and flowers in July and August. (Syn., *E. pallescens*.)

Amongst others in cultivation may be mentioned *E. corniculatum*, the Horned Eryngo, odoratum of gardens, because of its sweet scented flowers, an almost unique property in this genus. This species is more curious than pretty, owing to the presence of an elongated palce produced about 2 inches beyond the globular flower-head. It seems to thrive best in wet or boggy places. *E. aquaticum*, also called *E. yuccæfolium*, is a good plant for partial shady spots. It is perfectly hardy, and produces pale bluish flowers from July to September. *E. serra* is a very ornamental species, quite worthy of extended cultivation, its large rosettes of Agave-like foliage being very striking. *E. dichotomum* has pretty steel-blue flowers with spiny involucre of the same colour. *E. Carrierei* is a very fine and effective species allied to *E. eburneum*, and the same may be said of *E. platyphyllum*, *E. Andersoni*, *paniculatum*, *planum*, *campestre*, and others. D. K.



Eryngium Lasseaui.

flower-heads are conical, and about 2 inches long, green when young, but afterwards they assume a rich violet colour, as do also the involucre leaves and part of the stems; the lower leaves are about 3 inches long, palmately divided, and sparsely toothed. To ensure strong plants the seeds should be sown early in pots and placed in a heated frame; when ready to handle, they may be pricked into boxes or potted into 2½-inch pots, the latter being preferable, as then no check is experienced. Its ornamental flower-heads keep their colour a considerable time after being cut. It flowers in September and October.

E. MARITIMUM.—This, one of our most common seaside plants, is a striking example of the way in which native flowers are neglected. They are passed by unheeded or are ruthlessly thrown aside, preference being given to exotics in many instances less ornamental. *E. maritimum*, though always found growing in sand, will thrive under other conditions, a good substitute being stiff loam with a dressing of river sand on the surface. To show itself off to advantage it should be grown in quantity and in a position that can be overlooked. The leaves

bust habit. It seems to thrive well in a stiffish soil, delighting in plenty of sunshine, and it flowers from July until September. It is a native of the Levant.

E. PANDANIFOLIUM (the Screw Pine-leaved Eryngo).—This, associated with *E. giganteum*, makes a very ornamental group on lawns, &c. It has a noble habit, and the branched stems rising 10 feet or 12 feet high, with hedgehog-like masses of flowers on their summits, have a stately appearance. It may be grown for the sake of its fine Pine-apple-like foliage alone, pinching out the flower shoots as they appear. If in a border it should be planted near the front. It is, however, not perfectly hardy, and is always most satisfactory in pots plunged out in spring and lifted in autumn. The lower leaves, which are in tufts, are spiny and toothed, with prominent parallel nerves. The flowers, which are in bunches, are egg-shaped and of a whitish green colour. It is a native of Brazil, and flowers in August and September.

E. SPINA-ALBA.—This is a charming little plant well suited for culture on the rockery. It seems

KITCHEN GARDEN.

ASPARAGUS CULTURE IN FRANCE.

In 1878 M. Leslain, of Montmacy, a little village situate in the valley of the Oise, and six miles from Compiègne, conceived the idea of planting with Asparagus some land belonging to him, and which was of such a nature as to render it worthless for Corn and Grass. This idea occurred through seeing the method of culture followed in the famous Asparagus-growing district of Argenteuil, and which M. Leslain thought there should be no great difficulty in imitating. He accordingly set to work, and commenced by deeply ploughing eight acres of ground, giving it a good dressing of manure, setting out the plants about 3 feet apart each way, no crop of any kind being put between them. Thus the plantations were made on the level ground in the manner so often recommended in THE GARDEN. Every year the plants are well manured, this operation taking place any time from November to January. In the beginning ordinary manure was used; now a special manure manufactured on the place has replaced it. This has for basis the blood of the slaughter-houses of Compiègne, and which, by chemical treatment, can be removed in a solid state. Mixed with the fine material from a chalk pit, salt, and ordinary superphosphate, it forms a fat manure, rich in potash and azote, light in carriage, and having a most quickening effect in the spring. In applying the manure, two-thirds are spread on before the crowns are unearthed, thus mixing it with the soil, the remainder being put directly over the roots of the plants. About 6000 pounds are used to two acres of ground. In January the soil is lightly forked over, earthing up taking place from the 15th to the 30th of March, the old stalks being left to mark the stools until that time.

Gathering commences the end of March or in the beginning of April. After the end of May two or three stems are allowed to run up from each stool and one from time to time until the 20th of June, so that at that time every plant has from six to eight stems, with plenty of room between them and of average strength. It is owing to this method that the plantations exhibit great regularity as well as luxuriance of growth. Everything is done by hand; the plough and the harrow are never used, and the gathering is performed without instruments, which, as some twenty

hands are employed in full season, would in all probability be the means of causing some injury to the plants. As regards disposing of the produce, M. Lesluin seems to have struck out a line for himself; he will have nothing to do with the Paris salesmen or middlemen of any kind, but contracts with greengrocers, fruiterers, and others in the towns of the north of France and of Belgium to supply them with certain quantities at fixed rates during the season. It would be good if our own market growers could follow a similar course, for until they can place themselves more direct in communication with the consumer there seems to be but little chance of their reaping a proper reward for their outlay, or of the working classes profiting by a plentiful season. The only serious drawback is having some produce left on hand in a time of great plenty, but in M. Lesluin's case this is guarded against by contracting with a canning factory to take all surplus produce at a fixed rate, so that loss from this cause is guarded against. From fifty to sixty hands are employed on this Asparagus farm in spring, and these are all boarded and lodged on the place. Gathering is done every day, but on alternate days the largest amount is gathered, the average yield being from 800 to 1000 bundles about 3 lbs. in weight from 12 acres now in bearing. As soon as gathered the stalks are placed in large square boxes containing from 80 to 100 lbs., and are taken away to an underground room perfectly lighted and fitted up for tying up and packing. The stalks are separated into two classes, the larger ones being used for the outside, the smaller for filling up the bundles. All that is not tied up is left in the baskets, so as to keep it in a fresh condition. Square baskets containing from six to thirty bunches are used for sending the produce away, each bundle being wrapped up in a sheet of paper, and separated from its neighbours by Barley or Oat straw. According to M. Lesluin, the first cost of planting and attending to the plants during the first four years until they came into bearing was £40 per hectare (a little over 2 acres), manuring, moulding up, gathering, packing, and other expenses bringing the total up to £53 per hectare.

THE AVERAGE TAKINGS per hectare have amounted to £128 yearly during the last three years, thus giving a profit of about £80 annually on about 2 acres of ground, a profit which many market gardeners in this country would probably consider very satisfactory. As already mentioned, the land on which this Asparagus is grown is what would be considered unfavourable for market gardening operations. M. Birot, who drew up the report for the French National Horticultural Society, and to whom I am indebted for the above details, states that "half the land consists of black rather moist sand, the remainder of sand of a drier and poorer description." This is instructive, as it shows that naturally rich ground is by no means necessary to the profitable growth of Asparagus. When we are shown that land so poor as to be the despair of the agriculturist can be made to return £40 per acre profit by devoting it to Asparagus, there seems reason to hope that in time something profitable will be found to occupy land in this country, which either lies quite neglected or cannot be made to pay expenses. It is certain that there is a large extent of land in this country of a similar description to that which has formed the subject of M. Lesluin's experiment, the result of which cannot be regarded otherwise than highly successful, and on which Asparagus might be profitably grown. I believe it to be a fact that in those districts where Asparagus culture has developed into something of an industry the natural staple is light, in many instances approaching sand. If I am rightly informed, the Colchester Asparagus is grown on very light land, and I know that the soil around Ulm, in Wurtemberg, is of that description. The Ulm Asparagus has about the same reputation in Germany as that of Argenteuil in France. This need not cause surprise, seeing that the natural habitat of the Asparagus is on the sandy seashore. Another thing seems certain, *i.e.*, that the old system of growing Asparagus on raised beds must give place to a more simple and consequently inexpensive method. In M. Lesluin's case the

foundation of success is undoubtedly a thoroughly stirred soil, which itself is of a nature to cause rapid root formation when properly enriched, and in which the roots are never likely to sustain injury from excess of moisture. BYFLEET.

BOTTOM-HEAT FOR CUCUMBERS.

THE purely artificial character of the climate produced in our forcing houses by means of fire-heat and the consequent need of a constant supply of atmospheric moisture to neutralise its arid tendencies in order to ensure something like natural conditions is perhaps a little apt to be overlooked. All who have charge of such houses know that close attention to what is called damping down, or sprinkling periodically paths and surfaces in warm houses with water, contributes in no small degree to the health and cleanliness of plants grown in them, and no plant is more benefited by that attention than the Cucumber, while none will sooner suffer from any continued neglect of this particular item of cultivation. Drought, either at the roots or in the air, and too high night temperatures are the two chief predisposing causes which render the Cucumber an easy prey to its most troublesome and mischievous insect enemy, red spider. We used to find it difficult, even with careful attention, to escape red spider in houses where Cucumbers were grown continually till means were taken to increase and sustain a regular supply of moisture at all times in the air. One side of the house is bottom-heated by means of a cemented slate water chamber, through which passes a flow and return $1\frac{1}{2}$ -inch hot-water pipe, the heat being regulated at will by a valve. Over holes drilled in the covering slates of this tank 3-inch drain pipes are fixed vertically at intervals, these being cemented against the 15-inch high retaining wall for the soil bed, which is built on the top of the tank. Under this arrangement there is a constant escape of warm vapour off the gently-heated water from some of these pipes, the number of which has been increased with advantage. Since we have practised the plan of replenishing this underneath tank partly with liquid manure, as well as keeping the movable cast iron evaporating troughs placed on the pipes in the body of the house always filled with the same, there has been complete immunity from red spider. Now that is a point worth gaining, and something to be thankful for. The manure water used is that made from soot and sheep's droppings, of which a continuous supply is always kept brewing for this and other watering purposes, and no doubt the Cucumbers derive invigorating benefit from its effects. There is thus maintained a necessary degree of humidity in the house, corresponding with the amount of heat in the pipes; excessive transpiration at night and its weakening results are avoided; besides, the nutritive properties of the stimulating liquid gradually evaporating into the air of the house present an ever-present element of atmospheric food which we believe the Cucumber capable of absorbing by means of its leaves. Experience leads me to think that the method of bottom heating here described is the best for all-the-year-round Cucumbers in houses; the expense of first construction is heavy, but the after advantages with a minimum of trouble are many. A moist, genial, steady heat, alterable by the touch of a valve, can at all times be assured, while the employment of liquid manure in moderation compensates for the advantages arising from fermenting material often renewed, with its attendant litter and inconvenience. A. MOORE.

Cranmore.

Pea Ne Plus Ultra.—I think "R. D." is mistaken in supposing that Ne Plus Ultra and Jeye's Conqueror are synonymous. I grew the latter for several years; it is more like British Queen in both growth and general appearance than any other variety that occurs to me. It is a strong, tall grower, a good cropper, good in flavour, and altogether a first-class Pea, but not quite so sugary as Ne Plus Ultra, which latter, although something in the way of the good old Knight's Tall

Green Marrow is, I think, not sufficiently near it to be nothing more than a selection from it. I think that most of the varieties of Peas that used to be represented as selections from well-known sorts must have been the result of accidental crosses, and not of simple deviation from the variety amongst which their appearance happened to be noticed. As to the merits of Ne Plus Ultra, there is not much room for difference of opinion, except with the few who do not like sweet-tasted Peas.—T. B.

Prolific Mushroom spawn.—We have had some very large and fine clumps of Mushrooms this year. One measured 42 inches in circumference and others from 24 inches to 36 inches, each clump consisting of from thirty to forty-five good-sized Mushrooms. The best individual Mushroom weighed a quarter of a pound, and measured 6 inches in diameter. In this particular instance the bed was made in a cold shed last November, and we always make such beds deeper than those made in a heated house. We always put the spawn in with a small hand-fork about a foot apart, and 2 inches or 3 inches under the manure, using pieces about $1\frac{1}{2}$ inches square. We make all solid and beat down at the same time. The bed should be left uncovered for a day or two to afford an opportunity of testing the heat, which should be about 90°, and if likely to fall under that point cover up with a good thickness of clean straw. The bed in question was spawned in the end of November, and we commenced to gather Mushrooms in January, and up to the present time have had an excellent crop.—N. F. FULLER, *Idsworth, Horndean.*

GOOD MUSHROOMS V. POOR ONES.

I READ in THE GARDEN (p. 213) that not near enough attention is paid to "the great difference that exists, when Mushrooms come to be eaten, between big, well-grown examples and such as are poor and puny, or in the intermediate condition between the two extremes. There are few things in the way of esculents that exhibit greater difference than Mushrooms when in the opposite conditions named." It is admitted that the kind of compost and situation in which Mushrooms grow affects their wholesomeness, but between big Mushrooms and small Mushrooms and thin Mushrooms and fat Mushrooms, which is just another way of expressing the same thing, there is no greater difference than there is between big Potatoes and little ones from the same root or between a big Melon or a little one or any other fruit under equal conditions. "T. B." talks about Mushrooms "in the poor and leathery" state sometimes met with, but he never saw a fresh Mushroom that was leathery, nor never will. Leathery Mushrooms are those which have stood too long on the bed and which are sold in shops a week old or more and have no more resemblance to a fresh Mushroom than a withered Raisin has to a Grape. I have tasted Mushrooms cooked in all ways by the best cooks, and I have cooked them myself in various ways, but between a thin Mushroom and a fat one I must say I never could tell the difference. Sure I am no one can detect any difference in taste, flavour, or agreeableness to the palate between a thick and a thin Mushroom, always provided they are gathered fresh. That a Mushroom may, and probably does, alter in taste and texture when it reaches maturity, and gets black and discoloured on the top and in the gills, I will not deny, but that the difference is in the direction of improvement under such circumstances, I do not believe. "T. B." speaks of Mushrooms of leathery texture as "produced by beds that are too dry." Now, everyone knows that Mushrooms never make their appearance under such conditions at all, while they go off under opposite conditions. "T. B." says Mushrooms are best when "they have opened out flat, and the gills have begun to assume their dark colour," which explains the "leathery texture" to which he has been accustomed. It is shop Mushrooms about which he writes evidently and takes his impressions from. Old Mushrooms get tough undoubtedly with age, and the first signs of it are

the dark colour of the gills and the flat tops. The French seem to know when to gather Mushrooms better than we do, and one thing which anyone may notice in the heaps that fill the stalls at the Halles Centrales is that none of the Mushrooms are fully expanded, but that all have turned-down caps or are in the button stage. The reason of that probably is that they are deemed best in that condition; and I notice in the article on Mushrooms in the "Parks and Gardens of Paris" it is stated that the small button Mushroom "whose cap is from $\frac{3}{4}$ -inch to $1\frac{1}{2}$ -inch diameter is greatly esteemed and always eaten whole;" while as regards the large grey Mushroom, although "the flesh is very firm, remarkably white, and emits a rich odour, it, in spite of these good qualities, is less sought after than the others."

J. S. W.

INDOOR GARDEN.

BERRY-BEARING SOLANUMS.

Of late years berry-bearing plants have become very popular for indoor decoration, and deservedly so, as they withstand the atmosphere of dwelling-houses well, and remain in beauty much longer than flowering plants. They have also other advantages—they are easy to grow, and quickly get into a fruit-bearing size. Among the best is *Solanum capsicastrum*, especially the kind known as Weatherill's hybrid, which is much finer in berry and of better habit than the original form, although the hybrids vary considerably, and require frequent selecting to keep up a good strain and obtain improved kinds. The latter can only be done by propagating from seed saved from the best sorts; and, if this is carried out annually, a type far in advance of many now grown may be had. In making choice of plants from which to gather seed, the thing is to pick those that have the biggest and highest coloured berries, and such as bear them most freely, as well as being dwarf and compact in growth; and the same remarks hold good if the stock is to be increased by cuttings. These cannot well be struck too soon, as the earlier they are put in the better chance will the plants have to grow and become well fruited and coloured. The way to get good cuttings is to put a plant or two in heat, when the young shoots, after starting, should be taken off and have just the lower leaves trimmed away, and then inserted in sharp, sandy soil put into small pots. If these are placed under a bell-glass or handlight, where they can get a brisk, moist heat, they will soon strike and become ready for potting off, which should be done singly in 3-inch pots, and the plants should be again placed in a warm temperature to help them quickly along. As soon as they have become established it will be time to decide whether they are to be grown as bushes or standards. Those intended for standards will require sticks, to which they should be tied and trained to the height desired, when by nipping out the tops they will soon burst the buds immediately below, and make symmetrical heads. Before they reach this latter stage the plants will require more pot room, and should be shifted into 6-inch or 8½-inch pots, according to their size and strength; then, to induce them to bloom freely and set plenty of berries, it will be necessary to give them full light and air by plunging or planting them out in the open. This may be done during the first week of June, or even before, as slight frost does not hurt these *Solanums*; but whether planted out or plunged, they should have a warm, sunny spot, and be well attended to with water, or their blossoms will fall, and the plants become infested with red spider, to which, in hot, dry summers, they are particularly subject. To prevent their attacks, syringing late in the afternoon or during the evening is a great help, and it also assists in setting the bloom. If planted out, they should be lifted, with good balls, at the end of September, and carefully potted, and then set in a cold, shady pit or frame, where they can be kept close for a time and damped overhead, so as to preserve the foliage fresh and prevent it from flagging. As soon as the plants will hold up

without drooping or showing signs of distress, air should be given; and if any are wanted in early, the more forward amongst them may be placed in a light house, where they can have a little heat to hasten the colouring. If *Solanums* are to be raised from seed, it should be sown now, and the plants nursed on in heat so as to get them as forward as possible for planting out. Valuable as one-year-old *Solanums* are, those of greater age are much more so, as they not only make finer specimens, but they fruit with greater freedom; and the way to get them to do this is to cut back and thin out the branches as soon as the berries begin to fall or become shabby, after which they should be placed in a gentle, moist heat to assist them in breaking. As soon as they have started, they will be quite ready for partially shaking out of the old ball, and re-potting or planting out in the open. *Solanums* are not particular as to soil, but good, rich fibry loam, with a little leaf-mould and sand, suits them best; if potted firmly in this mixture and duly attended to, they are sure to grow well and bear a rich crop of berries. *Solanums* are very subject to aphides, especially early in the season, when making their young, tender growth and setting their blossoms; and it is only by timely fumigation that they can



Flowers of *Impatiens Jerdoniae*; colour scarlet and yellow (natural size).

be kept clear of such pests, as they breed at a great rate, and spread quickly over the shoots, which they soon cripple.

S. D.

Gloxinias from seed.—Gloxinias are always welcome, especially the erect-flowered kinds, which are very large and stand boldly up, showing off their rich colours to the greatest advantage. As *Gloxinias* are tender, the seeds must be sown in heat, the way to get them to germinate freely being to cover with a pane of glass and keep the soil moist. When the plants are up and large enough to handle, they should be pricked out in pans, filled with a mixture of equal parts peat and loam, or the latter and leaf-mould made fine and smooth on the surface. The place to start and grow them in is a manure bed frame, the genial warmth and moist atmosphere from which will push them on rapidly; or they may be stood on a light shelf in a bothouse or stove, where, if syringed occasionally, they will be found to do well. Although *Gloxinias* require a moderately high temperature in which to grow them, they will stand in a warm greenhouse after they come into flower, and, if kept out of reach of draughts when placed in such structures, they last a long time in bloom. S. D.

Prolific Hyacinth.—I have a Grand Maitre Hyacinth (growing in water) which has thrown up ten flower-spikes. They are, of course, somewhat crowded, but the effect, nevertheless, is very fine. The bulb was a very large one, but such a prodigal display of bloom is surely unusual.—F. T. L.

IMPATIENS JERDONIÆ.

To grow this plant well it must be treated in a manner very different from what suits the now popular Zanzibar Balsam (*I. Sultani*) and the several other species of *Impatiens* which require to be grown indoors. *I. Jerdoniae* is a dwarf plant by the side of the majority of Balsams, as its stems are never more than half-a-foot high, though when happily situated it forms a cluster of such stems. These are thick and succulent, no doubt as a provision against a lengthened period of drought, which this plant, when wild on the Indian hills, has to undergo, and which it is necessary to subject this species to when under cultivation. The stored-up vitality in these stems enables them to bear with impunity the total absence of moisture, and they are thus fitted to bear transport in a small box by post to the most distant countries. A match-box containing half-a-dozen stems of this *Impatiens* was received at Kew last year, every one of which grew and flowered, and it was from one of these that the annexed drawing of the flowers was made. By the end of November the Kew plants began to show signs of ripeness, the leaves all falling away from the stems, which had become swollen and purplish coloured. To rest these plants

through the winter, they were removed to a house in which young succulents are grown, the atmosphere in which is perfectly dry and the temperature about 55°. Hung up close to the glass these plants have remained quite fresh, and they will be allowed to remain dormant for about six weeks longer or till the middle of April. They will then be potted or placed in baskets, the soil used for them being a mixture of peat and loam, with plenty of silver sand. They will be started into growth in a warm moist stove, and will be left in such until they show for flowering, when they prefer a lower and drier temperature. The details of cultivation for this plant are not without importance, as it has frequently been imported and lost again through wrong treatment, its being an *Impatiens* leading to the belief that no exceptional course would be required for its successful management. We possess many larger growing species of *Impatiens*, and also many with larger flowers than this little species; but not one of them equals it in prettiness of colouring—bright red, with a band of yellow round the neck of the "sabat"—nor in quaintness of form, which is well shown in the accompanying woodcut. We may note here that seeds of a gigantic white-flowered *Impatiens* have been received at Kew from Tropical Africa, where it is said to be a neighbour of *I. Sultani* and a much finer plant.

B.

***Alpinia alba lineata*.**—This, on account of its ornamental foliage and graceful habit, is an

acquisition to the plant stove, and for general decorative purposes I know of no plant more useful. It is propagated by dividing its stems, which are thrown up from the underground rhizomes in abundance. The leaves are lance-shaped, and pale green striped with creamy white. Young plants of it should be placed in bottom heat until they have become established. I find that it is best to grow them in comparatively small pots, as they retain their variegation better than they otherwise would do; 8-inch pots will be sufficiently large for a plant 3 feet high and nearly as much through. The soil in which it is grown should consist of three parts turfy loam, one part rotten manure, and a little sand. The pots should be well drained, as the plants are great lovers of water.—C. H. H.

WORK DONE IN WEEK ENDING MAR. 17, 1885.

MARCH 11.

FINE, but bitterly cold, which reminded us of the advanced state of Apricot and Peach blossoms, as both are very nearly opening, and as yet the protectors had not been put in working order. They are fixed to a permanent frame-work, roll tightly up under the wall coping, and are worked exactly as are roller window-blinds, and all that needed to be done was to replace some of the lines with new cord, which has now been done. We have given over attempting to protect trees in the open borders with netting, and hay or strawbands fastened to long poles, for the injury, through lashings by wind, fixing poles, trampling, and darkness caused by the covering, does quite as much harm as do a few degrees of frost; circumstances are different with trees on walls, as by laying a few poles slantwise, and fastening a double ply of Strawberry netting on the wall coping with a few nails, and tying the netting to the bottoms of poles, a really good protector is assured. This is the kind of protector we apply to Pears, Cherries, and Plums on walls. Finished pruning Roses. Trenching vacant beds on terrace garden, and began to plant edgings of *Herniaria glabra*. We use this plant only for all upright edgings which are made some 4 inches high, taking two lines of plants that are dibbled in 2 inches apart. If the pieces are well fastened they quickly take root, and make a good edging in about a month's time. House work has been potting a few Pine suckers taken from the latest fruiters. I find that a more constant succession of fruit is maintained by potting on a few suckers at intervals of a few weeks rather than by taking a number off at one time and at longer intervals. They are plunged in a bottom-heat of 85°, and the soil being moist no water will be given them till rooted. Sowed Sunflower, Perilla, variegated Maize, and Hemp. We do not use many of any of the kinds, but a few intermixed with rarer plants in the sub-tropical garden add to the interest of the whole. Tied down and stopped shoots of Muscat Vines, also cut off surplus shows, not necessarily leaving the largest, but the most sturdy and compact. I am aware that usually all the best shows are left till the fruit has set, and I was going to say, consequently it does not set; anyhow not so well as would have been the case had half the shows been cut off. During the prevalence of this bitter north-east wind the night temperature will be 65°, but when this is ended 70° by night will be our minimum till after the fruit has set, when we shall not be particular to a few degrees either way.

MARCH 12.

Being very fine and the ground in good order, every available hand was had in kitchen garden. Planted all our first early Potatoes. Deep drills 26 inches apart, and the sets 14 inches from each other and these filled in by hand, fully describes our mode of planting. For later kinds we simply give more space, but these will not be planted for another fortnight. Sowed Intermediate Carrot and remainder of Onions and Parsnips; all are sown in shallow drills, and filled in with the finest soil by hand. I am particular to name this way of covering, because we have never failed in having a good plant since adopting it; but frequently

we had partial failures when covering was done with rakes, the reason, as I think, being that instead of covering the seed was sometimes raked quite out, or at any rate unevenly covered. Sowed succession lots of Peas and planted another lot of Broad Beans; Cabbage, Colewort, Brussels Sprouts, Cauliflower, and early Savoy have been sown on a south border and covered over with netting. Lettuce has been sown on a border where it is to grow permanently, and also another lot for planting out. Single rows of Radishes and Spinach have been sown between the rows of Peas that are 6 feet apart, and they will both be used before they prove of any detriment to the Peas. Earthed up Peas that are just breaking through the soil, and which birds had begun to peck; as they get older they are less tempted to meddle with them, and therefore this early earthing frequently keeps them from injury. Sowed a few Turnips; this is but a chance crop, as it is more than probable they will run to seed; still, they do sometimes stand when sown as early as this, and if we get ever so few the extra earliness is worth the risk. Planted Vines—eight Gros Maroc and seven Madresfield Court. I have a notion that these two varieties will grow well together, and come in at the same season; neither are late kinds, and ought never to have been classed as such. Madresfield has never done really well with us, always cracks badly, but the dry warm air necessary to colour up and sweeten Gros Maroc will, I think, tend to prevent cracking in Madresfield, and this is the sole reason why the two varieties have been given a house to themselves. Madresfield is highly prized here, and that is why I long to produce it in as fine form as others have done. Potted off sundry kinds of bedding plants and prepared pit for planting out bedding Pelargoniums. Put in cuttings of Ageratum, variegated Koniga, and kinds of variegated Pelargoniums, of which the stock is still short.

MARCH 13.

Still very fine; covered up all Seakale in the open ground with fine coal ashes, raked over Asparagus plots, and gave a good dressing of soot, hoed deeply between the rows of winter Spinach and late Broccoli, covered over the heads of Broccoli that are ready for use to protect them from frost, there being 8° this morning; all the covering for fruit trees has been applied. Making up and planting edgings to flower beds, and recommenced shrub pruning, which we hope to complete in a day or two. Indoor work has been potting tuberous Begonias, partial disbudding of second Peaches, further pinching and tying of shoots of early Vines, thinning the fruit on Strawberry plants, and putting the forwardest ones in stronger heat to maintain a regular supply, which is now expected of us till the fruit is ripe in the open air. Not having convenience for forcing many flowering plants and required supplies being comparatively large, all that are in flower we endeavour to keep as long as possible, and, therefore, Lily of Valley, Deutzias, Hyacinths, Tulips, Spiraas, &c., soon as fully developed are taken to the coolest house we have, and other relays of them are placed in heat. Cinerarias, Tree Carnations, Azaleas, &c., have all to be included in this plan of cool place treatment, our latest Peach house being at present the only available place, and which has been quite filled up to-day, the inside border having previously been well watered.

MARCH 14.

The three sunny days with which we have been favoured this week has perceptibly forced into growth spring flowers, and protection is desirable where it can be conveniently done. Netting or tiffany, fixed over hooped sticks, effectually screens from harm the choicest Tulips and Hyacinths. Primroses, Daisies, Violets, Pansies, and hardy annals we never trouble to protect, as they quickly recover from the effects of the most severe frost that we are ever likely to get at this time of the year. The easterly winds having dried up the soil, all parts of shrubbery and herbaceous borders that were not mulched have been pricked over with forks to break the

soil that had got hard on the surface through the heavy rains. This loosening will not only prove beneficial to the growth of the plants, but weeds in embryo will be destroyed at the same time. Planting edgings of *Herniaria* and digging and manuring the beds. Vegetable, or leaf-soil, for the most part is the kind of manure used. Only those beds intended for Violas, Calceolarias, Verbenas, and subtropicals are given ordinary stable manure. Swept up roads and walks, and rolled with horse-roller parts of lawn that it is intended to mow at first opportunity. The usual all-round clean-up in and about the houses on Saturdays we never shirk, no matter how pressing other work may be, and to persistency in this rule must be ascribed the increased pleasure that one always feels in the quiet look round of Sunday. Shades of our Scotch friends! No, surely they cannot think this enjoyable walk round on Sunday desecratory. Put in more *Dahlia* cuttings and shifted from propagating pit to a cooler house those already struck; they are now in 2½-inch pots, and soon as a bit hardened will be potted into 4-inch pots, which will serve them till planting-out time. Tied up Melons and watered them. Having a good command of bottom-heat, we give more water than would otherwise be necessary, though at no period of growth would I like to have the soil as dry as some cultivators practise; good foliage and healthy growth generally, and consequently high quality of fruit, can only be had by giving sufficient water to keep the soil moist, but not wet. Watered Pines; fruiters are given clear manure water every time that water is necessary, and it is never given at a less temperature than 90° to plants in every stage of growth.

MARCH 16.

The covering up of Peaches and Apricots is now imperative. There was a sharp boar frost this morning, and the mercury sank to 24°; and as generally happens after such severity, there was bright sunshine all day; consequently we kept the trees covered the whole day, and shall continue the same treatment till the blossoms are fully expanded in hope of retarding them somewhat, and even when they are open, the covering will not be undone till the sun has been on a couple of hours or so. Did more cutting of Laurels, Hollies, and common Rhododendrons by coach roads and rough parts of pleasure grounds, where, as they are growing under the shade of large trees, they develop a straggling growth, which, if not cut away, the bottom parts of plants would soon get bare and be useless for their present purpose, which is to screen walks and coach roads and hide from view undesirable spots or objects that would otherwise mar the beauty of the landscape. Planting edgings of flower-beds, manuring and trenching them; cut Ivy on terrace wall, gave a top dressing of peat and leaf-soil to hybrid varieties of Rhododendrons that were planted last year, and which, by reason of the drought, did very badly. The recent heavy rains have much improved their appearance, and the additional soil and slight fork-over will probably end in renewed vigour. Got soil in for another batch of Melons, and as it is much infested with wireworms traps are set for them by burying pieces of Carrot in the soil, which they quickly find out, and thus we can effect a riddance of them. Melons and Cucumbers in a young state they eat off with impunity, but it is a curious fact that they never injure young Vine or Peach roots. I suppose there must be something about these that is distasteful to them, and well for us that it is so, as all our loam for fruit growing is of the same description. Turned heat on Lady Downes and late Muscat vinerias, and both will be syringed in the morning and early in the afternoon till the shoots are a couple of inches long. The temperature of both on cold nights will at present not exceed 55°, but when warm, 60° or even 65° will not be thought too much. For Vines I prefer forcing by closing up with plenty of sunshine, rather than extreme firing, which is only necessary for Muscats when in flower. Put in another batch of cuttings, variegated *Mesembryanthemum*, *Coleus*, *Heliotrope*, and *Petunia* being amongst the number.

MARCH 17.

Very fine weather for all kinds of garden operations. Hoed between the rows of spring Cabbages, late Broccoli, Kales, Peas, Rhubarb, and Globe Artichokes. Planting edgings to flower beds, and began to do up a long border, that is, planted with hardy and tender plants in about equal proportions. All tender plants were of course taken up in autumn, and their place filled for the winter with turves of Heather and hardy Sedums. These temporary plants are now being cleared away; small shrubs, Retinosporas, and Cupressus, Sedums, Herniaria, &c., that did duty last summer, are still to be left, and the vacant spots are having part of the old soil taken away and new added, in which tender summer bedding plants are to be grown. Finished top-dressing Rhododendrons, suckers, or rather shoots, growing out from the stocks of grafted kinds being cleanly cut off before new soil was added. Brilliant sunshine made it a busy day in the houses as regards airing and watering. Strawberries required to be gone over twice. A thin shading of tiffany was also applied to Smooth Cayenne Pines for the first time this season. This variety will not bear bright sunshine at this early season, and especially fierceness of it all at once; as the plants get more inured to it, a few hours' sun does not harm them, though at no period do they relish sunshine, as do all other varieties. Planting out bedding Pelargoniums in cold pits. Two-thirds of leaf soil and the other third light loam ensure the plants transplanting with plenty of soil attached. A covering of double mats, or a single ply of frigidome, will keep them from injury by frost. Disbudded second Peaches, and gave the border a soaking of tepid water. Thinned out the fruit on all Strawberry plants that had set their fruit, and soon as this is done the plants are always given more warmth and moisture, for the quicker the fruit can be made to swell the larger it will be, but as colouring begins, then is the time to let them have their own pace. Examined Grapes in bottles to remove decayed berries, and filled up with water such bottles as needed it. **PLANTS.**

FRUITS UNDER GLASS.

CHERRIES.—The most gentle fire heat must be now at command to dispel damp and to keep the air dry and constantly moving. If plenty of time has been allowed for the perfect formation of all the delicate organs, the flowers will open fresh and strong, and when pollen begins to fly off in golden clouds, the camel's-hair brush passed over them at the hottest part of each fine day will soon secure enough and to spare for the crop. Should the weather be very dry, it may be necessary to damp the floors and borders during the hottest portion of the day. When the fruit is set, the trees will require good syringing, and the house must be closed to secure a temperature of 60° on fine afternoons.

CUCUMBERS.—Winter plants that have been kept clean, healthy, and growing down to the present time may now be gradually worked into the usual routine of summer treatment. If they have not been over-cropped the vines will be strong and free, and capable of covering every part of the trellis with fresh young foliage, which must have plenty of room for development. These strong growths will not, however, be over fruitful; therefore they must be regularly tied down and pinched before they reach the extremities, in exactly the same way as one would pinch spring-sown plants. This operation, it is needless to say, will induce a good break of fruit-bearing laterals from every vine, and as they will show at the first joint, all that are intended to carry a fruit to maturity may be pinched at the second leaf, while superfluous shoots may either be removed or pinched to the first leaf and divested of their fruit to secure sub-laterals for succession. When this condition has been attained it will be necessary to look to the roots, as they must be encouraged to work up to the surface of the bed by the daily use of mild stimulants and frequent supplies of fresh compost; but grossness being as great an evil as weakness, the materials used

should consist of light fibry turf, lime rubble or charcoal, in preference to solid manure, which only encourages worms and forces an unmanageable growth of vine and foliage. Evaporating pans hitherto kept dry may now be regularly replenished, and good syringing twice a day when the weather is fine, the first time when the temperature begins to rise and again after the house is closed about 2 p.m. will keep the plants clean and fruitful.

Spring plants.—As many private growers and consumers give preference to the black-spined varieties for summer use, the present month is a good time to put out plants of some favourite kind to succeed the Telegraph section. An excellent variety under the name of Smith's Frame or Lorraine is one of the best I have met with, as it is handsome, prolific, not too large, and of superior quality. These kinds are well adapted for growing in manure pits or frames, but all who can spare a few lights will give preference to a house fitted with a trellis, be it ever so plain and simple. From such a structure every fruit comes clean, straight, and perfect. The foliage, being close to the glass, grows stout, short-stalked, and leathery, and although the entrance barely admits a man's body, the vines in all weathers can be manipulated and trained to a nicety. Bottom-heat for summer culture can be obtained from fermenting leaves, tan, or manure, and where better convenience does not already exist, a small, portable boiler that does not require brick "setting" will give an amount of top-heat truly surprising. The fermenting bed in a pit of this kind should be solid and lasting, as planting on hills or a continuous ridge of soil is preferable to pot culture, particularly where the attendant is neither more nor less than an assiduous amateur. Now, as many amateurs set great value on operations and conditions which professionals condemn, it may be well to remind them that the fermenting material should be thoroughly worked, turned, and sweetened before it is placed in the pit; that the more it is beaten and consolidated in making up, the less will be the danger of overheating and burning—a rock on which many who ought to know better wreck their frail bark at the outset. When the heat in a properly made bed has declined to 90°, it will be in a fit state for the introduction of the soil or compost, which should be light, friable, and porous, but not over rich. Therefore if the turfy loam be light, old lime rubble will be found a suitable corrective; if it is heavy, flaky leaf mould and charred garden refuse may be added. Having decided upon the position of the hills or ridge, large thin sods of fresh-cut turf laid grass side downwards, while forming a suitable base for the compost to rest upon, will be found a valuable sustaining medium, as it will check the downward course of the roots into the manure and cause them to ramify in the hills within the influence of solar heat and atmospheric moisture. The hills should not be made too large at first, as Cucumbers, unlike Melons, do not resent the application of fresh soil to the stems, but invariably succeed best under the little-and-often system of top-dressing as the roots find their way to the surface. The next common mistake to be avoided is close planting, one plant to a light, say 6 feet by 4 feet, being quite sufficient for summer culture. A straight stick inserted in the soil will lead the young vines to the foot of the trellis, thence they may be allowed to travel nearly to the top, when, by pinching out the points, side shoots in abundance and to spare will be produced from base to summit. If the plants are not too strong some of these will show fruit, but a thoroughly fruitful condition is not often secured until these have been pinched and sub-laterals appear, when constant pinching at the first leaf beyond the fruit and tying out will require frequent attention.

Moisture.—The Cucumber being a great lover of moisture, syringing with warm water at a temperature of 80° may be performed twice every fine day; the first time when the day temperature begins to rise, and again after the pit is closed with strong sun heat. As days increase in length and nights become warm, an occasional afternoon

syringing from the outside, while cleansing the upper sides of the old leaves, will keep them free from spider and mildew by producing a genial bath, the value of which was so thoroughly understood by skilful frame cultivators of the last generation. On dark dull days the foliage should not be syringed, but by damping all available surfaces, atmospheric moisture can be abundantly produced.

Heat from fermenting and decaying vegetable matter is more genial than fire-heat, but as the first cannot always be obtained, at least through the early spring, hot-water pipes are indispensable until summer weather arrives. The mean temperature of the bed should range about 80°, and that of the air of the pit from 70° at night to 80° by day, with a rise of 10° after closing with sun heat. Good Cucumbers can be grown in a much lower all-round temperature; but if quantity and quality be the primary consideration, the above figures should not be widely departed from.

MELONS.—When the plants have covered two-thirds of the space allotted to them all the side shoots from the base to the trellis having been pinched at the first joint, they should be strong enough for stopping, to induce a break of laterals from which the fruit is to be obtained. Prolific kinds will show at the first joint on every lateral, which must be allowed to grow on until a sufficient number of female flowers have been fertilised, and the young Melons have attained the size of Walnuts. If evenly set, two or three of the most equable in size will be selected for the crop, all the others will be removed, and a general pinching at the first joint beyond the fruit retained and at the first leaf from the main stem where they have been removed, will complete the framework of each plant. If the plants are growing in pots, the dry condition of the soil which favours setting must now give way to moderate feeding, as they will soon begin to feel the strain of the rapidly swelling fruit, and when the latter reach the size of large hen eggs, each pot must be top-dressed with good heavy turfy loam enriched with old cow manure or the surface of a spent Mushroom bed; this material, it must be borne in mind, should be dry, as it will require ramming; and warm, as it will be placed in immediate contact with the surface roots. Stronger stimulants in larger quantities and in proportion to the bottom-heat will now be needed, as a well-grown Melon lays on its flesh in a very short time, and good syringing from the time the fruit begins to swell until it changes for ripening will be imperative. All Melons do not, however, submit to morning syringing, but they revel in atmospheric moisture, which can be produced by damping the paths and beds, and they luxuriate in a good foliage bath after the house is closed with sun-heat at a temperature ranging from 80° to 90°. Each fruit will require a small piece of board or lattice wire as a support, and all laterals and sub-laterals must be pinched or entirely removed, to prevent overcrowding of the main foliage, which must be carefully preserved. Melons, like Cucumbers, can be grown in a very high temperature and with very little air, but if the fruit is to be worth eating, a sound constitution must be secured by planting in efficiently heated houses that can be freely ventilated through the early part of the day without reducing the temperature below summer heat, otherwise the foliage will be thin, tender and flabby, and an easy prey to insects, in which case it will most likely ripen before the fruit. Old gardeners of the past generation thought very little of their work when they did not succeed in getting a second crop of good fruit from their MacPhail frames. They were unacquainted with hot-water pipes, but depended entirely upon fermenting material—still an invaluable agent—good covering, and incessant attention. Melons in these days, it is true, were harder, as the rage for hybridisation had not set in. Little Heaths and mongrels were unknown, but the original Egyptian green flesh, Spencer's green flesh, and the fine old Beechwood were well grown, and sent their aroma over the whole of the frame ground. These varieties may have been equalled, but it is doubtful if they will ever be surpassed.

W. COLEMAN.

WOODS & FORESTS.

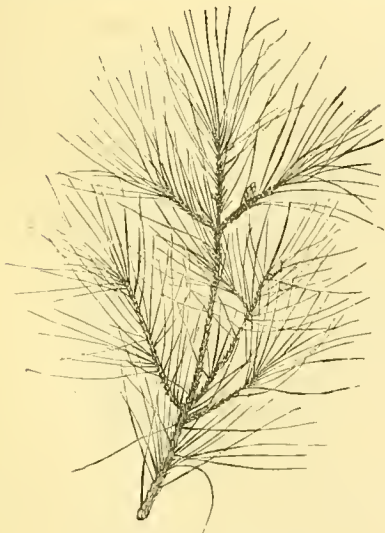
THE STONE PINE.
(PINUS PINEA).

ALTHOUGH not such an important tree in this country as many other Conifers, the Stone Pine possesses a peculiar interest beyond that of any other European Conifer. From the earliest



Stone Pine. Terminal buds and coning branch.

periods it has been the theme of classical writers. Ovid and Pliny describe it; Virgil alludes to it as a most beautiful ornament; and Horace mentions a Pine agreeing in character with the Stone Pine; while in Pompeii and Herculaneum we find figures of Pine cones in drawings and on the arabesques; and even kernels of charred Pines have been discovered. The Pinaster of the ancients does not appear to be the same as that of the moderns; the former was said to be of extraordinary height, whilst the latter is almost as low as the Stone Pine. No forest is fraught with more poetical and classical interest than the Pine wood of Ravenna, the glories of which have been espe-



Sterile branch of the Stone Pine.

cially sung by Dante, Boccaccio, Dryden, and Byron, and it is still known as the "Vicolo de' Poeti."

The Stone Pine is found in a wild state on the sandy coasts and hills of Tuscany, to the west of the Apennines, and on the hills of Genoa, usually accompanied by, and frequently forming forests with, the Pinus Pinaster. It is generally cultivated throughout the whole of Italy, from the foot

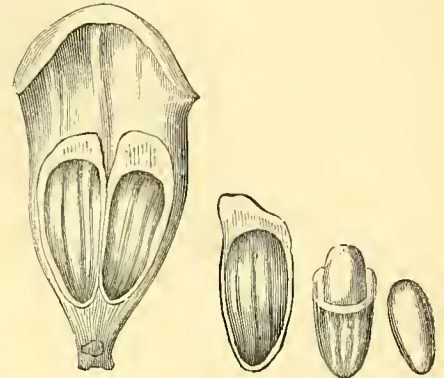
of the Alps to Sicily. It is not commonly found higher than from 1000 feet to 1500 feet, but it occurs in the south of Italy as high as 2000 feet. It is found, according to Sighthorp, on the sandy coasts of the Western Peloponnesus, in the same conditions, probably, as in the middle of Italy; it is also met with in the island of Melida. Cultivated, it is found on all the shores of the Mediterranean. In Northern Europe, and especially in England, its general appearance is certainly that of a low-growing tree, its densely clothed branches forming almost a spherical mass; but in the sunny south it attains a height of 75 feet to 100 feet, losing, as it ascends, all its branches, except those towards the summit, which, in maturity, assume a mushroom form.

Seen in the soft clime of Italy in all its native vigour, the Stone Pine is always majestic and strangely impressive to a northern eye, whether in dense forests, as near Florence, in more open masses, as at Ravenna, in picturesque groups, as about Rome, or in occasional single trees, such as may be seen throughout the country, but rather more frequently towards the coast. In these isolated trees their imposing character can be best appreciated, the great trunk carrying the massive head perfectly poised, an interesting example of ponderous weight gracefully balanced. The solid weighty appearance of the head of the tree is increased by its even and generally symmetrical outline, this especially in the examples near the coast, the mass of foliage being so close and dense that it looks like velvet, and in colour a warm rich

The lofty or normal type with the umbrella-formed top is almost peculiar to Central and Southern Italy. In other parts of the south of Europe, though often attaining large dimensions, it remains more dwarf and rotund in shape. This Pine has not been much planted in this country, owing, no doubt, to its slow growth and want of hardiness in a young state. Consequently there are not many large specimens, and certainly none to compare with those of Italy for size or picturesque beauty. Mr. A. D. Webster, the forester at Penrhyn Castle, North Wales, who has kindly sent us a fine cone of this Pine, writes thus respecting it: "A fair-sized specimen of this Pine stands on the sloping ground to the south-west of Penrhyn Castle. It shows off to advantage the peculiar outline of this Pine which is so marked a characteristic of those grown in the Mediterranean region. The trunk, which is about 4½ feet in girth at a yard up, rises for three-fourths its height without branches, after which it divides into a number of limbs, the extremities of which are well covered with foliage, thus giving to the tree a bushy, well-formed, and, I might almost add, rounded appearance. At a casual glance the whole tree might readily be mistaken for the Pinaster, but the leaves are shorter, less tufted, and always more erect. The bark of the Stone Pine is somewhat rough and uneven, of a dull grey colour, unless between the furrows, which is of a bright brown. That on the branches is more

smooth and of a light reddish brown colour. When closely examined, there is something remarkably pleasing and distinct from the generality of Pines in the appearance of this tree, the leaves, which are of a deep olive-green, being from their regularity and usual closeness when seen in good light like the finest network."

There is a moderately large specimen in the arboretum at Kew, and if this is the tree which



Stone Pine. Cone scale and seeds (natural size).

Loudon in his "Arboretum" alluded to as "a mere bush," it has made good growth during the past thirty years. According to Veitch's "Manual of Conifera," a fine specimen, one of the largest in the country, is at Glenthorn, in North Devon. It is 33 feet high, and has a spread of branches some 22 feet, while the trunk is clear of branches for 15 feet. Loudon enumerates several fine trees in these islands at that date (1854), only one of which was 45 feet high. This one was at Ballylead, in County Down, and had been planted about 60 years. Even where planted in the most favoured localities we can never expect the Stone Pine to assume its true character, and that is the reason why so few plant it.

AS A TIMBER TREE it is of not much value. Mr. Webster says, "The wood is worthless except for very ordinary purposes. The timber grown here (Penrhyn) is, from the few specimens I have had the chance of examining, very clean, light, from the small quantity of resin it contains, and in colour very nearly approaches the yellow Pine of commerce. It cuts clean and works well under the tools of the carpenter. In its native country the wood has been used for boat-building, but is now, I believe, almost entirely discarded." This Pine thrives best on a soil that is deep, sandy, and dry. It should be well sheltered and nursed, as it is rather tender while in its young state. It is best to keep the seedlings under glass, though they may be planted out in the open after their fourth or fifth year.

The cones of this Pine supply the "Pignoli" of commerce. The Italian cooks use these seeds in their soups and ragouts and in the Maritazzi buns of Rome. Sometimes the Italians roast the barely ripe cone, dashing it on the ground to break it open, but the ripe seeds of the older cone when it naturally opens are better worth eating. They are soft and rich, and have a slightly resinous flavour. The empty cones are used by the Italians for fire lighting, and being full of resinous matter they burn rapidly and emit a delightful fragrance.

DESCRIPTION.—*Pinus pinea* belongs to the Pinaster section of the genus. In the south of Europe it is a lofty tree, with a spreading head forming a kind of parasol, and a trunk 50 feet or 60 feet high, clear of branches. The bark of the trunk is reddish and sometimes cracked, but the general surface of the bark is smooth, except on the smaller branches, where it long retains the marks of the fallen leaves, in the shape of bristly scales. The leaves are of a dull green, but not quite so dark as those of the Pinaster; they are semi-cylindrical, 6 inches or 7 inches long and one-twelfth of an inch broad, two in a sheath, and disposed in such a manner as to form a triple

Natural sized leaves.



THE STONE PINE (PINUS PINEA) AT CASTEL GANDOLFO, IN ITALY.

spiral round the branches. The catkins of the male flowers are yellowish; and, being placed on slender shoots of the current year, near the extremity, 20 or 30 together, they form bunches, surmounted by some scarcely developed leaves. Each catkin is not more than half-an-inch long, on a very short peduncle, and with a rounded denticulated crest. The female catkins are whitish, and are situated two or three together, at the extremity of the strongest and most vigorous shoots. Each female catkin has a separate peduncle, charged with reddish, scarious, lanceolate scales, and is surrounded at its base with a double row of the same scales, which served to envelop it before it

green, the point alone remaining red; and at last, about the end of the third year, they attain maturity. At this period the cones are about 4 inches long and 3 inches in diameter, and they have assumed a general reddish hue. The convex part of the scales forms a depressed pyramid, with rounded angles, the summit of which is umbilical. Each scale is hollow at its base; and in its interior are two cavities, each containing a seed much larger than that of any other kind of European Pine, but the wing of which is, on the contrary, much shorter. The woody sheil which envelops the kernel is hard and difficult to break in the common kind, but in the variety *fragilis* it is ten-

and believe to be a remedy in cases of intermittent fever, if swallowed in uneven numbers, such as 3, 5, or 7. The duration of the tree is much greater than that of the Pinaster, and the timber is whiter and somewhat more durable. In the climate of London, trees of from 15 to 20 years' growth produce cones.

There are no well-marked varieties of the Stone Pine, though in its native districts geographical forms may occur. For instance, Loudon describes a variety *cretica*, which is said to have larger cones and more slender leaves. Duhamel also describes a variety *fragilis*, having thinner shells to the seeds or kernels. Neither of these varieties are in this country, so far as we are aware. There are various synonyms for *P. Pinea*, the chief being *P. sativa* of Bauhin, *P. arcanensis* of Knight, *P. domestica*, *P. chinensis* of Knight, and *P. Tarentina* of Manetti.

Pyrus floribunda atrosanguinea.—This is a hybrid between the Japanese *Pyrus floribunda* and the Chinese *P. spectabilis*, both very free-flowering and very handsome Crabs. It has the habit, the floriferousness, and the deep colour of the former plant and the large flowers of the latter. It is said to be an excellent subject for forcing; in any case, it is a very handsome hardy-flowering shrub. It originated a few years ago in one of the Dutch nurseries, and no doubt ere long when better known will be widely cultivated in this country.—N.

Rubus deliciosus.—Each recurring spring we are reminded of the great beauty of this Rocky Mountain Bramble, which should find a place in every collection of shrubs, however choice. It forms a somewhat Currant-like bush, with rather slender branches, which become completely studded with pure white flowers some 2 inches to 3 inches in diameter. In such profusion are the blossoms borne, that the whole bush is a mass of white, and if traioed to a wall, which—by the way, it furnishes in a very satisfactory manner—the blooms are equally numerous and fine. It does not produce suckers like most of the Rubuses, but is generally increased by means of cuttings.—T.

Acer macrophyllum.—In the Western United States this forms a tree 80 feet to 100 feet in height, with a trunk sometimes 5 feet in diameter. Its wood is valuable, hard, close-grained, is susceptible of a good polish, and in the Pacific forests is the best substitute for the Hickory of the Atlantic States. From its inner bark mats, hats, and baskets of excellent quality are made, and Maple sugar is also manufactured from its sap. In this country it grows vigorously, and its large handsome foliage and long dense racemes of yellowish green flowers make it a conspicuous object in the park or pleasure ground. It is well worth growing as a highly ornamental deciduous tree.—G.

The red-leaved Peach.—Among coloured-leaved shrubs the new *Prunus Pissardi* is undoubtedly entitled to the first rank during the latter part of the summer and till the fall of the leaf; but earlier in the season, that is, during the early part of summer, the red-leaved Peach is by far a more conspicuous object, the leaves being of a bright telling colour, while the *Prunus* at that time is but of rusty tint. With the heat of summer the Peach commences to pale, while the Plum acquires a greater depth of colour. The red-leaved Peach was imported into this country from America, where it is said to have been found wild on or near the battlefield of Fort Donelson, in Kentucky.—W.

The white Oak.—It would seem far from improbable that this Oak (*Quercus alba*) if planted in suitable spots would prove successful from a purely commercial standpoint in many places in the British Isles. As an ornamental tree it is too seldom met with; the bright green of the upper surface contrasts rather markedly with the glaucous colour of the under side of the somewhat large sinuate-pinnatifid leaves. The Acorn is about an inch long and the kernel is edible; the hemispherical saucer-shaped cup is considerably shorter



Full size 1 cone of *Pinus Pinea*.

expanded; its form is perfectly oval, and its total length about half-an-inch. The scales which form the female catkin are of a whitish green; the bractea on the back is slightly reddish on its upper side; and the stigma, which has two points, is of a bright red. After fertilisation, the scales augment in thickness; and, becoming firmly pressed against each other, they form by their aggregation a fruit, which is three years before it ripens. During the first year it is scarcely larger than the female catkin; and during the second year it becomes globular, and about the size of a Walnut. The third year the cones increase rapidly in size; the scales lose their reddish tinge, and become of a beautiful

der, and easily broken by the fingers. In both, the kernel is white, sweet, and agreeable to the taste. The taproot of the Stone Pine is nearly as strong as that of *P. Pinaster*; and, like that species, the trees, when transplanted, generally lean to one side, from the head not being correctly balanced. Hence, in full-grown trees of the Stone Pine there is often a similar curvature at the base of the trunk to that of the Pinaster. The palmate form of the cotyledons of the genus *Pinus* is particularly conspicuous in those of *P. Pinea*. When one of the ripe kernels is split in two, the cotyledons separate, so as to represent roughly the form of a hand; and this, in some parts of France, the country people call *la main de Dieu*,

than the Acorn. The white Oak is common in rich woods throughout the Northern United States, and the estimation in which it is held in its native country is shown by the following abstract from Professor C. S. Sargent's valuable "Catalogue of the Forest Trees of North America:" "A large tree 60 feet to 80 feet in height, with a trunk 6 feet to 8 feet in diameter, of the very first economic value, and superior to all other North American Oaks in the quality and value of its wood. Wood light coloured, strong, heavy, elastic, durable; its specific gravity .662; largely employed in ship-building, construction of all sorts cabinet making, cooperage, for which purpose and basket-making it is preferred to all other American woods; also very largely in the manufacture of agricultural implements, carriages, &c., and for railway ties, piles, posts and fuel."—G.

Pyrus Malus floribunda.—Among spring flowering shrubs this stands out conspicuous; every branch and shoot becomes literally crowded with lovely pink-tinted blossoms, in shape and size much like those of the Cherry. The habit of the plant is naturally drooping, and when grown as standards on clear stems it forms a remarkably striking object on a lawn; it is equally valuable, too, for growing as a bush in the foreground of a shrubbery border, where it may be pruned in occasionally, and kept to any size or shape that may be desired. It may be planted now, but the right time is during autumn or winter, and the same season suits for making cuttings of the ripe shoots, which, put in then, strike readily, so that stock may be increased as quickly as that of Gooseberries and Currants.—S. D.

Cratægus pinnatifida.—Undeterred by cold winds and frosty nights, this interesting and very desirable Thorn has developed young shoots nearly an inch in length. Every year it is a long time ahead of all the other Thorns in commencing to grow, and the light green-coloured growths seem to experience no injury from frost. There seems to be two distinct forms of this species, both of which occur only in Eastern Asia; one is a decidedly spiny plant and the other almost quite thornless. The leaves, handsome and distinct from those of most other Cratægus, do not seem to differ appreciably. As a single specimen on a lawn or in the ordinary shrubbery, *C. pinnatifida* forms a very attractive object.—G.

The Red or River Birch.—During the winter months a clump of this tree makes a very attractive group and contrasts very markedly with the more graceful European Silver Birch. The bark of *Betula nigra* (for the Red Birch is now known under this name, that of *B. rubra* no longer being used except as a synonym) is a distinct red; it remains attached to the trunk and larger twigs in thin loose plates, and presents a remarkable appearance at this time of year. It is perfectly hardy in this country, and as a thoroughly ornamental tree should find a place in damp spots in the park or by the side of ornamental water. In the United States it forms rather a large tree, and is generally found along the borders of streams.—N.

The Murthly Conifers.—It is a pleasure to hear that there are such fine Douglas Firs at Penrhyn. The dimensions given on page 115 of the Murthly specimens as regards height were rather under than over the mark. Many of the trees in the avenue were quite 10 feet or 15 feet above the stated 70 feet. The statement that no finer Douglas Firs, taken collectively, exist from Penzance to Wick was made by me, because I had been over the ground mentioned since last August. Moreover, it was Mr. Fowler, of Castle Kennedy, who advised me to go, used a statement very similar to my printed one. I trust before long to give Mr. Webster the particulars he asks for. Meanwhile I may say that the Murthly trees are growing in a sheltered part of the Tay valley, and that close upon 4000 acres of wood have been planted since. A goodly portion of the trees are Douglas Firs. I am pretty confident that my statement will not need further qualification than the "perhaps" gave it.—M. C.

WHAT TO PLANT NEAR THE SEA.

AS I see that this is a question often asked in your columns, permit me to recommend the Evergreen Oak (*Quercus Ilex*) to the notice of your readers as valuable for planting near the sea coast, either in groups for ornament, or as a nurse for plantations. In the latter point of view, perhaps, the Pinaster (*Pinus Pinaster*) may be considered by some as preferable, being more rapid in its growth; and for deep plantations I should be inclined to favour it, not only on account of its being the fastest grower, but because a large supply can be more easily obtained at a much less expense; but as a breastwork, for either deep plantations or belts, I should favour the Evergreen Oak, as being by far more ornamental, as well as lasting, and for having the advantage, also, of feathering down and forming a thick mass of foliage nearly impenetrable to the eye, which is of considerable advantage in belt planting, and in which the Pinaster fails in its advanced state of growth. With regard to the properties of the Evergreen Oak, it shares an equal if not a greater degree of indifference to the sea air with the Pinaster, which is fully proved in the west of Cornwall in numerous instances.

THE PINASTER is well known in Cornwall, and

this soil operates as a sponge, suffering the superfluous water to sink down to a lower level, but retaining a quantity of water so closely combined with its own substance that it will not freely give it out to the heat of the sun, although it long continues to afford a sufficient supply to the fibres of the vegetables which invest it. We accordingly see that the grass and herbage of the chalk downs do not burn up with the summer heat, even under a very high and long-continued temperature; if they appear brown or yellow the colour is only that of the ripened stalks of the grass, but the leaves are still green, and the corn and pulse crops on the chalk, even in a dry summer, are less deficient in straw than are the same crops on many other soils, and they never through excess of heat or drought fail of finding a competent supply of moisture below their roots to swell the grain with farina of the best quality. This rock is for the most part too compact to admit the roots of trees freely to insinuate themselves into its fissures until it has first been trenched or otherwise broken up, but as well the detritus which covers it (and which usually consists of a calcareous loam, varying at different places in its depth in the proportions of silex, of vegetable matter, and of clay, which are mixed with it), as also the chalk itself,



A young English-grown Stone Pine (see p. 245).

much sought after by gentlemen who are forming new plantations, to plant principally as nurses to the more valuable kinds of trees. When they are planted to stand by themselves, either in groups, belts, or large plantations, unless they are kept properly thinned during their growth, premature old age ensues, and they make but a sorry appearance at the end of forty or fifty years. Cases of this kind have occurred where a few Evergreen Oaks were sprinkled among the Pinasters, the latter of which are gone to decay, leaving the former healthy and vigorous, and promising fair to be of long standing.

T. R. C.

TREES ON CHALK SOILS.

THE soils to which my observation has been principally directed, because I have been most familiar with them, are the calcareous strata, and particularly the chalk, a stratum which subtends a very considerable proportion of England, extending with some intermission from Bere, in Dorsetshire, to Flamborough Head, in Yorkshire. This rock, though sufficiently porous to permit water to percolate through it, so that it is rarely troubled with surface water, yet has, like all other calcareous matter, a very strong attraction for water, and the consequence of these two properties, namely, its attraction for water and its porous texture, is that

when trenched, evince an aptitude for the growth of certain plants usually considered as aquatics which we are surprised to see flourishing so luxuriantly in very elevated situations and far remote from any visible reservoir of water either on the surface or beneath it.

Select trees for chalk planting.

The Abele or Silver Poplar (*Populus alba*), the black Italian Poplar, Lombardy Poplar, the Red-twigged Osier (*Salix rubra*), Goat Willow (*Salix caprea*), the Huntington Willow (*Salix alba*), and the Alder (*Alnus glutinosa*) all flourish with surprising success in a trenched chalk soil, though it be almost destitute of any surface covering of vegetable earth, and apparently barren. I regret that I have not made more extensive experiments in the cultivation of other aquatic trees on chalk soils, but those which I have mentioned ought to be considered as affording sufficient encouragement to try the *Salix Russelliana* (Bedford Willow), *Populus macrophylla*, or Ontario Poplar, and other valuable trees of similar habits. I feel, however, called on to declare that I am not aware of having observed either of these trees spontaneously produced on the chalk, except the *Salix caprea* (Sallow) and *Populus alba* (Abele).

NATIVE TREES ON CHALK.—The following is a list of certain native British trees and shrubs

which I have observed to grow spontaneously and vigorously on the chalk and its detritus:—

Common Maple, <i>Acer campestre</i>	Wild Pear tree, <i>Pyrus communis</i>
Common Birch, <i>Betula alba</i>	Common Crab Tree, <i>Pyrus Malus</i>
Tree Box, <i>Buxus sempervirens</i>	Whitebeam Tree, <i>Pyrus Aria</i>
Traveller's Joy, <i>Clematis Vitalba</i>	True Service Tree, <i>Pyrus Sorbus</i>
Common Dogwood, <i>Cornus sanguinea</i>	Oak, <i>Quercus Robur</i>
Common Hazel, <i>Corylus Avellana</i>	Buckthorn, <i>Rhamnus catharticus</i>
Whitethorn, <i>Cratægus Oxyacantha</i>	Berry-bearing Alder or Blackwood, <i>Rhamnus Frangula</i>
European Spindle Tree, <i>Eunonymus europæus</i>	Goat Willow, <i>Salix caprea</i>
Common Beech, <i>Fagus sylvatica</i>	Common Elder, <i>Sambucus nigra</i>
Common Ash, <i>Fraxinus excelsior</i>	Common Yew, <i>Taxus baccata</i>
Walnut, <i>Juglans regia</i>	Small-leaved Lime, <i>Tilia parvifolia</i>
Common Juniper, <i>Juniperus communis</i>	Wych Hazel, <i>Ulmus montana</i>
Privet, <i>Ligustrum vulgare</i>	English Elm, <i>Ulmus campestris</i>
Abele Tree, <i>Populus alba</i>	Gelder Rose or Coppice Alder, <i>Viburnum Opulus</i>
Aspen Tree, <i>Populus tremula</i>	Wayfaring Tree, <i>Viburnum Lantana</i>
Blackthorn, <i>Prunus spinosa</i>	

There are certain of the upper beds of the chalk in various localities of a fine soft texture, into which the roots of the Oak so penetrate as to make that tree flourish in a singular manner, attaining in those situations great height, and having the bark of its young branches shining like silver, of beauty not inferior to that which adorns the silver bark of the Oak woods on the schist of Devon, but, generally speaking, the Oak on the chalk, though it spontaneously propagates itself, is small and stunted, and is by no means the most splendid sample of the species. The Ash, too, although it is spontaneously propagated in great plenty, does not, except in certain soft beds of the chalk, attain great size, and it is extremely subject on this, as well as on the mountain limestone and on other calcareous soils, to be affected and destroyed by the canker, which disease often also attacks and destroys some of the young Beeches. With these materials, however, it is very practicable to create stately groves, dense covers, valuable timber, productive coppices, and beautiful and varied scenery.

EXOTIC TREES ON CHALK.—There are also plants and many exotic trees long established in this country as native species which are not the spontaneous growth of this stratum, to which, nevertheless, the chalk soil is congenial. Such are:—

Norway Maple, <i>Acer platanoides</i>	Common Bay Tree, <i>Laurus nobilis</i>
Esculent Hippocastanum (provided there be a depth of calcareous loam above the chalk rock)	Mock Orange, <i>Philadelphus coronarius</i>
Common Alder, <i>Alnus glutinosa</i>	Platanus orientalis
Arbutus Unedo	Platanus occidentalis
Acubia japonica	Larch
Buddleia globosa	Silver Fir
Hornbeam, <i>Carpinus Betulus</i>	Spruce Fir
Cistus, numerous, probably all the hardy sorts	Scotch Pine
Bladder Senna, <i>Colutea</i>	Weymouth Pine
White-berried Cornel, <i>Cornus alba</i>	Black Italian Poplar
Common Laburnum, <i>Cytisus Laburnum</i>	Lombardy Poplar
Scotch Laburnum, <i>Cytisus alpinus</i>	Rhamnus Alaternus
Black-rooted Cytisus, <i>Cytisus nigricans</i>	Red-berried Elder, <i>Sambucus racemosa</i>
Broad-leaved Spindle Tree, <i>Eunonymus latifolius</i>	Chinese Arbor-vite, <i>Thuja orientalis</i>
Kerria (Corchorus) japonica	American Arbor-vite, <i>Thuja occidentalis</i>
	Common Linden Tree, <i>Tilia europæa</i>
	Laurustinus, and doubtless many others which have not met any observation.

OF CONIFERS the Larch seems to succeed best; next to that the Weymouth Pine and the Silver Fir. On some exposed and barren parts of the chalk even the hard Scotch Pine can attain no stature, at least if planted without previous trenching, and in all, except the deepest and most fertile of the chalk loams, the Spruce Fir, though it may appear to flourish for a few years, yet, after a quarter of a century, it becomes stunted and starves, it loses its foliage, and either actually dies, or survives only to perpetuate the melancholy spectacle of a well-intended work injudiciously conducted. The finest Planes that I ever saw were on the chalk, but situate in a bottom where there was a considerable depth of calcareous loam, mixed with flint gravel, interposed between

their roots and the homogeneous rock. As we advance from the chalk hills to the north-westward the calcareous stratum of extent and importance which we next meet with is the great oolite, or Bath freestone rock. The trees upon this stratum do not materially differ from those which invest the chalk. If it usually is covered with a bed of hazel calcareous loam of greater depth than commonly lies over the chalk, yet the rock when we come to it is generally more compact, harder, and more difficult to be trenched than the chalk. The Elm flourishes on this stratum more freely than on the chalk. I have had no opportunity of observing any experiment on the culture of the Alder and Poplar tribe on this stratum, but the substance of the stone being less porous than the substance of the chalk, I should be thereby led to expect that these trees would not succeed equally well here as on the chalk. I have seen the Abelegrowing spontaneously and vigorously on this stratum. In the valleys which cut this stratum is usually found an extraordinary depth of rich friable loam, in which the *Salix fragilis*, or Crack Willow, and some others of the large Willows attain a great stature. The next great calcareous stratum, as we pass to the north-westward, is the mountain limestone, carboniferous or metalliferous limestone. This stratum is in some respects modified from the two preceding by portions of a purple ferruginous clay, which in certain places are interposed in joints or other cavities of this rock and also by layers of chert, and others of firestone, i.e., impure siliceous limestone, alternating with the beds of mountain limestone; and these heterogeneous rocks and their detritus in some parts materially affect and modify the soil which is spread over this stratum. We find on the mountain limestone the Sycamore, the *Pyrus hybrida*, and most of the preceding trees which I have mentioned as natives of the chalk. The Holly (*Ilex Aquifolium*), too, is found here more frequently than on either of the preceding calcareous strata, fostered, no doubt, by the more abundant silex, which is supplied by the detritus of the interposed beds above mentioned, and from the same cause the *Ulex europæa* (Whins, or French Furze) usually invests in considerable plenty some of the uncultivated portions. G.

FORESTRY.

WHAT TO DO WITH OUR TIMBER.

It is most gratifying to me, as doubtless it will be to other readers of WOODS AND FORESTS, to see that you intend to devote a portion of the columns of such a widely circulated journal as THE GARDEN to the important subject of arboriculture. A good deal of what has been written about forestry I find has had reference more to planting than to the question of judicious exploitation and marketing of our home-grown timber—a subject of equal if not of more interest. It is hoped that this part of the question will be fully dealt with in your columns. Perhaps the point of judicious cutting may be more easily solved than the marketing, as the former may to a great extent be accomplished by individual observation and study. The latter, however, is the vital one, and has to be answered more or less unsatisfactorily every day. I see no reason why it should remain on such an unsatisfactory footing. In the London and other markets the value of imported woods is known to almost 5s. per standard, or a fraction per foot, as the case may be. Why should there be such ignorance of the value of our home-grown woods? Often in the same district a great divergence of opinion exists, and, taking such returns as have come before me, the figures in many parts are irreconcilable.

This may arise partly from the lack of knowledge of the proper markets by those having charge of the sales, and in other cases from a desire to make the returns look as well as possible on paper. This is a mistake, and only arises from a false sense of delicacy in publishing the true state of affairs. Why should it be? If a stack of corn or a herd of cattle has to be sold, there is no

desire shown to keep the prices realised from those interested; and why should there be with timber?

The present moment, to my mind, is a peculiarly opportune one for raising the enquiry whether some more uniform method of imparting mutual and reliable information cannot be devised. Knowledge of the actual state of affairs must be in the possession of many of your readers, and the only way that we can see to bring about a more uniform and satisfactory basis of prices is publicity. Such an opportunity as this paper will now present has never before occurred. I had intended to have raised the enquiry as to how far home-grown timber may be used with advantage for estate purposes, but this may be a subject for another paper. D. J.

SELLING PLANTATION WOOD.

WHERE large quantities of home-grown timber are disposed of annually the more need is there to sell direct to the consumer, so that the entire profits of the produce may be the greatest possible and come into the proper exchequer, and not the smallest, and in many instances, as is too often the case, no profit at all, but loss. The timber merchant, it is said, likes good profits. So he does. Much too good, and much more than the growing of timber will warrant to allow any sort of profit after to the grower. Again, it is said that his is all the risk. What risk? Any risk that the producer cannot as well run as the timber merchant? Why, if the timber merchant is able to bear great losses and risks and still go on flourishing, surely the producer with the collected profit of the produce is more fit to meet such emergencies. Those who raise objections to the direct disposal of plantation timber contend that the woodman would have to become a timber merchant, and have to contend with keen competition on all sides. Well, if foresters were less capable of selling wood to the consumer than the timber merchant, or if he were less capable of selling to the consumer than to the timber merchant, to whom he must sell at present, there might be reason to dread going forward. But I contend he is not so. There would doubtless be keener competition than now, but more competitors there would not be; seeing there are as many with wood to sell now as there would then be, only many more might sell wood then who do not do so at present, just on account of the extra low prices offered. But is competition a bad thing in trade? Competition, in my opinion, is the life, and not the death, of trade, regulating at all times the proper value of an article. The producer has quite enough to compete against in the heavy importation of foreign timber without having to combat against the nominally no prices of the British dealer in home-grown timber.

A large portion of the timber in Great Britain is far removed from railway facility, and being so is far distant from the market, for which reason it will not afford a middleman's profit. I am not now thinking of the few or more places better located, but of the many not so well placed. But this is not all; the vast aggregate of the land yet to plant is also greatly distant from railway transit, which ought notwithstanding to yield remunerative timber crops if not burdened by intermediate commissions. The application of steam power and the laying of country roads with rails similar to tramways in towns would do much to enhance the value of wood and to lower the rates of railway companies.

I am not given to prophesying, yet I dare predict that before many years are past a great and, I hope, a beneficial change will have come round both in the selling and in the bringing of timber to the market, whereby the era of stock-jobbing in this will have got the *coup de grace*. Now, why not have depôts in the great centres of timber consumption, with the essential staff and apparatus attached to convert the wood into the several uses of the consumer? Wherefore should not all woodland proprietors form themselves into associations, co-operative associa-

tions; in short, become members, one and all, of one or other of the depôts intended to prepare and put the timber into the market—each member paying his share of the tear, wear, and labour of the manufactory in proportion to the amount of wood converted and sold to his account. As, for instance, A's sales are equal to £100, D's to £500, and C's to £1000. It is evident that the liabilities of D would be five times and that of C ten times that of A, as for every £1 A would pay for tear, wear, and labour, D would pay £5 and C £10, and so forth. This would put a check upon adverse competition, as the sole competitor would be the foreigner. But, besides being members of their own neighbouring depôt, every producer would become a member of one supreme association, which would be the main source of council and of mutual conference, issuing all orders and regulations—that is, this chief association would consult about the common interest. Although proprietors need not be more visibly concerned in the matter than they are at this time, as their acting officials would represent them in this.

GLENDYF.

ARTIFICIAL PLANTATIONS OF SCOTCH FIR.

THE following remarks concerning the culture of the Scotch Fir in this part of Scotland are in no sense connected with the discussion which has been carried on lately in *Woods and Forests* respecting the merits and demerits of the Scotch Fir. They are rather the outcome of a desire to disseminate information among brother foresters with regard to the behaviour of Scotch Fir under peculiar conditions of soil and climate.

THE SCOTCH FIR PLANTATIONS to which these remarks refer range in age from twelve to sixty years. They are chiefly found on hilly and rocky ground, from about 400 feet to 800 feet above the level of the sea, and about 18 miles or 20 miles south of the Moray Firth. The soil is generally of a peaty nature, growing heath, and partly loam, such is, if cultivated, would produce Turnips; the subsoil is principally of clay, and rather too damp for the successful growth of the Pine. There is a portion of these plantations also growing on a thin peaty soil over a subsoil of gravel or sand; but, as from the springs, the sand appears to be much impregnated with iron, the Pine does not thrive here on this soil so well as on ground much like it near the Spey. The trees in these woods are planted about 4 feet apart and require little attention, beyond that of filling up vacancies for the first twenty years; and from that age to forty years, according to growth, pruning and thinning go on. At about twenty years, where the trees stand at the original thickness, about three-fourths of the weakest plants are cut out, which leaves those that remain at about 8 feet apart; the dead branches are at the same time pruned off close to the stem of the tree, about 7 feet up from the ground.

REMOVING DEAD LIMBS.—I consider it as decidedly best to take off all the dead branches, even if they should be higher than a man can reach at this period; but in extensive plantations the expense of labour is an obstacle. The reason is that, when the dead branch does not soon fall off, there is a danger that the wood of the trunk will grow round it and produce a dead knot. I do not approve of cutting away live branches of two or more inches in diameter, as the resin flows freely from the wound, and where many of these wounds are made the tree is weakened. Small live branches might be pruned off with a knife from trees of ten years' growth or thereabouts without much disadvantage, but in this case I would not remove more in one year than one year's production; but this mode could only be practised in plantations of small extent. As regards the distance at which the trees are finally left, supposing all the trees left at the first thinning to thrive, I gradually remove the weakest until the best trees stand from 12 feet to 16 feet apart. If the branches do not touch each other, I leave the trees so that they will nearly touch; for, if much further apart, the wind gets vent amongst them and often uproots the best ones.

In point of fact, however, the trees, after first thinning, do not all thrive; both before and after this operation many of them die.

THE CANCER DISEASE appears like a black resinous patch on the side of the tree, and invariably kills it in a short time after the disease appears. All these dead and cankered trees, when removed, frequently leave the plantation thinner than we wish it to be; but the rule I adopt where there is no disease is to leave the trees so as the tops have room, and not much more; and with this treatment I find the trees will attain the full size that the soil and climate will allow. In this district, the best planted Scotch Pine trees in plantations of sixty years' growth do not measure more than 16 cubic feet; the timber is rather soft, and when used for roofing houses it is found to be much inferior to Scotch Pine from the natural woods. In all the country on the banks of the Spey Scotch Pines thrive better than in this quarter. I suppose the soil being nearer in quality to that on which they grow naturally is the principal cause. I cannot say with certainty how plantations are treated in that district, but I rather think much in the manner I have endeavoured to describe.

SCOT.

DURABILITY OF ELM WOOD.

IN a portion of the Marylebone Road, extending from the ancient hostelry long known as the "Yorkshire Stingo," and ending at the junction with the Edgware Road and the Oxford and Cambridge Terraces, the Middlesex Waterworks Company have been recently relaying iron pipes in the place of wood pipes. The wood pipes which are now being displaced consist of rude natural trunks of Elm trees of various lengths, but mostly 7 feet to 8 feet long, and at the base, or thicker ends, they are 6 inches to 20 inches in diameter. The Elm trunks are pierced with a longitudinal bore 10 inches in diameter at the thicker end, gradually diminished to a 7-inch bore at the upper or smaller end, the latter being thinned down and driven socket-ways 2 inches or 3 inches into the wider bore of the stouter end. On enquiry I learned from the chief officers of the Middlesex Waterworks Company that the latter was formed and commenced operations in the year 1806, and they found the wood pipes in question were then in use, and were of opinion that they had been laid at some earlier period by the New River Company or the city authorities. I carefully examined these Elm logs as they were dug up, and could find no indication of decay either within the bore or on the outside of the trunks. If anything, the texture of the wood seemed to be intensified in hardness.

It is at this point where the interest of my story—whatever it is worth—mainly centres, that is, the clearly ascertained fact that these Elm logs have lain buried underground for a period of ninety-six years, and, judging from the above statement, in all probability more than 100 years, and that without suffering the least decay. This is, at least, a significant incident, and one of some public interest, as bearing on the relative properties of timber, and at the same time a striking confirmation of the commonly accepted belief of the great endurance and lasting properties of the Elm, and its consequent value in cases where the use of timber is required in underground constructions, or where it is kept constantly wet. Looking back at the very suburban condition of the locality at the time when these Elm trunks were laid in the Marylebone Road, it is quite likely they were cut down from some adjoining hedgerow, and used at once in their recent green state. When dug up they were still covered with portions of the bark.

In connection with the above a very cursory glance at the progress of the arts and manufactures of the country during the last century receives from the following incident a remarkable illustration of the altered condition of the surroundings in which we now live, comparing now with then. In replacing some of the original water-pipes of the above company, such were the difficulties which then surrounded the efforts of those con-

cerned in the distribution of the London water supply, that besides the use of perforated Elm tree trunks as described above, portions of the supply pipes when dug up in the public streets were found to have been constructed of blocks of stone pierced with bores of considerable size and fitted together end to end.

ROBERT MARNOCK.

REPRODUCTIVENESS OF LARCH.

I AM very much interested in the discussion which has recently taken place in your pages concerning the reproductiveness of the Larch. This tree I look upon as one of the most useful and profitable trees ever introduced into this country. Notwithstanding the bad treatment it has received since it has been under cultivation it still is able to hold its own against any of the more recently introduced trees. When first introduced it was thought a delicate plant, yet no other forest was ever planted so extensively over so much ground in so short a time. The Larch has great reproductive powers, and not only springs up as numerous as the Scotch Fir, but, from what I have seen in many woods, I believe it would exceed it. In the woods of New Milne, Perthshire, I found many young plants which were self-sown. The woods were about sixty or seventy years of age, planted rather thinly, and growing in soil with a short mossy surface, which is most favourable for the germination of the seed. The Scotch Fir was plentiful, but not nearly so numerous as the Larch. If the seedlings should remain unmolested by ground game they will form fine young trees in years to come. In another wood about a mile distant from this place are some seedling Scotch Firs and common Spruce, the latter being nice young plants and very thick.

In another planted wood consisting of Scotch Pine, Spruce, and Larch, about thirty-five or forty years of age, are several self-sown Scotch Pines growing by the sides of an old road which winds through the wood. These naturally self-sown Pines are not very much smaller than the parent trees, and are promising to make superior timber as they approach maturity. The trees are not suffering from an over-abundance of lower branches.

On the Scone Estate, famous for its extensive woods of coniferous and hardwood trees, there are many acres naturally sown and planted trees, the like of which are not exceeded in some of the forests of the north for length of bole, clear of branches to a great height, and girth. I have been fortunate enough to see some of these cut up which were laid flat by the heavy gales of late years. The heartwood was as hard and solid as ebony. At Scone, also, are some young plantations of naturally self-sown Larch, not to speak of the many trees which spring up here and there throughout the woods; on this part where the self-sown Larch plantations are was a piece of very poor land which was considered unfit for tillage. This was left alone for some years; the consequence was many young Larches sprung up, being sown from trees in a plantation adjoining the land. These trees are very irregular—some being large trees, some mere poles, others springing up successively at all stages of growth. On the Lenfield estates are also some seedling Larch plantations, which were pointed out to the party of French foresters when visiting the Scotch woods.

I firmly believe that most of our hardy trees at present cultivated, including Scotch Pine, Larch, Douglas Fir, Menzies' Spruce, and other hardy Conifers, would reproduce themselves naturally if the seed fell in spots favourable for its development. I find that Moss, not too deep, is favourable for seed germination, because it contains dampness sufficient to develop the seed; then the small roots strike into the damp Moss, ultimately reaching the soil. But nothing equals the common Heath where not too long or thick and bushy. Where it is neither too open nor too close to contain too much dampness, so as the young seedlings would not damp off, is most favourable. To this same cause may be attributed the very extensive

woods of natural Pines in the north, because of the short healthy surface. R. COUPAR.

Ashford, Galway.

FOREST MACHINERY.

KNOWING that a large quantity of home-grown timber that could profitably be turned to account on the estate, both for new buildings and repairs, is continually being disposed of in the rough at unremunerative prices, we propose to give from time to time under the above heading plain and practical papers on the kinds of machinery best adapted for reducing this rough timber to its required dimensions. The only reason for the present suicidal policy of selling gound timber, suitable in every respect for work that has to be done on the spot, and buying wood of doubtful quality that has to be brought many miles to the sea coast in a foreign country, across the sea, and then probably another considerable distance by rail, must be, that it comes to hand in a more available shape. We are not now speaking of joinery and similar woods, but the vast bulk of timber that goes to make up a building. It is almost incredible in a day like this, when machinery is used for almost every purpose, that there should be so little attention given to this subject. The time-honoured custom of the use of

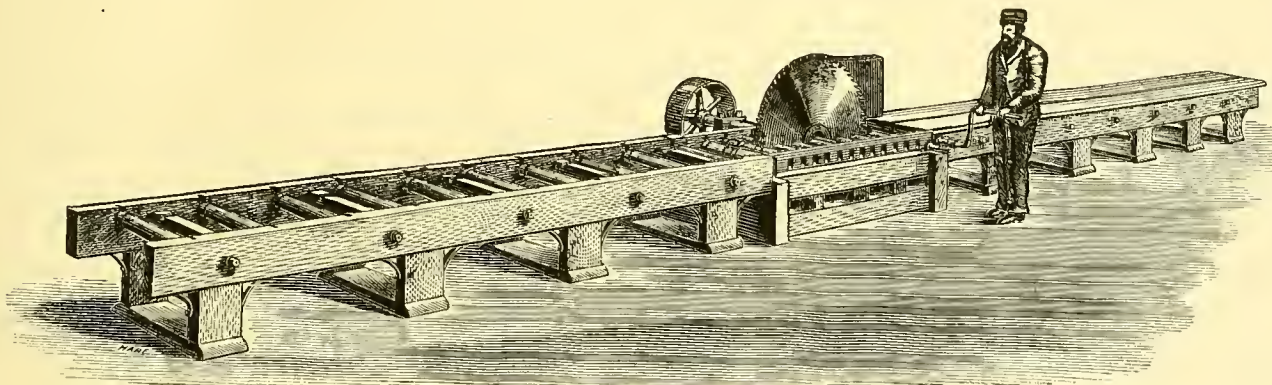
recent number of WOODS AND FORESTS, and well illustrates what we mean. In some cases, however, it may not even be necessary to go to the cost of an engine at all, as one used for threshing or other agricultural work may be available. We know an estate, and there are doubtless many others, where the arrangement of hiring for a few weeks, when sawing is required to be done, works very well. When a portable of this kind is already in the possession of an estate owner the matter is still further simplified.

The rack bench.

Having dealt somewhat cursorily with the question of the engine to be employed, we will now consider what is the best form of bench for reducing the large trees to something like usable form. There are a variety of these manufactured, each excellent in its especial way, but we have not seen a more generally useful bench than the one illustrated in this paper. This is made specially for reducing large trees into sizes suitable to be dealt with on the smaller benches. We will suppose that a tree of 2 feet or 3 feet diameter is required to be sawn into boards of an inch or similar thickness and to one uniform width. It would be impossible to get such a piece as this upon a bench only constructed for small stuff. This bench, however, meets the difficulty. As will

right through. It is constructed to take saws up to 6 feet diameter. As a saw of this size must of necessity have a somewhat thick plate, the principal advantage, as before stated, of this bench is to deal with the heavy logs and bring them into shape to be dealt with on the smaller benches. Of course when large dimensions such as beams or similar pieces are wanted, the whole operation can be completed on this bench; but with boards it should only be used to saw the logs into a size sufficiently portable to be readily handled on the small benches. In another paper we hope to give an illustration of a small bench, and an account of the work for which it is adapted.

Canadian Rhododendron (*Rhodora canadensis*).—This shrub, a near ally of the hardy Azaleas, bears its rosy purple blossoms in great profusion before the leaves make their appearance. It always flowers some time before those of the earliest of the Azaleas make their appearance. It is a native of the cold, damp, peaty districts of North America, and succeeds well under the same conditions as most of the so-called American plants, except that it is more impatient of drought than some of them. Conditions under which its relatives, the Pepper-bushes (*Clethras*) thrive will suit it perfectly, thus bringing together some of the best of early spring and autumn-flowering shrubs.



Forest Machinery.—The Rack Bench.

the saw-pit, and the employment of men with a pit-saw, cannot longer be observed, except where a very small amount of work has to be done. The saw-mill in some shape or another must be used. In some instances water power may be turned to account with advantage; but in the majority of cases steam must be the motive power. It is the object of the writer in this and the following papers to indicate in general terms the best means of applying power to the manufacture of estate produce on the spot.

The engine.

In considering the arrangement of a portable saw-mill the motive power must first be thought of. To obtain this an engine in one or another form must be used. There are some advocates for traction engines, on the ground that they may be used for hauling timber to the machines, as well as supplying the power to drive the saws. There may be something to be said in favour of this, but so far as the question has come under the observation of the writer there is more to be said against its adoption than for it. One reason is the first cost, and as we are considering the whole matter from the commercial point of view this must not be overlooked. The traction engine here stands at a great disadvantage, as this kind would cost very nearly double the money an ordinary portable one of the same power would. It is also very unwieldy, and unless used by experienced men and with the greatest care, a dangerous thing.

For ordinary forest work we think nothing excels a good type of portable of about 10-horse power. Such an engine as this was given in a

be seen in the illustration, the bed of the bench is at no great elevation from the ground; therefore by the aid of planks laid at right angles to the length of the bench, with one end resting on it, and the other on the ground, heavy trees can readily be placed in a position for operating upon. The portion of the machine in the cut immediately at the side of and behind the man at the handle is the traversing bed, constructed of two planks of Pitch Pine. It will be seen that when the tree is fixed in its proper position on this platform, and the arrangement set in motion, by rack and pinion the tree is slowly advanced against the teeth of the rotating saw. To make the construction of this part of the process more clear, it may be well to say that the racks are let in the whole length of the two traversing table planks. The pinion wheel is keyed on the spindle to which the handle shown in the illustration is fixed, and this is slowly turned to give the steady advance of the tree as required. The machine, which is manufactured by Messrs. Frank Allchin, Linnell & Co., a young and enterprising firm of Northampton, is well constructed, the central part being of English Oak, very strongly morticed and stayed together, and carries a cast iron girder to which is fitted all the short rollers, saw spindle bearings, and fence guides. The fence has a canting motion which may be useful sometimes for cutting scantlings, &c., required out of square. The head and tail parts are built of red deal sides mounted on Oak trestles. The sides and supports are morticed together and have bolts passing through the whole length. The rollers on which the traversing planks run are made of Elm turned up to 4½ inches diameter, and have iron spindles running

Though so valuable from its spring blooming character, the *Rhodora* is quite a rare plant in this country, while in the districts which it inhabits large tracts are occupied by it. According to Loudon, it was introduced as long ago as 1767, and was figured and described by him under the name of *Rhododendron Rhodora*.—A.

Garrya elliptica.—This grown against a wall covers a considerable space in a short time. Flowering, as it does, during the winter in any position, it is a most desirable shrub. We have two plants here growing against a wall having a northern aspect which flourish remarkably well. At the present time they are literally covered with their long drooping catkins. It is easily propagated when planted in good soil, and if freely supplied with water in summer at the roots and overhead, it grows luxuriantly.—E. MOLYNEUX.

WOODS AND FORESTS.

THE following appears in the last No. of *Woods and Forests*: "*Woods and Forests* has had a considerable amount of encouragement from country gentlemen and others interested in planting, but their numbers are not sufficient to allow of its existence as a separate journal. We come to this conclusion after a fair trial and making the journal known so far as possible to all concerned. *Woods and Forests* will, therefore, cease to be published as a separate paper; it will be incorporated with *THE GARDEN* and form a permanent addition to that journal. We believe we can in this way do justice to the subject, and the plan will have one advantage in enabling us to illustrate new species of trees or shrubs in colour."

NOTES OF THE WEEK.

Hyacinth show.—The eighth annual Hyacinth show at the Exeter Nursery took place on Friday, March 13. The collections staged by different growers for competition contained some remarkably well-flowered plants. The first prize, of two guineas, was awarded to Mr. Viney, gardener to Mrs. Norris, of Pinhoe; the second, of one guinea, to Mr. Sparks, gardener to A. Barnett, Esq., of Tiverton; and the third prize, half a guinea, to Mr. Daw, gardener to the Rev. T. J. Yarde, of Chudleigh. Mrs. Norris's collection included *La Grandesse*, white; *Queen of Hyacinths* and *Lord Macaulay*, carmine; the dark blue *Sir J. Lawrence*, the rich purple *General Havelock*, and the creamy yellow *Ida*. The other displays comprised *Von Schiller*, rich salmon; *Lady Derby*, white; *Duke of Connaught*, deep blue; *Lord Melville*, blue with white centre; *Mary*, purple; *Robert Steiger*, carmine; *gigantea*, rose; *La Franchise*, blush; *General Gordon*, lustrous black; *King of the Blues*, *Grand Maître*, porcelain; *Fabiola*, striped carmine; *Lina*, scarlet; *Prince of Saxe-Weimar*, purple; *Charles Dickens*, violet; *Norma*, waxy pink; *Prince of Wales*, dark blue; *Blondin*, silvery blue; *Baron Von Humboldt*, black; *Rosseau*, white; *La France*, white; *Grandeur à Merveille*, rosy white; *Temple of Apollo*, flesh-coloured; *Lord Derby*, light blue; and *Gertrude*, bright red. The house in which these were shown was tastefully decorated both with flowering and fine-foliated plants, and, indeed, the whole display was in every way satisfactory.

Camellias at South Kensington—It must be confessed that an exhibition of Camellias, such as that which Messrs. William Paul and Son furnished to the meeting of the Royal Horticultural Society on the 11th inst., is both interesting and instructive, as it affords an opportunity for noting the best flowers in the different shades of colour. Those possessing shades of crimson, red, and deep scarlet in the collection just referred to were very attractive. Amongst flowers representing bright shades there were *Chandleri*, a well known kind; *Beali*, large, full, and finely cupped; *Leeana* superba, having the build of *Beali*, but darker, and in the case of two or three of the flowers blotched with white, while the others were self-coloured; and *Mathottiana*, large, deep coloured, and fine. Pale scarlet and rose-coloured flowers were represented by *Rose la Reine*, large, handsome, and finely-formed stout petals; *Andrea Doria*, deep rosy scarlet, slightly blotched with white; *Jeffersoni*, crimson while open, but changes to deep rose, full, smooth, symmetrical, and barred with white; *Marchioness of Exeter*, large, shining pale rose in colour, very showy, but inclining to coarseness; a seedling, which might have come from this, was also shown paler in colour, smaller, large, and bold; *Fatima*, bright rosy scarlet, barred with white; *Beauty of Hornsey*, much in the same way, but smaller, more symmetrical and handsome; *L'Insubria*, pale bright rose with crimson centre, somewhat cupped at opening, but reflexes a little with age; and *Hally*, the exterior petals rose, with pink centre, and slightly barred with white. The pink flowers are very pretty indeed, and it is not surprising they are generally such favourites. They were represented by *Ten-tonia*, clear pale blush, with a centre of pale pink, barred with white, very pretty and distinct; *Henri Favre*, rose exterior, the centre broadly tinted with delicate pink, full, handsome, and very attractive; *Madame Ambroise Verschaffelt*, pale pink, and slight flakes of deep rose; *Eugène Massena*, rosy pink, margined with white, and finely cupped; *Adelina Benverenti*, blush, or delicate pink, flushed with rose; and *Bonomiana*, white striped with rose, very handsome, finely cupped and a real beauty. The white flowers were also charming. The best were, *Cup of Beauty*, some pure white, others tinted with cream in the centre; *Montironi*, a fine pure white reflexed variety; *centifolia alba*, very fine; *Princess Clotilde*, large, full, and fine; the old *alba plena*, in excellent form; and lastly, the purest and most symmetrical

and attractive of all the whites, *fimbriata*, shown in fine form, and to all appearance the *beau idéal* of a good *Camellia*.—R. D.

Dendrobium nobile—Two marvellous specimens of this popular Orchid were sold at Stevens' on Thursday, both of which were considered by experienced growers to be the finest they had seen. The smaller of the two was named *elegans*, the flowers being much larger and more highly coloured than those of the original. It was sold for 18½ guineas. The other specimen was about a yard through, and formed a huge globular mass, carrying over 700 flowers. This was bought by Messrs. Sander.

ASPHALTE V. GAS-LIME.

THE opponents of asphalt walks do not appear to have any seconders. It is interesting to recall the fact that asphalt is extensively used in gardens about London, and in an editorial note in one of the back numbers of THE GARDEN it is stated that the "asphalt walks laid down by Mr. Meston in the public gardens in London and recently in Leicester Square are durable and in every way satisfactory, and not expensive." What I wish to draw attention to, however, is that although "T. B." is distressed by the imaginary smell of an asphalt walk, and would not have such walks laid down anywhere about a garden under any circumstances on that account, he rather enjoys the smell of gas-lime. For weeks back "T. B." has been advocating the claims of this in a contemporary wherein another writer describes it as "a disagreeable nuisance." Yet it is this "delightful mixture" that "T. B." recommends to be spread on "walks and carriage drives through parks or other grounds to kill weeds." I remember a farm bailiff severely censured for thoughtlessly spreading a quantity of it on some rough old pasture land near the house, where it smelt so offensively that for months no one could walk in the park. Gas-lime sticks to one's boots, like wet plaster of Paris, to which it is akin, and renders them almost unfit to wear again. It discolors or destroys anything in the nature of carpets with which it comes in contact, and it is almost useless as a weed destroyer. It is this vile material which the law compels gas makers to remove or hide in some way on account of its offensiveness that "T. B." proposes to spread annually over the drives and walks in our gardens and grounds in the most pleasant season of the year. True, he admits that some may object to its use "on account of its powerful smell," but he is not among the number, although a clean, comfortable, inoffensive asphalt walk overpowers him! Further comment on the validity of "T. B.'s" objections to asphalt is needless.—S. W.

—As a cheap and tolerably durable substance asphalt is no doubt the best material for kitchen garden paths and places where utility is second to appearance; for pleasure grounds the dull sombre hue is decidedly objectionable, but even if used there the appearance can be tempered by sprinkling with coarse sea sand where procurable, or well washed gravel rolled well in, this being in my opinion preferable to white spar. Where sand of any kind is scarce, heating the roller may be an excellent plan to prevent the asphalt sticking, as mentioned by "W. I. M.," but only when too much tar has been used would this be necessary, as the free use of sand or fine ashes would prevent this, and also have the advantage of rendering the surface hard and fit to walk upon in a few days. I consider many failures arise from a too liberal supply of tar often in a cold congealed state. The chief point is to thoroughly mix the ashes or gravel with as small a quantity of perfectly liquified tar as possible, not necessarily boiling, and to roll it in well. Where tar can be procured fresh from the gasworks it is preferable, as it will then be in a perfectly liquid state and will not require so much heating. Where it has to remain in open vessels, I have found it a good plan to cover it with water, so as to keep the air from it, and on no account should the casks be exposed to the sun for any length of time.—M. C. MARS.

Ramondias.—Will you kindly allow me an additional remark to the article (p. 194) on *Ramondias*? There are now five European hardy *Cyrtandraceæ* known: 1, *Ramondia pyrenaica* (Rich.); 2, *Ramondia serbica* (Pancic); 3, *Ramondia Nataliæ* (Pancic); 4, *Haberlea rhodopensis* (Friv.); 5, *Haberlea Heldreichi* (Boissier), syn. *Ramondia Heldreichi* (De C.). 1 (and the white variety), 2, 3, 4 are planted on the rock you reproduced in THE GARDEN (p. 195); 5 is not yet in culture; it was discovered thirty-three years ago by Th. von Heldreich on Mount Olympus in Thessaly. Of Nos. 2 and 3 Messrs. Froebel and Co. also possess young, but not yet saleable plants. We have still snow on the mountains in our neighbourhood, but in the woods in the valley *Anemone hepatica* flowers in glorious beauty; indeed, nothing is more charming than patches of *Hellebores* surrounded by blue, white, and red *Hepaticas*.—O. FORSTER, *Lechenhof*.

QUESTIONS.

5335.—**Gas water.**—I shall be much obliged if any of your correspondents will tell me which is the safest method of using ammoniacal water from the gasworks for the flower and kitchen garden, and in what proportion it should be used.—J. E. A.

5336.—**Effects of varnished pipes.**—Last summer I had my viney painted, and in order, I suppose, to make all tidy, the hot-water pipes were painted with black varnish. When the Grapes ripened (a beautiful crop) the berries not only had no taste of the Grape, but tasted of nothing but carbolic acid. This spring I have had also some *Rhubarb* in the house likewise partially affected. I shall be obliged if some of your readers will suggest a remedy, and also say what is the best thing to paint the pipes with.—R. H.

5337.—**Aronia Sieboldii and other shrubs.**—Is this *Thorn*, which is figured in Siebold's "Flora Japonica," and highly praised by the author, procurable in England? I have enquired for it repeatedly at the principal English nurseries, but can never even hear of it. Other desirable shrubs that are hardy in Cornwall and the Channel Islands, but which I have failed to find in any nurseryman's catalogue, are the *Edwardsia grandiflora* and the *Embothrium coccineum*. If any of your readers could put me in the way of procuring these three beautiful shrubs, I should feel highly indebted to them.—J. SAUMAREZ, *Lareyan Penzance*.

5338.—**Hard Parsnips.**—I took up a bed of Parsnips on the 29th of January last and stored them in ashes and sand. They grew on heavy land and were rather small. Since I stored them a good many have been used, and much to my surprise complaints have been made that a great many of them are only edible about half way through their centres, being almost as tough as sticks when cooked. I have learned that the man who sowed them sowed a large quantity of soot and guano on the seed at the time of sowing. This he did on about half the bed; the other half he surface-mauured, and as all the Parsnips are not alike tough, I should feel obliged if any reader could tell me if artificial manures sowed on the seed at the time of sowing would produce the effect mentioned or not.—A. B.

LATE NOTES.

Daffodil book (*T. C., Guernsey*).—Messrs. Barr & Son, 12, King Street, Covent Garden.

Pots in saucers (*Rusticus*).—No; saucers keep the soil about the roots too damp, especially in winter.

Viola (*S. Mount*).—Very good blooms of the *Marie Louise* and *Neapolitan* sorts; among the best we have seen.

Injured Peach leaves (*Inquirer*).—The leaves you send show evident signs of scalding. We cannot otherwise account for the injury.

Rhododendron Sesterianum (*N.*).—Keep the plant a little drier at the root just as the buds are about to expand, and admit air to the house at this period. Instructions regarding the treatment of greenhouse *Rhododendrons* may be found in the last volume of THE GARDEN, p. 177.

Eucharis disease (*Anon*).—Your *Eucharis* bulbs are attacked by a minute fungus. The diseased portions of the bulb appear to be thoroughly impregnated with it. In THE GARDEN (p. 179) "P. W." mentions how he successfully treated the disease. Besides the fungus the bulbs were attacked by the bulb mite (*Rhizoglyphus echinopus*). This *Eucharis* disease seems to be gaining ground.—G. S. S.

Naming plants.—Four kinds of plants or flowers only can be named at one time, and this only when good specimens are sent.

Names of plants and trees.—Dr. P.—Next wee —"W. For."—*Rhododendron Falconeri* (a very fine truss) *W. Sangun*—*Senecio Ghiesbreghtii*.—C. S.—A fine variety of *Helleborus colchicus*.—J. C. B.—Next week. *J. M.*—*Dendrobium oculatum fimbriatum*.—"W. Heath."—*Diosma ericoides*.—C. F. F.—*Helleborus orientalis*.—J. Thirby.—We are unable to rectify the mistake unless you send us another specimen.—C. M. O.—Violet *Marie Louise*.—R. S.—1. *Abies Smithi*; 2. *A. pectinata*; 3. *A. Nordmanniana*.

No. 697. SATURDAY, March 28, 1885. Vol. XXVII.

"This is an Art
Which does mend Nature: chance it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare*.

REGENT'S PARK SPRING SHOWS.

It seems a strange inconsistency for the Royal Botanic Society to tolerate a formal stereotyped arrangement of their spring shows year after year, while their summer shows have won a world-wide reputation for tasteful arrangement. At last Wednesday's show, than which there has never been a finer one in March, there was a sufficiency of plants matchless as examples of high culture to have made one of the most charming exhibitions imaginable. From the very nature of the plants shown it must have eclipsed in brightness and far out-distanced in picturesqueness the summer shows, at which there is always a preponderance of huge and formally trained specimens, but their arrangement spoils their effect. On the conventional flat bench they look monotonous; how, indeed, is it possible for plants to be otherwise than formal under such an arrangement? And should an exhibitor with an eye to striking effect attempt to break the level appearance of his plants on a flat surface, he would utterly fail. In short, one may any day see in the flower shops in Covent Garden or Regent Street flowers more tastefully displayed than is to be seen at these London shows, which ought really to be public educators in such matters. Do away with the ugly stages, and a charming exhibition, one that would interest thousands of visitors, would be the result. In skilful hands those magnificent banks of Cyclamens, of Tulips, of Hyacinths, of Amaryllises, of Azaleas, and of Narcissi which filled the conservatory on Wednesday last could have been arranged so as to make a paradise of flowers. It is a mistake to suppose that visitors want to see as much of the pots as they do of the plants. They would rather see the effect of a harmonious blending of the various masses of colour, not the crude jumbles of yellows, scarlets, magentas, and reds in all their baldness, with not a bit of greenery to relieve the eye. With rich material at hand in the conservatory and plant houses, combined with that brought by exhibitors, it would be possible to render these spring shows most charming. Little informal groups might have been distributed here and there about the conservatory—in the nooks and recesses which abound in it. So placed, the flowers would have been seen to quite as much advantage as perched upon stages, and the effect of the two modes of arrangement would not have borne comparison. The Azaleas, for example, might have occupied one recess, Cyclamens another, Cinerarias, Amaryllises others, and so on, each group forming in itself a picture distinct from its neighbour. Thus these shows could be diversified year after year, and visitors would anticipate with keener interest what they would be likely to see. It was a good idea to widen the corridor. At one time it was a mere passage; now it is quite wide enough to have on either side a continuous fringe of little groups on the ground, and these would lead on to what ought to be the chief display in

the conservatory itself. The Botanic Society is not adverse to change as a rule, and we hope that its council will endeavour to remedy what we believe to be a standing complaint among its *habitués*, and substitute for its spring shows picturesque for faulty arrangement.

FLOWERS ON GRASS.

WHEN managed properly, flowers on Grass are very effective, especially those of bulbous plants. Thus situated, they do not get splashed in wet weather, as they do when planted in borders, though near the margins of the latter they have a cheerful appearance in the early months of the year. Those who have not seen a large piece of Grass planted with bulbs and plants of different kinds cannot realise the effect produced. We have an old disused orchard of about an acre in which there are several large trees of different kinds, notably a large Evergreen Oak, Tulip Tree, Spanish and Horse Chestnuts, Limes, Walnuts, and several others, the shade of which would be inimicable to Apple trees. The whole space has, therefore, been converted into a sort of wild pleasure garden. On the north and east sides there is a high Holly hedge, interspersed here and there with tall trees of *Abies excelsa monstrosa*, Limes, and Beeches. The former are dying fast, owing probably to their roots having descended too deep into the subsoil, which is a strong hard clay mixed with flint. They have been planted about seventy years. For the sake of variety we have planted double-flowering Cherries, yellow and purple Laburnums, Weeping Beeches, *Paulownia imperialis*, Deodars, *Cryptomeria elegans*, *Picea Nordmanniana*, *Wellingtonia gigantea*, Siberian Crabs, Apple trees with Mistletoe upon them, and many others, thus investing each season of the year with an interest peculiarly its own. The principal part of the flowering plants are bulbous; first, we have Snowdrops, double and single, which come up thickly in patches, having been originally planted in that way, but since then rapidly increased. Last October we planted 1500 *Crocus* bulbs, consisting of large yellows, whites, and purples, mixing the colours and dibbling the bulbs in singly. The yellows commenced to bloom first, followed by the whites and purples, and altogether they have been very showy. On the same piece of ground we have also hundreds of Lent Lilies now blooming in profusion, and there are likewise some thousands of double Daffodils. The latter are in broad patches, and bristling with bloom buds, which, when open, are very effective both at a distance and close at hand, the Pheasant's-eye being amongst the latest. Grape Hyacinths, Star of Bethlehem, yellow Aconites, and border Tulips are also plentiful, and here, too, we plant annually Hyacinths and other bulbs that have been forced, and thus circumstanced they bloom every year, producing quite an interesting succession of flowers. The secret of success lies in the foliage never being cut off till it is thoroughly ripened. In order to have flowers as long as possible we have planted Tritomas in patches of good soil, well manured, and liquid manure is given them during the summer. Thus treated they grow strongly and bloom freely. *T. Uvaria* opens its blooms first, followed by *T. glaucescens* and *T. grandis*; the bloom spikes of the latter are particularly large and rich in colour. Then we have *Arundo conspicua*, Pampas Grass, Yuccas, and similar plants, which, on the whole, make a charm-

ing show quite different from what is seen in gardens generally. E. MOLYNEUX.

Swanmore Park.

THE COMING ORCHID SHOW.

EVERYONE interested in Orchids is talking of the coming Orchid show, or conference, as it is called, and everybody anticipates a gathering of Orchids in one place such as has never before been seen. It is to be feared, however, that its very magnitude will prevent the possibility of any good and permanent result arising from it. It promises indeed, to be a huge, indigestible gathering of Orchids of all sizes, forms, and descriptions, such as would take fully a week to deal with properly, instead of a couple of days. Let us have a big Orchid show by all means, but let it not be placed on a parallel footing with the Apple and Narcissus conferences unless the conference proper is directed specially to one large genus; indeed, there is abundant work for a committee of experts to do in dealing with several of the most important genera among cultivated Orchids—the *Odontoglossum* to wit. Unless some such large and difficult genus is dealt with at one time, how is it possible that any permanent good can accrue from such a gathering of material as will doubtless come from all parts of the country? What would have been the result if, instead of Apples only, the Apple congress had included Pears and other fruits in season in October? Again, if the Daffodils had not been dealt with as a genus, but had been accompanied by the hosts of hardy bulbs that flower in March, it is probable that we should have not had the valuable digest of names and synonyms that we now possess. The genus *Odontoglossum* is sufficiently muddled to engage the attention of a day's conference, and if the different members of the genus were collected from all parts, what more lovely floral exhibition could be imagined than they would make? Why not invite the learned German orchidist to explain at the conference the principles upon which he names Orchids, and particularly the grounds upon which he names species and varieties of *Odontoglossum*. This would be an interesting revelation, and could not fail to create a lively discussion among those who in this country are completely at a loss to understand the principles of *Odontoglossum* nomenclature. The professor would probably be able to give us the key for unravelling the intricate synonymy in the *Odontoglossums*, and if he did not succeed we should be none the less wiser after the attempt. In like manner other large genera, such as *Cattleya*, *Oncidium*, *Masdevallia*, *Dendrobium*, would form subjects for exhibition and discussion in their seasons, but, as it happens, the conference occurs at a time when there are the least number of species of these genera in bloom.

VALUELESS CERTIFICATES.

It must have occurred to many of our readers that plants upon which certificates are so plentifully bestowed by the representative societies in London are not of equal merit as garden plants. At one time certificated plants *did* bear the mark of high distinction in the eyes of the public, but now the latter appear to have lost faith in plants thus distinguished. This is not to be wondered at when we see how heedlessly plants are awarded certificates. This does not happen now and then, but at almost every show, and the Royal Botanic Society is notoriously to blame in this respect,

Take, for example, the new plants shown on Wednesday last. Upwards of thirty were certificated, but out of these it may be fairly said that not a dozen would be generally considered to possess high merit. Some eighty odd plants were submitted to the judges, and it would seem as if a certain proportion of these must necessarily be certificated. Many of the plants thus placed before the judges were not only not new, but of questionable merit. If exhibitors possess such a queer idea of the fitness of things as to show old plants for new, that is no reason why judges should encourage the practice. From the list of certificated plants given in our report of the show readers may draw their own conclusions. It seems to us that in several instances the plants themselves belie the honour thus forced upon them. Even exhibitors themselves, we know, look upon these certificates as comparatively valueless. By all means let plants be certificated, not merely because they are new, or because they come from particular exhibitors, but because of their intrinsic value. Our only motive is to warn those of the public who are apt to place implicit confidence on what is thus honoured at London shows not to be led away by the inference that because a plant is certificated it must necessarily be first-rate, and better in fact than any in its way that have preceded it. The evil would in a great measure be remedied if a system of bestowing certificates of the first, second, and third classes were carried out. But as it is, certificates are all first-class if the plants are not. The Royal Horticultural Society has a second-class certificate, but it is rarely bestowed, not nearly so often as it might be. It seems to us that first-class certificates should only be given in cases where the vote of the committee is unanimous; a second-class when half the committee votes, and a third when only a fourth portion votes. Some members abstain from voting for reasons best known to themselves, but surely no member should sit upon a committee who could not see whether any plant, whether tender or hardy, is of first, second, or third class merit as a garden plant. In some cases we believe that the vote for a certificate is carried only by one, yet the plant to which the vote applies is placed on equal terms with another when the vote is unanimous. The fruit committee at South Kensington, though it certificates but few of the multitudinous array of seedling fruits and vegetables placed before it throughout the year, wisely makes good use of the second-class certificate.

NOTES OF THE WEEK.

American Roses.—Mr. Sereno Watson, the American botanist, has just contributed to the proceedings of the American Academy of Arts and Sciences a valuable paper upon the history and revision of the Roses of North America. As that country contains so many lovely Roses the paper will be useful, and we hope hereafter to further allude to it.

Daffodil show.—It is proposed to make a great display of Daffodils at the next meeting of the Royal Horticultural Society, on April 14, so as to enable the nomenclature committee appointed at the conference held last year to consider what additions or changes in the Daffodil report are made desirable by the experience of the present season with a view to the publication of the report at an early date. It is hoped that amateur cultivators of these popular flowers may contribute largely. Messrs. Barr and Son, Mr. Walker, and others have promised to make special efforts.

Exhibition flower glasses.—Samples have been sent to us of a new kind of flower glass

specially designed for holding flowers at exhibitions. They are made in stout bottle glass and are designed so as to be strong, to look well, to stand steady, to hold plenty of water, to pack head and tail in boxes in the least possible space, and to be low in price. Such glasses have long been a desideratum. Exhibitors who show cut flowers largely have hitherto been obliged to resort to such unlovely vessels as blacking bottles and other makeshifts. The glasses now under notice are made in two sizes, one being $7\frac{1}{2}$ in. high, the other $5\frac{1}{2}$ in. Those of the largest size have been tested with bunches of Gladioli and other heavy flowers cut 3 feet long and held them perfectly safe. Being somewhat conical, the large size fits conveniently in boxes 20 inches by $15\frac{1}{4}$ inches by 14 inches deep. This box holds four dozen large glasses and six dozen of the smaller size, and rope handles in the boxes make them quite portable. The makers are Messrs. Green, 107, Queen Victoria Street. The glasses are not kept in stock, but made to order in a short time.

PLANTS IN FLOWER:

Primula obtusifolia.—From the Himalayas. Raised from seed collected for Dr. King, of the Calcutta Botanic Garden, and distributed last spring. Native range, from 12,000 feet to 16,000 feet altitude. It closely resembles a pale purple form of *P. involucrata*, and appears equally hardy and easily grown with that species. My plant was brought forward in a greenhouse, which has paled the colour.—C. WOLLEY DOD, *Edge Hall, Malpas.*

* * A delicately coloured flower, very similar to *P. Munroi* and *P. involucrata* both in flower and leaf. The flowers strongly remind one of those of *P. obconica*.—ED.

Chimonanthus fragrans.—With reference to the mention of *Chimonanthus fragrans* by "R. D." in THE GARDEN of March 14, there is now in full flower, at Raywell, in the East Riding of Yorkshire, a beautiful specimen of this shrub. It measures 10 feet 6 in. high by 8 feet 6 in. in width. The flowers began to burst forth about January 17, and in about a month's time from that date the whole tree was one mass of flowers, scenting the garden walk as well as the inside of the house. The tree is on the south wall of the house, well sheltered, but until this year it has not been noticed to bloom thus abundantly.—D. B.

Seedling Chionodoxas.—I enclose you two of my seedling *Chionodoxa Luciliae*. The first has a much darker and brighter colour than the type, and with a much less conspicuous white eye. The second is a white form, with outer surface of the petals striped with pale blue. Enclosed also you will find the typical species, so that you can form an opinion from the three distinct flowers. I have also two forms of *C. sardensis*, one with a white eye and the other without, both these are welcome additions.—WM. H. BROWNE, *Aldborough, Hull.*

* * The first is a very fine form, differing from the original in having larger and more richly coloured flowers; the second is very different from the type, and more resembles the flowers of *C. nana*. It at once reminds one of *Puschkinia scilloides*, as the blooms are white and porcelain tinted, and have a distinct blue stripe on the outside of each sepal. These are two of the most distinct *Chionodoxas* we have seen, and they are a foreshadowing of what fine varieties we may expect from those who are bent upon raising *Chionodoxas* from seed.—ED.

Freelias.—We send spikes of *F. Leichtlini*, *F. L. major*, and *F. refracta alba*. We think that on comparing the three varieties together you will notice a marked difference between each sort. The *F. L. major* bears a larger and more substantial flower than the typical form; the colour is not such a deep primrose, and as regards size of flower, it is more allied to the *F. refracta alba*; in fact, it is clearly a cross between these two varie-

ties, being intermediate in colour, but bearing larger and more substantial spikes of bloom than either kind. We think it a very desirable sort for supplying cut blooms during a long period.—HUBERT & MAUGER, *Doyle Road Nursery, Guernsey.*

* * Lovely specimens, fully bearing out the statements just made by Messrs. Hubert & Manger. The best of the three is decidedly the major variety of *F. Leichtlini*.—ED.

Narcissus nanus.—I send you my first gathering of *Narcissus minor nanus* from an open border. They are some three weeks later in coming into flower than they were last year, owing in some measure to the sharp frosts which we have experienced on nearly every night during this month, the most severe being on the 14th and 23rd, when the thermometer registered 12° and 10° respectively. Last year we divided several varieties of *Narcissus* immediately after the leaves had died down, and now we find these are much later in commencing growth than those which were left undisturbed.—W. NEILD, *Wythenshawe, Northenden, Manchester.*

* * Excellent flowers of this pretty little *Daffodil*.—ED.

THAMES-SIDE SCENERY.

A TRIP on the Thames from London to Oxford is one of the most delightful excursions one can make at any time between the spring and the late autumn months. The panorama unfolded on each side of the river is ever changing, and comprises every degree of well-diversified scenery. One may see in the hundred odd miles thus traversed every grade of building, from the modest boat-house to such stately palaces as those of Hampton Court and Windsor. Here the river threads its way through rich and verdant meadows. Onwards come into view park-like scenery and the richly wooded heights of Cliveden. Indeed, from Richmond upwards the interest never flags. On either side are elegant villas and noble mansions, the glimpses of whose gardens give interest to one's journey. Trees generally succeed well in these river-side gardens, a fact well illustrated at the Bishop of London's palace at Fulham, where exist some of the oldest and finest tree growth, both exotic and native, in this country. Both Kew and Syon are famous also for their trees, which are of great age and size, and on many a fair lawn along the Thames the Cedar of Lebanon stretches out its noble limbs, adding beauty and variety to the landscape. Each season possesses a charm peculiar to itself. In spring we have freshness of leafage, while the flowering of trees in early summer gives a glow of colour to the tender green of the newly-unfolded leaves, and not least among these are the thousands of fruit trees in the orchards in which the whole of the Thames valley is singularly rich. During the heat of summer the cool breezes off the river temper the sultriness, and the deep shadows from the tree-clad banks give a feeling of coolness. In autumn the sere and yellow leaf and the fruit pickers busy in the orchards tell us of the approaching winter, when the traffic on the silent highway is once more left to the barge and steam-tug. But even in winter these waterside gardens, to which the Thames owes so much of its beauty, are not devoid of interest; their evergreen trees then stand out in bold relief from summer-leaving trees.

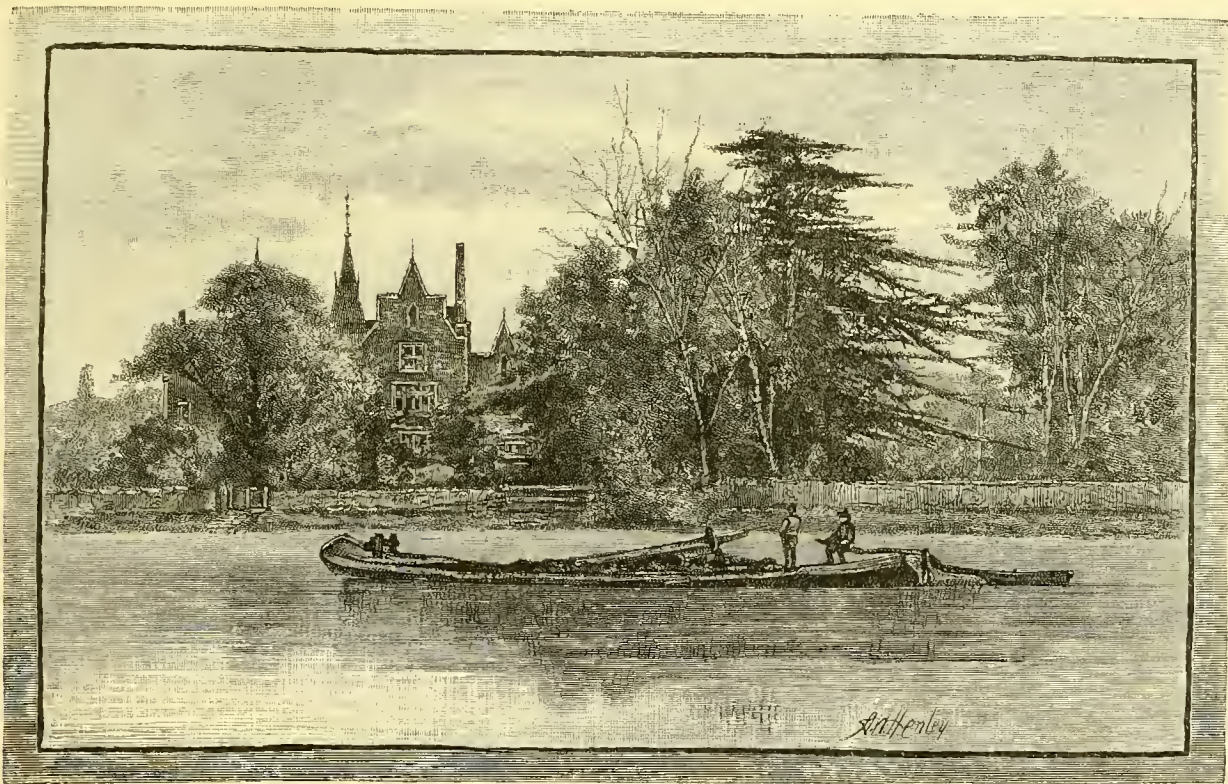
Probably nowhere in Europe can such a wealth of garden landscape be seen as from a boat on the Thames. The countless gardens which contribute to the panorama vary in size from those of such ducal places as Cliveden and Syon to those of the unpretentious villas which swarm its banks. They all have a conventional beauty, for in almost every case it has been considered the proper thing to let their pretty lawns meet the banks of the river without any impediment to intercept the view of its still waters and the numerous craft with which they are crowded. The view here given shows one of these famous river-side villas, and is quite typical of what one may see constantly occurring from London to the remotest reaches of the river.

CUTTING IN AND HEADING DOWN.

It is scarcely necessary to say that these very common operations differ one from the other only as regards the extent to which the branches or entire heads of plants are removed. The conditions which render such proceedings necessary are various. In the case of pot plants or others grown under glass, it may be that they have got thin and straggling, or they have outgrown the space allotted to them, and have to be reduced, so as to take up less room. Experience shows that amongst the immense number of plants now known to cultivators there is a wide difference in the way in which different kinds bear the severe ordeal to which deprivation of most of the branches and stems subjects them. Plants that are slow in growth and the nature of their wood exceptionally hard show their dislike to having their branches cut close in so much, that in the case of some they die outright; others there are that suffer less—*i.e.*, they do not succumb altogether, but they take a long time to recover when cut back into the hard

above the collar, show that in many cases the first season's growth was double that obtainable when the whole stem was severed at a few inches above the collar; the portion thus retained, although limited in quantity, and in most cases devoid of leaves, evidently helped the formation of a new head to take the place of that cut away. Such plants as *Cyanophyllum magnificum*, the stronger-growing *Aralias*, *Cupania filicifolia*, *Ficus elastica*, *Hippomane spinosa*, *Pavetta borbonica*, the *Rhopalas*, and *Sphærogynne latifolia*, all of which look best when confined to a single stem, with leaves down to the bottom, after being left with 18 inches of stem, made leaves of more than double the size of those produced when severed lower. When a portion of the old stem is thus left, it is obvious that the buds at the top in most cases would alone break, leaving the bottom naked were means not taken to prevent this, the latter consisting in cutting out all the buds down to within 2 inches or 3 inches of the collar. In this way such plants as those named above and many others can be more

growth commences is best, as then there is not the waste of strength through bleeding which occurs when the sap is ascending, and the buds have time to develop gradually. When a plant is headed down late in summer, there is not time enough before winter arrives to admit of sufficient young growth being made to assist in keeping life in the roots until the active season again comes round; therefore the progress made the subsequent summer is usually much less than it should be. The old portion of stem left is generally best allowed to remain until autumn, when the growth should be such as not to require its further presence. There are, I may remark, many plants that require to be headed down that cannot be treated in the way just described, *i.e.*, by leaving a portion of the old stem with the buds not wanted cut out, for the simple reason that the latent buds in the old hard wood are not visible. Take, for instance, an old *Camellia* that has got into a condition that makes it desirable to remove the top by heading down; there are



THAMES-SIDE SCENERY.

mature wood. It may be taken as a rule that plants of quick or moderately quick growth and that make roots freely, soonest make good the injury inflicted by a reduction of their branches or by being headed down altogether. Yet, even in the case of those kinds that possess the greatest amount of inherent power to make good injury done in this way, there is such close sympathy between the underground organs, the roots, and the parts above the surface, the stems, branches, and leaves, that any mutilation which takes place at either end is acutely felt by the opposite extremity. If the roots are reduced, the effects are shown by diminished growth proportionate to the extent of mutilation sustained. If, on the other hand, the leaves and branches or any portion thereof are cut away, the roots suffer accordingly, and either partially perish or become inert until the injury which the head of the plant has sustained is so far made good. Observations on the growth made by plants after having their heads removed, where even only a limited part of the main stem was left, say from a foot to 18 inches

expeditiously furnished with new heads and better developed leaves than if no stem was left. *Nepenthes*, more than any plants I know, are benefited by being treated as described; with them it is not possible to get densely furnished specimens until they have been twice headed down. If the stems have been simply shortened to within a foot or 15 inches of the bottom, I have found that they never make specimens equal to such as have more shoots springing from just above the collar. These singular plants admit of being treated in this way better than most things, from the fact of the buds being placed so far above the axils of the leaves that they can be cut out without the least interference with the latter. The strength with which the young growths of *Nepenthes* will come away from the bottom when so managed will surprise anyone who has practised cutting them back in the ordinary way.

WHEN TO HEAD DOWN.—As to the time most suitable for heading plants down, it may be held, as a rule, that a short period before active

buds at the points where the first leaves which the stem bore when no thicker than a Cedar pencil existed, but which have fallen off in the ordinary course possibly a score or two of years before, yet although the smooth bark now shows no more of the presence of such buds than if they were non-existent, nevertheless when the top is removed they soon show themselves.

THE LESSON taught by the behaviour of the plants named when treated as described is not new, nor is the matter put forward as a new discovery, yet the principle which it exemplifies is not by any means so generally recognised as it deserves to be. As mutilation of the roots of a plant limits the power of top growth, so reduction of the shoots interferes with root progress; it therefore follows that if when the roots of a tree or shrub, which is taken up with a view to its being replanted elsewhere, are subjected to injury and the branches are at the same time submitted to corresponding mutilation, the weakening influence of the reduction of both top and bottom at the same time will be doubly injurious to growth, and thus

is just what often occurs with young fruit trees when the mischievous practice of cutting the shoots hard in at the time of planting is followed. By such treatment they are so weakened, that a year or two's time is lost in their progress. The worst examples of the mistaken use of the knife are often met with in trained trees, especially dwarfs. In these the preceding year's shoots are not unusually cut back to an extent that leaves not more than a third or a fourth of their length; whereas if merely the extreme ends of such as were of medium strength and a few inches more of the strongest were removed, the requisite equality in the branches afterwards made would be secured. Similar results follow when in the planting of Quick for hedges the plants are cut down to some 8 inches or 9 inches above the collar, in place of allowing them a season's growth after planting, in order to get them established before being cut down. The outcome of actual experience is in accord with what might have been looked for. In regard to the age of trees or shrubs that are headed down, the older they are the more acutely do they feel the effects of being subjected to such severe treatment. In the case of fruit trees, such as old Apples, that yield nothing but undersized fruit, by removing the old top, a new healthy head in bearing condition can be had in much less time than is required to get a young tree into a state to fruit; if in such cases the tree is cut down to the bottom, the chances are that it will refuse to move; but if a stump of the old trunk, say 2 feet or 3 feet in length, is left, it will usually break strongly. In coppice wood cut periodically, and with which it is necessary that the heads should be felled to the ground, when the stools get old after being subjected for a long period to repeated cutting, they become weaker, and there are more deaths than when they were young and better able to repair the injury. In respect to hardy Evergreens that require heading down, spring before growth commences is obviously the best time for performing the operation; if the work is done later, the growth is feeble and has not time to get matured before winter. I once saw a quantity of large old Hollies that formed a conspicuous feature in several acres of pleasure ground, but their lower branches having got somewhat thin, they were headed down. Someone advised the work being done after mid-summer; they broke in a few weeks, but the soft immature shoots were killed by the frost in the winter, and the result was that nine-tenths of the stools did not make a second effort to grow.

T. BAINES.

VEGETATION ON THE ZAMBESI.

THE remarks under this heading in THE GARDEN (p. 186) do not state from whence the scene depicted on p. 187 was obtained. Allow me to say, then, that the original painting in oil was made by the late Mr. Thomas Baines, F.R.G.S., who was attached to the Livingstone Expedition as artist. The painting was, probably, the first ever made on the Zambesi, and is now exhibited in Museum No. 2 of the Royal Gardens, Kew. A coloured plate produced from this painting by permission of Mr. Baines was published in the "Student and Intellectual Observer" for — 1866, for which I wrote an article, the following description of the plate being kindly furnished to me by Mr. Baines. He says: Some miles from the mouth of the Zambesi, as the Mangroves (which have performed their office in converting the accumulating shoals into land capable of bearing a superior vegetation) begin to be supplanted by other trees, the most striking feature in the landscape is the tall Pandanus, which towers above the brush that skirts the various channels of the delta; and in the distance especially, when thickly draped with creeping plants, presents the appearance sometimes of village spires. It seems to begin where the Mangrove—*i.e.*, the kind which forms the advanced guard in reclaiming the land from the sea—begins to cease, and where Palms of various kinds—dwarf Fan Palm, Wild Date, Doom Palm, Zamias, a kind of *Strychnos* (*Bauhinia spinosa*?), bearing an orange-shaped fruit, large flowering Hibiscus

and occasional Cocoa-nuts—begin. Some of these channels are so narrow that in passing through the vessel would brush the Reeds on both sides, while the main stream would be several hundred yards in width. The specimens shown in the sketch were situate in a perfect tangle of old Mangroves, with their aerial roots and luxuriant vegetation overgrowing them, so as to conceal and render more precarious the treacherous footway over which we have to pick our way. The tree was covered with *Convolvulus* and was exceedingly beautiful. This was within the tidal influence, and the stream would be brackish at high water or fresh when the volume of the river was sufficient to overpower the tide. These Pandani did not appear to extend far beyond where the river ceased to be brackish.

Museum, Kew.

J. R. JACKSON.

ROSE GARDEN.

PLANTING ROSES IN SPRING.

ACCORDING to our experience, it is quite as safe to plant Roses in spring as in autumn. If in autumn we could look forward to a mild winter, then we would plant early in November; but whether we plant in autumn or spring, there is always a certain amount of risk. If we plant in autumn, a severe winter may follow and injure the growth; and should a cold dry time immediately follow spring planting, a serious check will be experienced. The only point in favour of spring planting is that, if an unfavourable time should occur, the results are not likely to be so disastrous as a severe winter frost following autumn planting. If we had a choice of plants not in pots, we should prefer spring planting—plants that had been lifted in November, and carefully laid in by their heels in some sheltered corner all winter. Such plants would be better planted in the first or second week in April than at any time in March, and any pruning required should be done a fortnight before planting time. We have practised this plan more than once, both in the case of standards and dwarfs, and have proved the correctness of the statement, that root disturbance promotes root formation. If the plants are lifted in autumn and their roots well cared for, it will be found in spring that they have been in an active state all winter, and will be furnished with many young fibres, and at the extremities newly made white fleshy additions, which, if carefully preserved, will enable the plants, when planted, to start quickly into active growth; but in dealing with such tender roots, the work of planting must be done with care. The positions should be ready to receive them, and some finely sifted soil must be ready to go both over and under them, when no fears of the result need be entertained; and this plan seems to be the only one likely to lessen the risk of loss, either through severe winter frost or cold piercing March winds. The details to the inexperienced may appear to be rather troublesome, but in practice they are not so. The only addition to the labour is that of laying in the plants in November and preparing a bit of fine soil to go round the roots at planting time. Roses planted in the second week in April will not flower so early as established plants, but they will not be far behind those planted in winter. In regard to soil and position for standards especially, the best we ever saw were grown by the side of a main walk in a kitchen garden, the soil of which was deep and kept well manured. A quarter of a century ago it was a common practice to grow standard Roses in such positions. At that time cultivators appeared to recognise the principle that Roses required pure air and plenty of light; but it is too much the practice now to plant them in shrubbery and other borders, and to require the same soil to sustain an annual crop of other flowers at the same time, with the result that neither the Roses nor the flowers thrive in a satisfactory manner. It is a misfortune for standard Roses that their heads are so far from their roots. The head in most cases appears to monopolise all the care and attention, while the roots are left to do the best they

can. This is a natural outcome of the way in which the plant is grown. A dwarf Rose, on the contrary, naturally protects its own roots, its branches being nearer the ground, and, therefore, it is not possible to plant anything else near them, as is the case with standard plants. In all cases where the planting of Roses grown in the open ground has been delayed to the present time, great care is necessary in getting the roots out of the ground with as little injury as possible, and also to see that they are quickly re-planted. It is always best to plant when the ground is rather dry than wet; when dry, it can be trodden firmly round the roots without danger of its being made into a paste. Planting Roses out of pots that have been kept in pits or frames all winter or in any other glass structure should be deferred until the middle of May. Meanwhile, let the plants have all the air possible, so that they are not exposed to frost or cold north winds. If planted out before that time, in all probability the young and tender growths will get injured by ungenial weather.—*Field*.

A good Marechal Niel Rose.—In Mr. F. Frear's garden, Lower Oddington, there is a grand *Maréchal Niel* in a house containing a miscellaneous collection of plants. It had, I was informed, been turned out of a pot two years ago and planted in an outside border, the stem being brought through the front wall, inside of which shoots were trained right and left on wires. It now covers nearly the whole of the roof of the house and is well furnished with flower-buds in all stages of development. I was informed that good Roses were cut from it in the second week of February, and that blooms have been cut every day since up to the present time, and if we may judge from appearances they may also be cut for some time yet to come.—R. OTLEY.

Tea Roses under glass.—Spring and autumn never recur without impressing on us the fact that there are not many who get all they might do out of Tea-scented Roses. It cannot be that the value of these Roses for indoor culture is not well known; it is, I think, rather on account of their simple requirements that their cultivation does not increase. People prefer, it would seem, to undertake more difficult subjects which require not only an experienced cultivator to manage, but also expensive appliances. But these Roses, which everyone who sees them admires, only require a covering of glass and the most common place management to make their cultivation a success. Nearly up to Christmas we were cutting some beautiful blooms from plants growing in an unheated house. Early in April they will commence to flower again, and for several weeks we shall get a rich harvest of Roses, and if we could heat the house up to about 50° to 55° we should secure plenty of blooms during winter, according to the number of plants. My experience of Roses grown in this way, which, after all, in our case is only a sort of makeshift, as the plants are only occupying odd corners, is of the most satisfactory character. Indeed, it is quite clear that if a house could be devoted entirely to Tea Roses, with the convenience of heating it, it could not fail to prove an invaluable feature in every garden where choice cut flowers are in request. Our plants are put in amongst Peach trees wherever there is room, and the treatment given to the Peaches in spring and autumn suits the Roses admirably; but in summer it is a little too hot for them. Then, however, we have plenty of Roses out of doors. The varieties which we grow are *Niphetos*, *Souvenir d'un Ami*, *Maréchal Niel*, *Gloire de Dijon*, *Madame Falcot*, and *Duchess of Edinburgh*. The last named is invaluable on account of its colour, viz., pale crimson. In other respects I do not consider it a first-class flower. *Reine Marie Henriette* is in the same line of colour, but it flowers sparsely after the spring time.—J. C. C.

Rose Mignonette.—This little Rose is one of the prettiest we can have for the conservatory at this season; it forces well and never fails to yield a profuse crop of bloom. Its small rosetted flowers are pink and are borne in elegant clusters.—G.

GARDEN DESTROYERS.

BULB MITES.

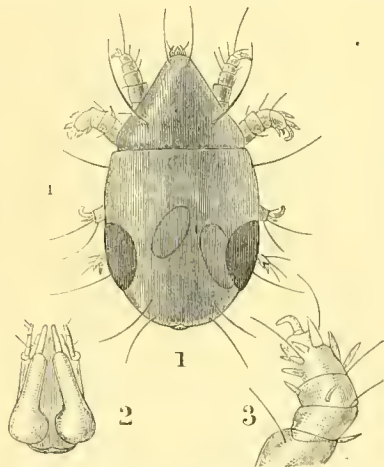
(RHIZOGLYPHUS ECHINOPUS.)

In the present series of articles on various injurious insects I have already alluded to two different genera of the order Acarina, or mites, namely, *Tetranychus*, or red spider, and *Phytotus*, or gall mites, which are very injurious to plants of various kinds. There is another genus, *Rhizoglyphus*, which is also very harmful to certain plants, but instead of attacking the leaves or buds, as the mites belonging to the two above-mentioned genera do, these mites attack the bulbs of the *Hyacinth*, *Eucharis*, *Vallota*, and probably of other bulbous plants; some roots I had sent me to examine last year were sadly injured by these mites. They live between the scales at the base of the bulbs and at the base of the roots, congregating together in large numbers and eating regular holes in the bulbs. Boisduval, in his work on garden insects, "*Essai sur l'Entomologie Horticole*," states that they are "abundant in autumn, and sometimes cause itching to persons who handle a great number of bulbs." At first sight it seems strange that a creature which feeds on roots should attack human beings, but this is by no means a solitary case among insects of vegetable feeders attacking human beings, the common harvest bug is a mite which lives on plants unless it happens to meet with an unfortunate specimen of humanity, under whose skin it will speedily burrow and make itself at home. Red spiders have been known to do much the same thing. Countless myriads of gnats, midges, and common bed bugs, whatever their usual food may be, must die without ever tasting human blood, and yet how they seem to delight in it when they have an opportunity. These mites are probably common throughout the warmer months, but they are not noticed except when bulbs are being potted or handled for some reason. They are very difficult to destroy on account of the position they occupy.

IMMERSION IN WATER for several hours will not kill them. A correspondent tells me he plunged some bulbs for fifty hours in water with no avail. I have had no opportunity of experimenting on these creatures, except in a very small way. I put some in glycerine before mounting them for examination under the microscope, and found they died very quickly. I should recommend dipping the bulbs for a few minutes in hot water as a likely method of killing them. Water at a temperature of 130° to 140° will, I believe, kill most insects, and is said not to injure the foliage of most plants, so one would think it should not hurt the bulbs. If this plan would answer, it would be the simplest way of destroying the mites; but if other means have to be resorted to, the bulbs should be washed as clean as possible from all soil, &c., and all decayed portions and loose scales removed which might harbour these pests; they should then be well brushed with a stiffish brush and soft soap and Tobacco water, or some other insecticide which will not injure the bulbs. All soil from the bulbs should be buried or burnt, and the water in which they were washed thrown down a drain, so as to prevent any mites which may be in them from getting on to other plants. These mites are very liable to be overlooked on account of their minute size (about one-twentieth of an inch in length) and sluggish movements, and, being tolerably transparent and shining, very much resemble grains of sand. They may easily be detected with an ordinary pocket magnifying glass. They are probably much commoner than is usually imagined, and unless carefully searched for are almost sure to escape notice. If bulbs are found to be unhealthy and show signs of decay, they should be thoroughly examined, and search made for these mites. These little Acari are sometimes present in *Eucharis* bulbs which are attacked by the so-called *Eucharis* disease; they are not, however, the cause of the disease, which, from what I know of it, is evidently a fungus, but they certainly assist in the destruction of the bulb. These mites, under favourable circumstances, multiply with marvellous rapidity, so that they are most

dangerous pests to have among one's bulbs. Besides these mites, others may be found with them belonging to the genus *Gamasus*, but they are comparatively few in number, and, as far as I know, are not likely to do much harm. They are of a dark brown colour, and nearly double the size of the others.

THE MITES belong to the order Acarina, and are not classed with true insects; they are more nearly allied to the spiders, but they differ from them in several very distinct structural particulars. True insects have as a rule a well defined head attached to a thorax, to which a body consisting of several joints is also attached; insects also when fully developed never have more than six legs. Spiders have the head and thorax in one piece, called the cephalo-thorax, to which the body is joined by a narrow waist, and have eight legs. Mites have the body joined to the cephalo-thorax, forming one piece, and it is often difficult to detect the line of junction. A full grown mite has eight legs, except the gall mites, which have only four, but when first hatched has only six. The female mite lays eggs from which are hatched mites, which very much resemble their parents, except that they have only six legs, and are of course much smaller; they increase rapidly in size, and after certain changes of skin acquire a fourth pair of legs, and having again moulted appear as fully developed mites. *Rhizoglyphus*



The *Encharis* Mite.
Fig. 1, mite; fig. 2, mouth of ditto; fig. 3, foot of ditto (all magnified)

echinopus, the bulb mite (fig. 1), when full grown, is about one-twentieth of an inch in length and of a transparent milk-white colour, with an oval dark spot on either side behind the middle of the body. The mouth and legs are slightly reddish. The division between the body and the cephalo-thorax is well defined; the former is oval, the latter conical and terminated by the mouth (fig. 2). The legs (fig. 3) are short and stout, and are no doubt of considerable strength, particularly the two first pairs; they are terminated by a single hook, just behind which are several large spines. Within the mite (fig. 1) may be seen two of its eggs, which are nearly ready for expulsion. Besides *T. echinopus* there is another species which very much resembles it—*T. robinii*, which is equally destructive to bulbs, and has also been known to attack Potatoes and Dahlia roots. This species may be distinguished from *T. echinopus* by the stoutness of its third pair of legs. G. S. S.

Birds and fruit buds.—If "T. P." were to keep a sharp look-out at early morning he would most likely see the cause of his fruit buds "dropping." It is, there is little doubt, the work of bullfinches, than which the fruit grower has no greater feathered enemy. As the country hereabouts is crowded with woods and our garden in the centre, every spring it swarms with bullfinches, and, by their mischievous propensities, the ground beneath Pear, Plum, and Medlar trees has been covered

with destroyed buds until annihilation was resolved on. It is now the only bird to which I give no quarter, and as it is not insectivorous and songless, it possesses no redeeming quality, except its beauty. I now never lose an opportunity of destroying it, with the result that my fruit-buds are spared.—J. M.; *Charmouth, Dorset*.

SLUGS, AND HOW TO CATCH THEM.

I HAVE been vastly angered from time to time by slugs. I have tried Potato slices, bran, oatmeal, lime, soot, ashes, sawdust, Cabbage leaves—what have I not tried to catch them?—and all these devices have their merits, but all have this great fault in common, that the number of the enemy destroyed each morning is but small, and its ravages only infinitesimally decreased. Now, I ask any successful slug-hunter to give us his method and experience. Let me recount mine. I always think how it must have encouraged the Israelites to see the Egyptians dead upon the seashore, so I delight to see the bodies of the slain; and though I can never soothe myself with the reflection that there remains not one, still I am convinced my plan keeps them very decidedly in check.

First, then, get a lantern, not a bull's-eye, but one such as bicyclists carry, only two sizes larger. Next take a knee-pad such as horses wear when they are out exercising, and strap this firmly round your own left knee; then, armed with a pair of good sharp scissors, sally forth upon the war-path about an hour and a half or two hours after sunset. Accustom your eyes to look only in the little field of light the lantern throws upon your border. Hold the lantern in the left hand and the scissors in the right, and then down upon your left marrow-bone and hunt. If your garden be like mine, you will find three sorts of slugs—first, a very soft, fleshy, juicy species, of colour varying from almost white, through ashy gray and red-brown to almost black; these are great consumers. Secondly, a smaller, jet-black-backed fellow with a yellowish foothold. He is very firm and tough, very sticky but not juicy, of long and slim proportions, moves very slowly, and is decidedly less corpulent and greedy than the first. These are your two chief enemies, and as soon as ever you notice the light of your lantern shimmer on the back of either of these two, deftly snip them in two pieces through the middle of the back, that is at about a quarter of the distance between the head and tail. Then I find a third kind abundantly in warmer weather called, I believe, *Testacella*. When full grown they are much bigger than either of the others, measuring when extended 4 inches or more. They are deep cream colour or very light buff, and if you look closely you will see a little oval shell like a small mussel shell fixed flatly over their tail. If you are lucky enough to have these in your garden get to know them thoroughly well by sight; the young ones are almost pure white, and their eggs are buff coloured and have a limy shell like a hen's egg. Beware of ever snipping a *Testacella* by mistake; they are your best friends, being wholly carnivorous. They never touch vegetable food, but subsist on worms, wireworms, grubs, and such like.

Slugs affect certain plants, as everybody knows. I find the following to be great favourites, and therefore deserving extra searching round: *Chionodoxas*, *Scillas*, *Pyrethrums*, *Sunflowers* of all kinds, *Chrysanthemums*, *Crocuses*, *Pansies*, *Crown Imperials*, *Hellebores*, *Delphiniums*, &c.; whereas I seldom if ever find them touch *Hyacinths*, *Phloxes*, *Daffodils*, *Snowdrops*, common *Fritillary*, *Lilies* (except the basal leaves of candidum), *Poppies*, *Anemones*, &c. The best nights for searching are warm still nights, and if there has been a little shower your prey will be increased ten-fold. I have only been out four evenings as yet this season from 8 o'clock till 9. The first night I killed 300 of the enemy, the second 198, the third 69, and last night 72. Now is there any other easier plan by which as good results may be attained? If there be, I shall be most grateful to anyone who will inform us.

One word, and I have done. Some one will be

sure to say in these anti-vivisection days, "But what a horribly cruel plan!" Fair reader, once admit that slugs are to be killed, and I am certain from careful observation that a pair of scissors through the back as I have described, not through the tail, is the most merciful way possible. If you attempt to crush them on the path at night, you are nearly sure to maim one out of ten horribly; and to put them into a jar of salt, as I have before now been entreated to do in the name of mercy, is the most barbarous and cruel mode imaginable. A sharp cut through the back is like chopping off a man's head; and although the slug's head may move for a time, it is but the involuntary exercise of the expansive and contractile powers with which their whole body is so wonderfully endowed, and which even death does not immediately destroy.

W. WILKS.

INDOOR GARDEN.

DOUBLE LILACS FOR FORCING.

DOUBLE-FLOWERED varieties of the common Lilac have been in cultivation for many years, but of late the well-known hybridist, M. Victor Lemoine, of Nancy, has devoted a good deal of attention to the raising of new and improved forms with double blossoms, the first of which, Lemoinei, sent out three or four years ago, made its appearance last spring at one of the meetings of the Royal Horticultural Society, and was awarded a first-class certificate. It is a very fine, free-flowering double Lilac, much branched in habit, and producing ample deep green foliage and dense clusters of double rosette-like blossoms, in colour resembling those of the common kind. Since sending out this variety, M. Lemoine has distributed others, all of which he claims to be an advance on those already in cultivation. Rubella plena is described as bearing long erect thyrses of very double medium-sized flowers of a clear reddish violet colour with purple buds. The fine dark green leaves of this kind render it one of the most desirable of Lilacs from a foliage point of view alone, *i.e.*, judging from young plants. Another is Renoncule, a kind with long, erect, much-branched thyrses of very double bluish mauve blossoms. The perfume of this variety is said to be very strong. Mathieu de Dombasle is spoken of as a variety with large thyrses comparable in size with those of the finest single varieties. The flowers are of medium size, but very double, consisting of two or three corollas within each other, numbering from fifteen to twenty petals of a fine reddish mauve colour with purple buds. It is the finest double-flowered Lilac I have seen, and one that produces the largest clusters of blossoms. Le Gaulois, another variety, is stated to have very large thyrses of double flowers, in colour deep peach blossom with a lighter centre. These double Lilacs, if all as good even as Lemoinei, must be very beautiful and suitable for forcing. The Lilac, as everyone knows, is one of the most attractive of shrubs we have when forced, as well as one of the most ornamental, when flowering under natural conditions in the open ground. Throughout the earlier months of the year Lilacs are very useful in a cut state, and these double varieties if superior to the older kind, should be extremely useful in this respect. Plants of these newer Lilacs imported from the Continent are all grafted or budded on the common kind—a mode of increasing them open to one grave objection, inasmuch as the stock is continually pushing up suckers, which are a source of trouble, for, if not removed, they would in many cases overpower the scion. When raised in this way the plants never form such neat little bushes as when struck from cuttings, and the latter send up no suckers of a different kind. There is no difficulty in striking cuttings if formed entirely of the current year's growth and kept in a close frame till rooted. In common with most other subjects, the shoots borne on forced plants strike in much less time than those from the open ground, and, besides, they have a longer period in which to establish themselves before winter. Having

some plants of these new varieties, and being desirous to increase them, I last year placed a few of each in the forcing-house, simply to push them into growth; and as soon as the young shoots were sufficiently advanced, I took them off and placed them in a close propagating case in an intermediate house. The result was that they rooted quickly, were soon potted off, and, after a gradual hardening off, were placed out of doors, and are now sturdy little plants in 4-inch pots. Some cuttings that had grown in a natural way out-of-doors were put in an ordinary cold frame and kept close, where they rooted well; but of course they are not nearly so far advanced as those struck early in the season.

ALPHA.

GLOXINIAS AND THEIR CULTURE.

It would be difficult to name a more attractive and beautiful class of easily-grown plants for extended and general cultivation than Gloxinias. The original drooping-flowered varieties have been superseded by those which are erect, and as the latter are well diversified both as regards colour and markings, there is little need for growing the others. As a rule, Gloxinias are not so generally well cultivated as their merits and usefulness entitle them to be, the majority of growers being content with a few plants in small pots indifferently flowered. Seed may still be sown where not already done, and if the plants obtained do not flower in the autumn, they will be forming the best of bulbs for next year. For raising seedlings shallow pans or pots well drained and filled with light soil are best, that on the surface being sifted and pressed evenly. The seeds should then be thinly distributed and carefully covered with the least amount of soil passed through a very fine sieve. This is better than simply placing a pane of glass over the top. Carefully water, keep the seeds shaded, and in a temperature of about 65°. The seedlings, as soon as large enough to handle, should be pricked off, especially if they are at all crowded, or damping will soon begin. Shifting into new soil is always the best cure for damping as soon as the least sign of it can be seen.

Bulbs about two or three years old are the best for flowering, and as a new stock may easily be raised annually there is no need for keeping them after attaining that age, unless in cases where there is only a limited stock and but little convenience for raising more. Gloxinias may be had in flower nearly all the year by continually starting some and retarding others to keep up a succession. Their natural flowering season is summer and early autumn, and now is a good time to start the bulbs. The treatment just given, and which is confidently recommended, varies a little in detail from that generally practised. The bulbs are taken from the old soil wherein they have been kept during winter in a dry, but not cold place, and are potted in small pots or according to their size in larger ones. They are then placed in a propagating house and not watered beyond a little from the syringe until the shoots appear. Soil composed of equal parts lumpy peat and leaf mould only partially decayed, with some charcoal and a little soot added, forms a good compost. The soot adds considerably to the health and colour of the leaves. No loam is used, and, provided plenty of water is applied when the plants are growing, the compost is best without it. It is a mistake to pot any of the Gesneraceous plants with scaly tubers, such as Achimenes, Gloxinias, Gesneras, &c., in heavy soil; neither should it be pressed too hard when potting. Before there is danger of the roots being starved the plants should be shifted on. Supposing their healthy appearance indicates free growth, they may then be transferred from 5-inch to 8-inch pots, or from other sizes in a similar proportion without any fear of injury. As the leaves are exceedingly brittle, the operation must be carefully performed, and the less number of times it is done the better. The plants or leaves should on no account be placed near hot pipes, or their chief insect enemy, thrips, will soon obtain a footing. This pest disfigures the

leaves and leaf-stalks, and is very difficult to eradicate when once established without much injury being caused to the leaves. Plenty of moisture in the house and about the plants is one of the best preventives. Gloxinias like plenty of water when growing and copious syringings, especially in the evenings after warm days. Water should never be used cold, as it has a very injurious effect. Plenty of room must be allowed the plants to develop, and although shade from bright sunshine is essential in summer, it should be movable, so that full light may be admitted at other times. As soon as the flowers can be seen, some manure should be given. A sprinkling of Standen's or Clay's fertiliser over the surface of the soil about once a fortnight will prove effective, increased vigour in the plants soon being apparent. Manure water may also be used, but it is not so easily applied without disfiguring the leaves; the artificial manure is readily put on with a broad label.

Plenty of air may be given in summer, especially when the flowers begin to open, but draughts must be avoided. As cut flowers, Gloxinias are extremely effective when arranged with only the addition of a little Fern in specimen glasses and in round or oval bowls. They last a considerable time without fading if the plants have had plenty of air admitted to them before the flowers were cut. If several shoots are produced from one bulb when starting, they may be thinned and easily propagated to form good plants the same year. Liberal treatment, by allowing plenty of pot room and tepid water both at the roots and overhead when growing, with a moderate amount of shade in summer, will induce a vigorous growth and eventually a fine display of flowers that will well repay for any extra trouble taken in their cultivation.

J. G. K.

CLIANTHUS DAMPIERI.

BOTH IN THE GARDEN and *Gardening* there have appeared from time to time articles relating to the culture of *Clanthus Dampieri*, and nearly all of them state that it is an easy plant to grow. Perhaps the best article on the subject is that by Mr. Christison (Vol. XXIV., p. 362). In that he intimates there is no difficulty with the plant, which he says "in the colder northern parts of the country may often be seen flowering when planted in sheltered nooks." I shall be glad to know if any readers of THE GARDEN have met with it under these conditions. If it is of such easy culture, why is one of the most beautiful plants so rarely seen? I have myself only met with one really good specimen, and that was at Messrs. Henderson's some years ago, and it was a plant not to be forgotten. My special object in writing is to ask whether your correspondent may not be speaking of *Clanthus puniceus*, about which there is no difficulty whatever, and is a plant common in gardens. I know Mr. Christison, and do not think he would be likely to make such a mistake, but it is very remarkable that we so rarely see a plant which no one having once made its acquaintance would be likely to forget, and which is scarcely ever offered for sale in nurserymen's catalogues, while its kinsman, *Clanthus puniceus*, the old Lobster-claw plant, may be had anywhere for a trifle, and may be grown anywhere if red spider can be kept from it.

A. R.

W. indermere.

Clematis indivisa.—This is one of the most useful of climbers, blooming as it does at this time of year, yet how seldom does one see it in cultivation. It is a free grower, blooms profusely, and lasts so long in bloom, that in a cool house it ought to be oftener met with than it is. We have at present one growing in a 10-inch pot covered with hundreds of flowers, long spikes of which hang gracefully from the roof under which it is trained. Copious supplies of water both at root and overhead during the time when it is making its growth appear to benefit it, and top-dressing annually with some rich compost also adds to its welfare. It has not been potted for three years,

and still it flourishes, proving that it does not require any great amount of root space wherein to grow and flower satisfactorily.—E. MOLYNEUX.

THE WHITE INDIAN DAPHNE.

(*DAPHNE INDICA ALBA*.)

THIS, though seldom seen, is a well deserved favourite of all who succeed with it. In reality its culture is simple if its likes and dislikes are properly attended to. It does better planted out than in pots, but in either case it must be kept

5333.—**Turfing Pelargoniums.**—Cut some turves, say 12 inches wide, 18 inches long, and from $2\frac{1}{2}$ inches to 3 inches thick, and water them well the day before using them; then take an old table knife and cut them into $2\frac{1}{2}$ -inch square pieces; then cut them half through, place the plant in the turf, keep the base of the plant well down or close to the grassy part, then press in each side with the thumb, and by pressing the ball or turf, it can be made square or round according to taste. The plants should be taken to a frame or place that has already been pre-

other reason. If turfed Pelargoniums can be placed in a house or frame there to remain until well rooted before they are removed, turves answer very well; but if space is limited and they have to be moved occasionally before the plants are taken out to harden off, pots are preferable to turves, as they can be moved in less time and more safely. The way in which I use turves is to cut good holding sods a foot wide and 2 inches thick. I then place them on the potting bench and cut them into 4-inch squares. Having prepared some fine soil composed of two parts loam,



Flowers of the white Indian Daphne (*D. indica alba*). Drawn at Coolhurst, Horsham, in February.

cool at all times of the year, well shaded from the sun and occasionally syringed. Peat, loam, and coarse sea sand suit it, but I believe the chief secret of success lies in perfectly cool treatment. We have a plant in the conservatory against one of the pillars now about 9 feet high, from which, without any exaggeration, a hundred heads of bloom must have been cut this winter. The delicious, spicy fragrance of the pure white flowers all through December, January, and February, besides that it is particularly useful for bouquets and button-holes, make it well appreciated, and at other times of the year the glossy dark green leaves form a good background for other things.

C. R. S. D.

pared for them. A little bottom heat will give them a good start. Spread a thin layer of ashes so as to keep the plants level, and they should stand at distances of about 3 inches or 4 inches apart; now cover up the ball or turf with ashes about an inch deep; keep them close for a week, or if the sun be too strong, a little shading should be given. After that they will make new growths, when plenty of air should be given to keep them sturdy; the lights may be taken off by day. Turfing saves a lot of labour in the bedding season, as there are no pots or crocks to pick up, and very little water is required.—W. WEBBER.

I have used some thousands of turves for Pelargoniums to save buying pots, but for no

one leaf soil, and sand enough to make it gritty take the small square turves and with a knife scoop a hole in the centre, shake out the plants, trim the roots sufficiently to get them into the hole, and press the soil firmly around them. Then set them on a stage where they will have the benefit of a little warmth and keep them moist, when the turves will soon be a mass of roots. When bedding-out time comes round they will bear moving anywhere without falling to pieces, and the turf will considerably enrich the beds. No time should be lost now in completing this operation in order to give the plants time to get well rooted.—W. ROGERS, *Ashford, Kent*.

—Turfing Pelargoniums, except for bedding

purposes, has not much to recommend it, and even for that purpose I should never think of adopting the system if I had sufficient pots for all the plants required. Sometimes, however, one has to adopt very primitive methods of growing plants, and this is one of them. It is not bad in its way, but at the same time it has its disadvantages, which sometimes more than counterbalance any utility there is in the system. The turves look very untidy in a greenhouse, and if not full of fibre cause much litter. They are not so convenient to move from one place to another as pots, and when planted out in beds or borders, if vegetation has not been properly killed, weeds spring up that take much time to eradicate. When all things are taken into consideration it is more trouble to grow *Pelargoniums* in turf than in pots. The plants, however, grow best in turf, and if turf can be got for nothing, which is not always the case, a word might be said in its favour on the score of economy, but upon the whole pots would be found the best. If "E. J." is desirous of trying the system, the first thing he must do is to cut the required number of turves 4 inches thick, and as large as may be required to accommodate the plants to be put in them; then lay them together for a few weeks in order to kill the roots of weeds, but they must not be allowed to get too rotten, or they will fall to pieces. When the plants are well rooted put the centre out of each turf 3 inches deep and put one plant in each turf, and fill up the hole with fine rich soil similar to that which would be used in potting.—H. PARKER.

Home-grown Lilies of the Valley.—

Whether it is that I have not been fortunate in getting the best of the imported crowns when I purchased them, or that foreign-grown roots are no better than home-grown ones, I do not know; but, after having tried both, I have come to the conclusion that properly-managed home-grown roots are in every way equal to any imported. Of course, if the crowns have been indifferently prepared, the flowers will be few and inferior in size. At the end of December and the early part of January we were cutting well-developed flowers from a limited supply of crowns that had been brought on in a propagating pit where the temperature ranged from 70° to 80°. This pit is in a rather dark corner of the stove, with the sash raised about 6 inches on one side, so that they did not get much air and only a reduced supply of light. Some pots and boxes, planted at the same time, that stood with other plants in the body of the house, produced but very few flowers, and those of poor quality; so that forcing, as well as growing, has something to do with the quality of the flowers. Notwithstanding this, however, I have always found that small and inferior crowns will not produce flowers of any value under the most skilful treatment very early in the season. My contention is therefore this, that, given a suitable temperature and appliances, very satisfactory results may be had from home-grown roots. Ours take from three to four years to prepare. They are grown on a border sloping to the sun. The soil is moderately heavy and fairly rich. We plant pieces about the size of a man's hand, leaving a space of about 9 inches between each. The pieces are laid regularly on the surface, and then covered with fine soil. Every autumn the surface is cleaned, and a light dressing of good soil is given. When we take up the crowns for forcing they are lifted in pieces, and the most promising are selected for potting.—J. C. C.

Balsam.—A way in which one can get these really good is to sow singly in small pots, which should then be placed in a temperature of 70° or so. As soon as the plants are up, they ought to be placed on a light shelf near the glass to keep them from drawing, the great thing being to get them dwarf and stocky, with the lower branches down to the pots. To bring them to that position, the plants, at each potting, should be dropped down a little lower in the soil, as then they will root out round the buried stems, which will add to their strength. A good compost for them is two parts fibry loam, one of leaf soil, and

the other of rotten manure, in which they should be potted somewhat loosely, and as soon as they get well hold of it, have liberal supplies of manure water. If wanted large, they must have their first flower-buds picked out and be shifted on before they get at all pinched at the root, till they are placed in the pots they are wanted to bloom in. The place that suits Balsams best to grow in is a light house or pit, where they can be plunged and have bottom heat, and a temperature between 70° and 80° with plenty of moisture. *Impatiens Sultani*, a new kind of Balsam, comes readily from seed and flowers in the greatest profusion, especially if the plants are grown in a light house with their heads well up to the glass, which exposure consolidates the sappy shoots and enables them to set plenty of blossoms. These are a very bright red, and are sent up well above the foliage, which is of a pleasing green and very pretty looking. The seed should be sown in light, fine soil, and placed in a Melon or Cucumber frame where it can get a brisk heat, when it will soon be up and the plants ready for pricking off or potting in 4½-inch or 6-inch pots, which are quite large enough for them to grow and bloom in.—S. D.

WORK DONE IN WEEK ENDING MAR. 24, 1885. MARCH 18.

A MILD and spring-like day, with a slight shower at noon, which was just what our light land needed to well settle the soil to the seeds that were sown on the 12th and 13th. Weeded amongst Strawberries, and worked the mulching well about the crowns of the plants, and the mulching between the rows was well pressed down; a sprinkling of soot will be applied over the entire plot soon as there are signs of rain, that it may at once get washed into the mulching to the destruction of worms and slugs. The present is a very good time to make a new plot from the reserve stock of plants that is usually saved when the beds are cleared off in autumn. We have a few that will be thus planted on the first opportunity, and the first flowers will be picked off, so as to get the plants to fruit in autumn. Edging Grass verges of walks and roads; most of it was done in the winter, but that was because we have so much of this kind of work, that if it were all put off till spring-time, it would probably not get done at all. The most conspicuous walks are therefore left till now, when there is not likely to be frost sufficiently severe to cause the edges to crumble, as often happens from autumn and early winter cutting. House work is getting to be more of a routine character, airing, watering, and syringing taking up a great part of each day. Disbudded another house of Vines. I may observe that in doing this work the rule followed is to leave as many or as few shoots as one's own judgment decides at the time there is room for; one, two, and sometimes three are left at each spur; uniformity of foliage all over the house, rather than uniformity of each Vine, is our aim, though, as a rule, but one bunch is allowed to remain on the one spur even if there be three shoots from it. Potted sundry kinds of bedding plants and put more cuttings in the propagating beds from which they were taken. Drew the lights entirely off cold pits, and weeded and cleared Moss from the surface of the soil. *Violas* and *Calceolarias* require more space, but which as yet cannot be given them, and meanwhile, therefore, they will have full ventilation to keep them from drawing up.

MARCH 19.

Another very fine day; made good headway with cutting and cleaning up edgings of roads and walks, also finished planting upright edgings of *Herniaria glabra* to parterre flower beds, and nearly completed trenching or digging them. Lifted old plants of *Arundo conspicua* and cut them up into moderate-sized clumps and planted more of them on the banks of the lake, for which position it is in every way suited and is far more effective than the Pampas Grass, not to mention that it flowers at least two months in advance of the Pampas and continues good long after the plumes of the latter have faded. A

stiffish loam and plenty of moisture are requisite to keep it in vigorous growth. The New Zealand Flax (*Phormium tenax*) is another excellent plant for the waterside, and as it has proved perfectly hardy in the south-west of England, it ought, and no doubt will, be more generally grown; it does not transplant so successfully as the *Arundo*, or perhaps I ought to say it suffers more, does not perish outright, but for a season or so afterwards the growth is very little, and this is a reason why it should never be disturbed except for increase of stock. The variegated variety is a grand plant for any position on the lawn, but more particularly for waterside planting. Tied down and pinched shoots in early vinery, and as thinning must soon begin, every bunch was cut off that was not needed for the crop. The length of the rods is about 18 feet, and the number of bunches left on each rod ranges from fourteen to eighteen, according to the size of the bunches. Pinched Fig shoots and rubbed off a few more of the worst fruits, and gave the inside border a soaking with tepid water. Peach shoots in early houses have also been tied down. The crop of fruit will be very short, as it has dropped much of late, and I am unable to say why, though I have a suspicion that spider is to blame, for the trees got badly blighted with it late in summer; and what with heat and drought it kept its hold in spite of the frequent washings the trees had. However, we hope to have sufficient fruit for a supply till the second house is ready, and which, as a consequence, will be forced on a little quicker than would otherwise be the case. The trees in this house have to-day been disbudded for the second time. Got more Strawberries indoors; twice each week, the whole set of plants that are being forced are overhauled for thinning the fruit, placing those in full flower in the most light and airy positions, and the plants from which the fruit has been gathered are put in cold frames. As put into the forcing houses, the pots are all washed and the plants freed from dead leaves and weeds. None are now started in frames on leaf beds, as was the case with the first and second batches. More potting done—*Chamaepeuces*, *Dahlias*, *Pelargoniums* for next winter's flowering, *Solanums* for sub-tropical garden, and *Abutilons* being amongst the number.

MARCH 20.

Weather being still favourable, outside work has been much the same as yesterday. We managed, however, to start another job, namely, trenching up the beds intended for sub-tropical and other large and strong growers, and which, as a matter of course, require special treatment if the plants are to grow quickly and well. Our planting arrangements are not yet decided, but with respect to plants of this character this is of little moment, as all kinds need the most liberal culture that can be afforded; therefore all the beds are being deeply trenched and abundance of good manure given, a layer being placed at bottom and another immediately under the top spit of soil; this heavy manuring throws the soil well above the turf, which exposure is favourable to its receiving the largest amount of sun heat. It should be added that the beds are also that much the warmer owing to the drainage being clear and abundant. Repotted earliest batch of *Chrysanthemums*, also more *Pelargoniums*, *Fuchsias*, and single *Dahlias*. Ivy-leaved *Pelargoniums*, by reason of their drooping habit, are highly prized here for planting to hang down over the sides of large basket-shaped beds and vases, and a few of the choicer varieties are retained for pot culture. They have all now been repotted and a few cuttings put in, which will make good plants for bedding out in May. We are also short of the old variegated *Manglesi Pelargoniums*, and have therefore put in cuttings to-day. Made another sowing of Melon (*Hero of Lockinge*); also sowed in pans and placed in heat *Phlox Drummondii* and Sweet Scabious, which are intended for planting out in the mixed flower border together with other annuals, which at the first opportunity will be sown in the open border. Turned heat on Lady Downes vinery; half the Vines are young, and with a view of inducing them to break evenly the canes have been tied horizontally. Old Vines

give us no trouble of this sort, and they are therefore kept in their usual position; syringing is now regularly done morning and afternoon, and the minimum night temperature in the coldest weather will now be 55°. The border being entirely inside, it has had a good soaking with water at a temperature of 90°. Gardenias being infested with fly and having to be fumigated, advantage was taken to put other infested plants in the pit to be done at the same time. Marguerites and Resines are constantly needing this attention to keep them clear of insects.

MARCH 21.

The same description of work continued as for the last two days. Finished subtropical beds and the planting of Arundo conspicua, Pampas Grass, and Phormium tenax. We have a pair of the Blue Gum (Eucalyptus) and also a pair of the red that were originally planted as central plants in subtropical beds, but having done so well, we have top-dressed them and turfed over the beds, and so made them lawn plants, and they are fine ones too, being some 20 feet to 25 feet high. The stems are proportionately stout, and present quite a timber-like aspect, and so hardy looking as to make one believe that the severest winter cannot possibly injure them. Swept pleasure ground walks and untidy parts of lawn, also swept and rolled kitchen garden walks. Besides the usual weekly general brush-up of houses, early Peach house and late Muscat vinery borders were watered and greenhouse Vines (Hamburgh) disbudded. These Vines are upwards of seventy years planted, and have always been pruned on the close spurting-in system, and yet they produce fruit second only to the best exhibition samples (size of bunch excepted), and these run rather small, as might be expected from Vines of that great age. The border is entirely an outside one and root space is limited, a wall being built at 20 feet from the front wall of the house. The border is a complete network of roots, top-dressings of fresh soil, bones, soot, and wood ashes being given yearly, and over this several inches of good stable manure as a mulching. To high feeding more than any other cause I attribute the general excellence and heavy crops of fruit that one can always depend on from these old Vines. Put more Spireas, Roses, Deutzias, and bulbs in heat, and examined Grapes in bottles to cut out decayed berries. In this dry weather heat is never required to be turned on, but now the nights are so cold that ventilation is quite excluded.

MARCH 23.

It is seldom that a more sudden change takes place in the weather than occurred at an early hour yesterday morning. Rain began to pour down at about 1.30 a.m., and by 6.30 there had fallen 0.58; at that hour the thermometer suddenly receded from 36° to 29°, and a heavy snowstorm set in and lasted for upwards of four hours, the ground being covered to the depth of 4 inches, and which subsequently, to our great relief, disappeared almost as rapidly as it had fallen, so that to-day we have been able to proceed with the work almost the same as if there had been no storm. The Lebanon Cedars had a few of their branches broken off with the weight of the snow, but damage to other trees is but slight, and, indeed, some good has been done to deciduous trees, as it has brought down many rotten branches from Chestnuts, Beeches, Limes, and Larches. Hands were at once set to work to clear away the branches and to open channels and gratings that had become blocked by the heavy rain, other work being a continuation of trimming the edges and levelling the gravel on coach roads. Besides the usual routine duties, indoor work has been shifting Vines struck in 3-inch pots into 6-inch ditto. Potting on a few more Chrysanthemums; also potted young plants of Dracenas and Crotons into 6-inch pots, this being our largest size for table plants, for which purpose these plants are intended. Potted singly out of cutting pans Begonia castaneifolia and Ingrami. Both of these are not only excellent plants for pot culture for decorative work in the house, but they are also both of them first-rate bedders. We intermix them with

the tuberous varieties, the latter forming a kind of undergrowth for the former, which grow about 20 inches high when planted out.

MARCH 24.

Sharp frost in the early morning gave us an opportunity to tidy up manure yard, renew linings of manure frames, and cart out manure for making up fresh hotbeds. Afterwards several hands were employed on coach-roads, edging and gravelling; this is now completed, as is also shrub-pruning for the season. Planted the inner edgings of a few flower beds with variegated Thyme, a plant that bears any amount of cutting, and can therefore be kept high or low, according to taste and the height of plants that are growing next to it. Having many spare plants of the hardy Sedum spectabile (the dark purple variety), we have planted a number amongst hardy Ferns and others in the outlying parts of pleasure grounds, under the shade of trees and Rhododendrons, which, if they do well, will give us flowers at a season (September and October) when there are but few flowers to be found in such positions. Daffodils and Primroses now make a fine show, and these will shortly be succeeded by wild Hyacinths and Wood Anemones; next we have Spireas and St. John's Wort, and eventually the Sedum just planted. More stopping of Vine shoots done, both in early Muscat and Hamburgh houses. Looked over Pines for watering and weeded them. There is always a number of weeds coming up in the new top-dressing which we like to pull out before they get a firm hold of the soil; all the plants are now given a slight syringe over when the ventilators are closed on sunny days. Potted on Tomatoes, single Dahlias, and Marguerites, also potted into small pots from the seed pans Grevilleas, Encalyptuses, Ferulas, and Acacia lophantha. Put in cuttings of various kinds of bedding plants.

HANTS.

FRUITS UNDER GLASS.

STRAWBERRIES.—Where early plants have been brought forward in Peach houses and vineries, an effort should be made to get them removed to a light, airy structure, where they can receive treatment best adapted to their requirements, for if they remain on back shelves in houses that have to be closed with sunheat, they do not as a rule set so well as others in close proximity to the glass, with a free circulation of air passing above and below the pots. Moreover, so subject are they to red spider and green fly when kept in a high temperature, that it is hardly possible to keep the legitimate occupants free from these terrible pests. In gardens where Strawberries must be grown, and there is no proper accommodation for them, a very good pit may be provided by fitting up a few lights of a hot-water Cucumber or Melon pit with narrow shelves some 18 inches from the glass; each shelf 6 inches or 7 inches in width will take a single row of plants, the pots will shade each other from the baking influence of the sun, the flower and leaf-stalks will be short and sturdy, and perfect fertilisation from this time forward will be reduced to a certainty. In such a structure, although bottom-heat pipes may be present, the most genial warmth and moisture can be best secured by partially filling the pit with half-spent leaves or tan, which can be kept constantly moist by the use of the syringe when the water passing through the pots is found insufficient. When the fruit is set the trusses should be well thinned and tied or propped up to keep it clear of the pots, and free from grit or contamination during the process of feeding as stimulants of some kind are indispensable up to the time the first Strawberry shows signs of changing colour, when pure water only must be used. Although forced Strawberries require a low temperature throughout the early stages, they will stand any amount of heat when the fruit begins to swell, and lay on size in proportion to the heat and moisture which they receive, hence the value of good shelves in Pine stoves for this part of their culture, but in order to secure flavour the pots should be removed to a dry, warm, airy house to complete the ripening process. Early Strawberries, like early

Grapes, are too often gathered and sent to table as soon as they are fairly coloured, and they are tolerated because they are forced; but to have them good they should hang in the dry, airy house until the aroma extends to the exterior.

Late plants.—The most useful Strawberries are those which ripen through April, May, and the early part of June, as the plants, consisting of the best varieties, come on steadily, give heavy crops of fruit and swell off, under the influence of solar heat, in the pits in which they are kept from the time they are put away for the winter. Although many new kinds have been introduced it is questionable if Sir J. Paxton, President, the old Keen's Seedling, and British Queen have been surpassed. Sir Charles Napier is a bright handsome Strawberry, but it does not succeed in every garden, and on this account a few plants should be tried before it is extensively grown, as pot Strawberries require an endless amount of care and attention during the eight or nine months they occupy the pots in which they are grown and fruited. These late batches of plants are generally grown in 7-inch pots, and plunged in ashes or leaves to save watering as well as to protect the roots from the ill effects of drought and frost. They require good syringing from the time they start and liberal ventilation throughout the night and day.

ORCHARD HOUSES.—In the early house the thinning of the fruit and disbudding will now require attention. In a preceding paper I stated in detail how these operations should be carried on; here it will only be necessary to remind the amateur that the performance of minute details at the right time is only second in importance to doing the work systematically and well. When the fruit begins to swell off freely, all shortening back of side shoots and leaders, for the twofold purpose of strengthening close-at-home growths and maintaining the symmetry of the trees, can be performed to a nicety, as two or three well placed fruit on each will be quite sufficient to leave for future selection. Any weak shoots in well furnished parts of the trees that are barren can also be shortened back to the young breaks nearest the main stems to secure a succession of bearing wood for another year, otherwise valuable space will have to be sacrificed to the requirements of hollow, straggling trees, which will soon become unsightly and worthless. If greenfly is present, it will be safe to fumigate as soon as the trees begin to cast their decaying blossoms, two mild smokings at intervals of two or three days being preferable to filling the house once with one dense volume. A calm evening is the most suitable time for fumigating, when the temperature should be low and the trees perfectly dry. Good watering and syringing must not be neglected, as one mistake on the dry side may prove fatal to the crop; hence the advisability of entrusting these important details to one person, who will not be deceived by a moist surface when the crock roots are suffering. The next thing to be considered is top-dressing of a kind that will favour the rapid formation of fresh surface rootlets, while the voluble matter carried down by water feeds existing roots below. Some use solid manure; others apply a mixture of loam, manure, and malt dust, which should be thoroughly incorporated and frequently turned over to prevent violent fermentation, in a dry, open shed, before it is taken in for use; but the malt dust throws off a disagreeable odour, and being very powerful, great care should be observed in its application. For my own trees I prefer equal parts of good turfy, calcareous loam, old cow manure from well-fed animals, and a little lime rubble to keep the mixture open. Upon this the surface roots feed and multiply; it is quite safe, and contains nothing that is disagreeable or dangerous.

GENERAL HOUSE.—The trees in this structure present a charming appearance, Plums, Cherries, Peaches, and Pears being in full flower, or approaching this stage. If the house is fitted with a flow and return pipe for use in case of need, treacherous morning frosts and that insidious enemy to fertilisation, a low, damp, stagnant at-

mosphere, can be set at defiance, a free circulation of air can be maintained, and showers of buoyant pollen from well-ripened trees, all other conditions being favourable, will result in a good set of fruit. It must, however, be borne in mind that fire heat must be applied with great caution, as too much is quite as great an evil as too little; therefore while moderately warming the pipes to dispel damp and to keep out frost the temperature by night should not exceed 40° to 45° with air, and 50° through the day when sun heat does not favour liberal ventilation. Last, but not least, to prevent disappointment, every tree should be fertilised with pollen of its kind when the day temperature has reached the maximum. Some Peaches and Nectarines, notably the hybrids of recent introduction, are not so free as many of the old standard varieties, including Royal George and Violette Hâtive Peaches, Elruge and Violette Hâtive Nectarines. Therefore these, where practicable, should be used as the pollen parents, and the more the others are crossed and recrossed with the camel's-hair brush the more likely will they be to set. Having pointed out the evil that attends an excess of cold stagnant moisture, it may be well to say aridity on bright days should be counteracted by damping the paths and surfaces of the pots with tepid water.

PLUMS UNDER GLASS.—Where the convenience exists for growing a set of trees of the choicest kinds under glass without the aid of fire heat they should be kept out of doors where they can be protected from birds until the blossoms begin to swell, and they can no longer be considered safe from the effects of morning frosts. Fruit of superior quality being the object, the pots, which should be full of roots, will be best plunged to the rims in old tan, leaf mould, or, in the absence of anything better, ordinary garden soil, as bottom heat is injurious and unprotected pots entail a great deal of daily attention to watering. Unless the spring is unusually severe, or, worse still, cold, wet, and sunless, a well-ventilated glass roof will preserve the blossoms from the effects of a frost that would destroy nearly every Plum in the open garden, as has now been the case for several years past. When housed, the trees should be kept well up to the glass, but not so close as to interfere with the year's growth, and sufficiently wide apart to admit of the free admission of sun heat and light throughout the growing season. Like all other stone fruit trees, they must be carefully tended with water, well syringed on bright mornings, and freely ventilated by night and day until the blossoms begin to open, a stage which must be preceded and prepared for by fumigation with Tobacco paper, as Plums and aphids are almost inseparable. When in flower the atmosphere of an unheated Plum house cannot be kept too dry, neither will a low temperature, provided frost is excluded, militate against the setting of the fruit. The conditions, however, which suit them best are an abundance of dry air, otherwise the petals of the flowers will damp and the pollen will become sluggish and pasty, a temperature ranging from 40° at night and 50° to 55° by day, when artificial fertilisation will favour the setting of the fruit. The varieties best adapted to pot culture are Coe's Golden Drop, now rarely met with in good condition on open walls; Jefferson, a variety but little inferior to the old Green Gage; Kirke's, a fine dark variety; all the Gages, from which transparent and McLoughlin's should not be omitted; De Montfort, Denniston's Superb, Angelina Burdett, and Reine Claude de Bavay. As Plums are gross feeders, the old top-dressing and a portion of the soil down the insides of the pots should be removed every autumn and replaced with fresh rich compost, consisting of turfy loam and rotten manure. If used in a dry state it cannot be too firmly rammed with the potting stick, as the roots luxuriate in a rich resisting medium. The best time to apply the compost is

just before the leaves fall, when, the trees being ripe, they can be removed to an exposed plunging border in the open air. Where pot culture entails too much care through the growing season, shallow well-drained beds of pure loam containing a liberal admixture of old lime rubble or burnt earth may be planted with pyramids or bushes previously prepared by being grown in pots for a year, plunged in an open quarter to form the nucleus of a ball. Manure should not be mixed with the soil, but it may be used as a mulching after the fruit has set, and diluted liquid occasionally applied will greatly assist the trees during the time they are carrying full crops of fruit. When trees are planted out they require biennial lifting, root pruning, and replanting to prevent them from becoming gross and unmanageable, and when once brought into a fruiting condition constant pinching to three leaves will keep them compact, healthy, and floriferous for years. In course of time the wood growths give way to dense masses of spur wood, which requires thinning when the trees are dormant, and being subject to green and black fly the thinning should be followed by careful washing with soap and water before they are housed in the spring.

Eastnor Castle, Ledbury.

W. COLEMAN.

WINTER PANSIES

PANSIES are with us nearly all the year. Strong seedling plants of show and fancy kinds seem to



A bunch of winter Pansies.

take advantage of mild winter days to open a few fine blooms at odd times, and the blooming season of the smaller or Viola section is pushed on to near midwinter; this is especially the case with a bright yellow kind of hardy constitution, a winter bunch of whose flowers is shown in the annexed engraving. It is well worth while to keep a few tufts of these late-blooming Violas in some sheltered corner of the kitchen garden or other genial spot for cutting from in winter.

G. J.

Planting Gladioli.—In lifting a quantity of Gladiolus bulbs of various kinds lately I came across some of the largest I have ever yet seen, and all were as plump and fresh as could be desired; those that were lifted and replanted last season had for the most part two large bulbs with the old decayed one still under them, and others that had remained undisturbed for three or four years had increased into large clumps. The finest bulbs of all were on a raised bed of rather poor soil, and although last summer was excessively dry, and other plants on this bed nearly scorched, the Gladioli produced very fine spikes of bloom, and branched out into several side spikes when the leaders were cut off. I may remark that our soil is light and stony, and that the Gladiolus grows freely in it without the aid of manure. I feel sure that the bulbs are sounder and less liable to disease if grown without gross stimulants of any kind. We never lift our Gladiolus roots until they require dividing, as I am sure that when the soil is light and well drained they are perfectly safe left in the ground. The drying off generally ends

in shrivelled tubers by the time it is safe to plant, while those left in the soil are plump and full of life.—J. G., *Hants.*

GARDEN FLORA.

PLATE 485.

THE PANSY.

AMONGST flowers which come under the care of the florist, perhaps the Pansy may take the highest rank. Although rigid florists of the Glenny school have repeatedly attempted to bind it down with arbitrary laws, declaring that no Pansy can be tolerated whose form is not a perfect circle, and whose colours have not their margins as carefully defined as if they were drawn with compasses, still hosts of lovers of the beautiful amongst all classes, from the hardy sons of toil to the most exclusive of our aristocracy, have continued to grow and admire the Pansy in all its irregular forms of simple beauty and delicious sweetness. Pansies do not at first appear to have received so much attention in the south as in the northern parts of the kingdom, the few varieties then in cultivation being less able to withstand drought and heat than the more robust and hardy types now grown. In 1760 Justice observed many varieties growing about Edinburgh, and as they seeded freely, he actually recommended people to keep them in check, as otherwise they would overrun the garden. Again, in 1786 Abercromby gives a list of named varieties. He states that he considered the Pansy to be an annual, although in mild winters it might prove to be biennial or even perennial. The Pansy, like many other flowers, has had to submit to changes of fashion, but it never entirely disappeared from our borders. About 1840, however, it became one of the leading competition flowers, and, as the inevitable result, its lines became more stiff and rigid, as may be seen from illustrations of it in gardening periodicals of that time. Ten years later, florists divided the show Pansy into different classes, such as white and yellow grounds and dark and white and yellow selfs, and in May of that year the National Pansy Society held its eleventh annual exhibition in The Thatched House, Hammersmith. The only seedling raiser and competitor at that show now remaining is Mr. Charles Turner, of Slough. The most important society that was formed after the National is the Scottish Pansy Society, which has now existed for forty-one years; and after being long in comparative obscurity, during which its membership was by no means numerous, it has for some years been growing in public favour; its membership has greatly increased, and its annual exhibition in June attracts competitors from the most distant parts of the three kingdoms. This old society, by keeping the merits of the Pansy before the public, has induced a number of its own members to form auxiliary societies in different parts of the country, and thus still further helps to spread and encourage a taste for this truly useful flower.

The varieties of the Pansy are so numerous, that there is ample room for all growers to follow their own particular fancy. Thus the florist *par excellence* has done good work in enlisting the keen sympathies of a large body of kindred spirits, who, while adhering to a certain standard of perfection, have widened its bases and admitted many changes which would have been looked upon as the grossest heresies by those who founded this school. On the other hand, varieties discarded by the florist, because of their vagaries in form and



colour, have now become the most popular of their race. The show Pansy only was known in this country until about thirty years ago, when a few varieties of a different character were introduced from Belgium. These differed from show kinds in having large dark coloured blotches on the petals, flamed or edged with colours quite new to Pansy growers in this country. The few imported flowers of this class at once opened up a new field, attracting the attention of amateurs and startling old-fashioned florists who saw no beauties in such oddities. In spite of all opposition, however, the work then begun has gone on steadily and rapidly. Professional growers saw that it was to their interest to cater for the public demand, and, by taking the brightly coloured flowers and crossing those having more substance in the petals, they soon began to combine the thick texture of the one with the glowing colours of the other; and now the improvement has been so rapid and marked, that one is afraid to say that perfection has even yet been attained. The highest merit of the Pansy may, however, be said to consist in the fact that flowers quite as fine as those in the accompanying drawing can be produced in the open air without any special treatment in every garden in the country.

CULTURE.—While most Pansies will undoubtedly not only exist, but will even flourish in any ordinary garden soil without special treatment, some of the more choice varieties and those having delicate shades of colour are greatly improved in quality, and their season of blooming much extended by receiving a little extra attention in making up a proper compost in which to plant them. The improvement in the size of the flowers and the richness of the colours brought out by generous treatment may well induce all growers to have at least one properly made-up bed for them. The finest flowers will be obtained from a mixture of hazel loam as full of fibre as possible, enriched with one-third of thoroughly decomposed cow manure, or that from a spent hotbed, and one-sixth of sharp sand. The best position for the bed is where it is naturally sheltered from the prevailing winds, but not overshadowed by trees, and, if possible, not too much exposed to the mid-day sun. If this cannot be found, a piece of tiffany hung perpendicularly along the south side of the bed for a few hours will be all that is required. If any shading is used overhead it should be at least 3 feet above the bed, otherwise the plants are apt to be drawn. Planting should be done as soon after the spring frosts are past as possible, but early flowering strong plants may be put out in September, and in case of severe weather some rough litter may be used as a mulching. Many amateurs injure their plants seriously by too frequent waterings in dry weather. If the plants are early, and deeply planted, and well established, a slight daily watering, instead of benefiting them, is apt to scald the stems at the surface of the bed. When watering is necessary the ground ought to be thoroughly soaked, and that only in the evenings; the mulching, by retaining the moisture, will prevent the surface of the bed from caking. When wanted for exhibition, all the fully expanded flowers should be taken off a fortnight before the show, and imperfect buds should also be removed. If the centres of the plants are too crowded, some of the shoots may be thinned out, and these can be used as cuttings for autumn planting. Cuttings strike well in a shady border under a north wall or hedge in the same compost as that of which the flowering bed consists, with an addition of one half of sand. Seed may be sown in June in the open air for transplanting in autumn, or in August or September in a cold frame for spring planting.

VARIETIES.—Most growers have their special favourites, but the following may be accepted as comprising flowers of the finest quality in every respect. Of course the list excludes the new

flowers of the present season, the prices of which might deter many from planting them:—

FANCIES.	
Alex. Kirk	Mrs. G. F. Frame
Catherine Agnea	Mrs. Hutt
Campbell Bannerman	Mrs. M. H. Miller
Colonel Welsh	Mrs. T. M'Comb
Captain Houstoun	Mrs. Welsh
John Gold	Perfection
Evelyn Bruce	Peter Nichol
May Fate	Flora Gem
Miss Bliss	Wm. Cuthbertson
SHOW PANSIES.	
<i>Sells.</i>	Lord Frederick Cavendish
Bluestone	Pilrig King
Dr. Gray	Robert Burna
Gomar	White Ground.
Isa Craig	Devonia
Isa Smith	Jessie Foote
John Donaldson	Miss Kate Sutherland
<i>Yellow Ground.</i>	Mrs. A. Peebles
Chancellor	Mrs. R. Laidlaw
Dr. Robertson	N. H. Pownall
J. B. Downie	
BEDDING PANSIES AND VIOLAS.	
Acme	Marginata
Bride	Merchiston Castle
Bullion	Pilrig Park
Distinction	Sovereign
Glow	The Mearna
Holyrood	Tory
Edinburgh.	DICKSONS & Co.

FLOWER GARDEN.

PLATYCODON GRANDIFLORUM.

ALTHOUGH to the unpractised eye, and even to the critical one, this plant, illustrated in THE GARDEN the other day, differs but little in generic characters from the Harebells, it has been by more recent authorities considered distinct enough to merit a separate name. In our climate few plants of so hardy a character as this *Platycodon* so readily show the effects of good or bad treatment. In poor, undrained, water-retaining soils or in shady places it throws up weak straggling stems, and is invariably bent by the weight of its own flowers, but where the soil is rich and contains plenty of peat and sand, and the situation well exposed, its character is speedily altered to that of an upright sturdy plant. The names under which this plant has been distributed since its first introduction to this country by Mr. John Bell, in 1782, are no doubt in a great measure due to the varied forms which the plant assumes in its different habitats. For instance, the typical *P. grandiflorum* is said to be one-flowered; that from the island of Yesso, in Japan, is dwarf, being not more than 6 inches high; while that from the hillsides of Hong Kong is about 2 feet in height. The latter has narrow, sharply serrated leaves and extremely large, deep blue flowers. Plants from other localities reach nearly 3½ feet high, with correspondingly broad leaves and spikes of short pedicelled flowers after the form of *Campanula pyramidalis*. Those from Pekin again bear from eight to fourteen large flowers in loose corymbs. As to names, it is *Campanula grandiflora* (in the *Botanical Magazine*, 252), *C. gentianoides*, *Wahlenbergia grandiflora*, and *C. carpathica* var. (Linnaeus the younger), while the form recognised by the Kew authorities as such, and which has been quoted as *Platycodon autumnalis* (Decaisne, *Revue Horticole*, t. 19), and *P. chinense* by Lindley in "Paxton's Magazine," t. 61), *P. homallanthinum* (Hort.), and *chinense* (Lal.); the latter is a form of great beauty and a very desirable border plant. For summer flowering *P. grandiflorum* and its varieties certainly deserve a first place in gardens, the more so, as when properly grown they support themselves without the aid of sticks. It does well, too, in pots, and where the soil is unsuitable it may in this way be used for greenhouse or conservatory decoration. *P. grandiflorum* has also been called the Balloon plant, the flowers of which are twice the size of those of *C. carpathica*, and they vary from a purplish to a deep blue. It forms fleshy tuberous roots, and the utmost care is necessary when digging near it not to break them, as they are extremely brittle. It ripens seeds freely, from which young plants may be easily raised. It is a native of Siberia, &c., and flowers in July and the two following

months. The double and single blue and white forms are very beautiful, the colours being remarkable for their purity. D. K.

NOTES ON HARDY PLANTS.

LEUCOCYJUM VERNUM.—Why this lovely little *Amaryllid* is not more freely used is hard to say. Like the Snowdrop, the Snowflake appears in February in the open garden, and the white, broad bell-shaped, nodding flowers, so chastely tinted with gold and apple-green, possess a delicious scent. Grown in quantity in sheltered nooks and patches, it affords early spring gatherings of the utmost value. I find it takes quite two years to get a new planting into good blooming form. I have also observed that the colour at the tips of the perianth divisions changes, at least in some, from green to yellow with age. Can, therefore, this colour-feature be of much value in determining a distinct form or species? Considering the risk of weather effects, perhaps the most pleasurable way of growing this small bulb is to set it in half dozens in small pots about early autumn, placing the pots in a cold frame, plunged, there to remain exposed to full air and sun until the flowers show, when, merely for their protection, the glass lights should be drawn over them. It may be inconvenient to give frame room to such hardy plants, but there are so many that would do well under the same conditions, that it might be found worth one's while to devote a frame to them. Winter-flowering Croci, Scillas, Daffodils, Chionodoxas, Hellebores, and such like might be had earlier and cleaner, and thus amply repay the cost of shelter. *L. æstivum* is about the worst sufferer amongst hardy plants from the night frosts of February; the leaves, 6 inches or 9 inches long, are turned to pulp by them.

TRICYRTIS HIRTA.—This peculiar, but handsome, herbaceous plant may, in a certain sense, be said to be perfectly hardy in the north. For many years it has lived and increased here as a common border plant; still, the bloom is not satisfactory compared with that to be had from pot roots kept in a cool greenhouse, or even a cold frame plunged in ashes. The manner in which the thick succulent underground stems, which spread immediately under the surface, become affected by frost, which in almost every instance damages the strong leads, must, I think, have something to do with the want of flowers which should be produced on these strong sprouts. They are actually killed back, and though I have never experienced the loss of roots from cold, every year they send up a number of weak back breaks instead of flower-stems. Similar results, we know, occur in the case of *Senecio pulcher* and that of a few more shy bloomers from being cut down before their crowns get ripe. Many grow the Orchid-like *Tricyrtis* indoors, a fact which of itself speaks well for a hardy plant, but out-of-doors it may be had in grand form on a raised border if a timely covering of coal ashes is given it, say in November, and it likes lime. I find that deep planting is no remedy for disaster, for the new shoots must be near the surface.

DONDIA EPIPACTIS is not a bad plant to succeed the winter Aconite. The effect of a patch of strong plants of it is very striking; moreover, it can be recommended for half-shady places, in which the Aconite always seems most happy. Its golden bracts, flatly spread on the soil, have the appearance of a scattering of gold coin, and equally well as *Linum tigrinum* might it be called the Coin flower, a name by which that bright shrub is known in India. Dwarf as the flowers are, they keep clean and last good for several weeks; it ought not to be neglected where bright little plants for early effect are in request. It enjoys stiffish loam and to be let alone for many years together.

HELLEBORUS TORQUATUS, another early flower and nearly as dwarf, has the merit of keeping in good form for six weeks in a mild winter like the present one. It is not often met with, though the plant is not by any means rare. Nor is there anything special about its culture; it does finely along with other Hellebores—enriched deep loam

being its only requirement. The little purple caps, more than an inch in diameter, are suffused with a kind of grape-bloom tint, and are richly coloured both inside and out. Closely examined, the flowers are a study of heavy colours and metallic shadings. At this season the plant is leafless; therefore plants of it should be allowed to get a good size in order to have them effective.

H. ABCHASICUS and its more purple varieties are now in fine form; the opened flowers are telling in a handful of the different Hellebores; but the big buds, resembling pendent clusters of Winesour Plums, borne on ruddy scapes garnished with ample floral leaves of the same hue, and further set off by contrast with the bold and bronzy green foliage of last year, all go to make this one of the most desirable of our winter flowers. Speaking generally, all the members of this genus, except niger and its varieties, are now at their best, and it is only when the different species are grown side by side that their distinctive features can be readily observed; besides the last year's leaves, which are more characteristic than the new ones, and besides the colours and markings of the flowers, there is the equally interesting and more highly concentrated beauty of their forms. Some are a little more than half globular, others bell-shaped and cupped; in some the sepals are waved, whilst many have them rigid as shells; some are almost pointed, others blunt almost to squareness, giving the form to the flower of half an egg-shell; in some the sepals are well apart, in several closely overlapping. All these variations apply to the outer shape of the flowers only. Other differences may be observed in the inner parts. Who can say that ere long this genus may not prove as extensive in variety as that of Narcissus?

GENTIANA ALPINA.—Touching this Gentian, the following are the synonyms of *G. acaulis* taken from Grisebach's "Genera et Species Gentianarum," pp. 295-6: *G. acaulis* (L.)—syn., *G. alpina latifolia* (C. Bauh.), *G. acaulis* (L.), *G. grandiflora* (Lam.), *Pneumonanthe acaulis* (Schm.), *ciminalis* (Borkh.), *c. grandiflora* (Mayrhoft); *b. G. angustifolia* (Vill.)—syn., *Pneumonanthe* (Schem.), *G. alpina magno-flore* (J. Bauh.); *c. G. alpina* (Vill.)—syn., *G. excisa* (Prest.). I should feel greatly obliged if "D. K." or anyone else would say where a living specimen could be obtained.

SAXIPRAGA CORIOPHYLLA has been in flower a fortnight or more; relatively it is a little plant with a big flower, and which, as is unusual in the genus, pure white. It is a distinct species; the minute leaden-hued rosettes form compact tufts, but the flowers are not numerous; many find it difficult to establish. I like to have these slow growers in pots, out of which nearly all the bottoms are chipped to secure thorough drainage; a mixture of turfy loam, sandstone-grit, and charcoal is as good as anything for them to be set in. If this is done in spring the roots soon get well hold of the compost.

ARNEBIA ECHINOIDES.—Seed of this gathered last midsummer, and being the earliest produce of this twice and often thrice-flowering Forage-wort, has germinated finely; the seeds were counted, and every one has vegetated. The seed had a somewhat sappy or unripe appearance, and it was kept about a week in a dry potting place; little if any difference in bulk or colour was perceptible. I mention this because the seed which one buys and which seldom grows must necessarily be older, has a much darker colour, and is smaller. Those, therefore, who have strong plants of this *Arnebia* would do well to look after the early seeds, for though, as I have before said and shown, the plant is readily increased by division; it is only at a season when old plants are full of bloom and buds, and when few would care to cut up, perhaps, an only specimen. In the border, old plants require perfect drainage, and young stock in pots should not only be secured against stagnant moisture, but be potted in a compost without manure or undecayed vegetable matter. A close-grained sandy loam is most exactly suited for this as well as numerous other thick and juicy-rooted plants, which, from their tendency to grow all through a mild winter, must needs be potted in autumn.

GERANIUM LAMBERTIANUM.—Who can help noticing and admiring the highly coloured, cherry-red sprouts of this Crane's-bill? At the present time they are bright as flowers, much redder than the reddest of the *Paeonies*; and as they have been visible all winter, though never so effective as now, the plant is worth a place if for no other reason than that it is a pleasing sign of life in the midst of death. Moreover, it is not one of the rampant and unmanageable sorts. Whilst speaking of

SPRING GROWTHS, there are a few things whose buddings we are apt to look upon in the same way as we look upon flowers, and certainly they give us equal pleasure. The Edelweiss, some *Gnaphalium*, *Primula scotica* and *farinosa*, *Mertensia maritima*, and some *Centaureas* almost resemble patches of Snowdrops at a little distance. *Mertensia sibirica* is a rich plum-purple, and the blue-green spears of the Daffodil foliage, mixed with the red of *Paeonies* and numerous tints of *Columbines*, are enough to make one feel that spring has really come, although many spring flowers are exceptionally late; not a Daffodil is open here yet (March 18). The Blood-root, always an interesting plant, is never more so than when its leaden-hued growths are just unfolding, revealing the large flower-buds curiously swathed in the young leaves, which are most intricately veined. This plant, by the way, comes up finely from self-sown seed, but from an examination of the young roots, the tubers must be some time before they produce flowers—at least four years, I should say.

DIANTHUS NEGLECTUS and one or two others of the alpine Pinks in many gardens are liable to "go off" at this season, and the attractions of spring flowers are all the more likely to cause us to overlook such Pinks which a very little attention might save. They appear to die downwards, beginning at the tips of the foliage, and young plants are often lifted quite out of the ground by frosts. The decay of the foliar parts in winter is most noticeable in low-lying gardens, whilst on high ground the growth is much better, and from the appearance of the old leaves they never suffer as indicated. No doubt in this the main difficulty rests which many of us experience in the culture of some alpine, a difficulty which it is impossible to overcome entirely in open quarters where natural conditions are opposed. I never saw finer patches—nearly 2 feet across—than some in the gardens of Mr. H. Richardson, at Ilkley, which lie high. The length and perfection of the foliage and the thick cushioned habit were remarkable compared with scores of plants which I have seen. Besides what I took to be the main cause of success, the thin and pure air of a good elevation, there was also a well-made rock border where the prostrate herbage could rest on dry stones. To glance again at lowland cultivated plants, they are just now being skeletonised by a sort of black decay. A glass cover helps them out of this, but it is desirable to find out some means of doing without such protection for plants otherwise of very hardy constitution.

POLYGALA CHAMEBUXUS PURPUREA is one of the loveliest bits of colour at present to be found in our gardens; the purple is not a mere stain on the typical colour, such as is often made the pretext for an additional name, but full-bodied and of the richest hue—a purple of purples. Moreover, the flowers are both freely produced and lasting, though the plant itself is of much slower growth than the common Milkwort. There is nevertheless nothing of a miffy character about it; it is not particular about soil, but it enjoys moist quarters over good drainage. Those seeking to make the choicest selections of alpine plants for either pot or rockery culture should not fail to add this gem.

YUCCAS.—These often get greatly injured from slight causes. A few stray leaves get blown into their centres, when in spring they begin to rot, and soon the young Yucca leaves become affected by contact with them; they fall down, and the specimen becomes one-sided for a couple of years. If the fallen leaves happen to be of a soft character, the ill effects are increased. It is, therefore, a good plan to look into the more erect foliage

and remove such foreign matter. Some tie up Yuccas in winter to obviate snow breakage, but I always imagined that the texture of the inner foliage became deteriorated by it, and certainly plants from the ages of three to twelve years repair any deformity caused by snow in a few weeks.

Woodville, Kirkstall.

J. WOOD.

VARIETIES OF DAFFODILS.

As I have on my table another large gathering of these beautiful flowers, I am anxious to make the list (p. 210) a little fuller than it now is. As the *incomparabilis* section was the shortest, I will commence with that. C. J. Backhouse is very nearly, if not quite, "the pink of perfection." To get at this decision, it is enough to place flowers of it alongside *incomparabilis* Leedsi. Firstly, taking the perianth, those of the latter are lengthened and somewhat straggly; in the other they are broadened, closer together, and of a deeper tinge of yellow. The tube of Leedsi is a pretence at scarlet when compared with the deep staining, almost reaching to the base, of C. J. Backhouse. The tube also, besides being so superior in colouring, is much longer, being within a barleycorn of an inch in length. Leedsi *amabilis* is a justly favoured variety; the perianth segments are a silky white, the cup creamy-white just tipped round the brim with light yellow. It is a chaste, delicious-looking flower. Leedsi *albidus* is a large flower, the petals of which are of a glossy straw colour, deepening to a light yellow at the junction with the tube. The colour below the orange rim in the tube is a lustrous yellow. *Incomparabilis albus*, although rather poor in the arrangement of the petals, has a glistening yellow chalice. Surely there is no flower which has more varieties of the same type than the Daffodil. What a delightful little gem is *Macleayi*; it is just the *beau idéal* of a flower for a button-hole. A very distinct form again is *Humei albidus* (Hume's Sulphur). The perianth arrangement is very like that of the pseudo-Narciss, and is of a very light sulphury hue; the trumpet is a bright clear lemon; the flowers vary a good deal. The best are those in which the length of the trumpet approaches to about 1½ inches. In the *parvi-coronati*, *Tazetta compressa* is worth notice. In colouring it is very like Grand Monarque, only about two-thirds of the size; it is very free flowering. *Phyllis* is very delicately perfumed, more so than its fellows. *Polyanthos Aigle d'Or* is rather lack-lustre, but the opposite is the case with *bifrons Etoile d'Or*, which is almost unicoloured. *Burbridgei grandiflorus expansus* is a beautiful flower; the edging of the cup varies considerably, in some being scarcely noticeable, while in others it is a distinct orange; the petals are quite apart, but do not look straggling. Of the Poet's Narciss, I think I prefer the well-named *radiiflorus*, the smaller cup and slightly broader edge of crimson being an improvement. There used to be a field of the Poet's Narcissus at Feckenham, on the Worcestershire border of Warwickshire. Alas! it is *non est*. Will some kind reader say where they can be met with now in similar quantity? The smallest *juncifolius* possible came from Scilly, and a good example of the hybrid between it and *Tazetta*, viz., *gracilis tenuior*. The corolla is almost flat, the cup rising but a very short degree. It is of a faint yellow colour and strongly scented. Although out of its place, for the cup is as long as the perianth, room must be found for a slight mention of *odorus minor*. It possesses one of the most effective shades of yellow of all the Daffodils. It is one of the best flowers for cutting available, and its bright shade of colouring is a gain to any bouquet. *Horsefieldi* is inferior to *Empress*, that is if the Scilly specimens of the latter be taken for comparison. They are far finer than those I have grown in pots, and the petals are as broad as those of *Emperor*. *Moschatus albicans* is a beautiful form and easily distinguishable from *moschatus*. The trumpet in the flowers in my possession is perfectly white, all trace of a primrose colouring having completely gone out of it. *Nanus* ought to be grown everywhere, for it is a most desirable plant for a

spring flower border. *Rugilobus*, too, is very bright and prolific, and in some respects as noteworthy as its larger congener, *Emperor*. The double form of *cernuus* is in very truth a noble flower, and a large full specimen is equal to any white Rose. Would that it were cheaper. Even as it is no one ought to grudge the price of a bulb or two. Another fine double kind is the *Sulphur Kroon*. M. C.

DAFFODIL NOTES FROM HULL.

THROUGH the kindness of Mr. W. B. Hartland, of Cork, I have been able to examine his dwarf double *Narcissus* *Rip Van Winkle*. He sent me some half dozen bulbs, but so far they are not yet in flower. A few weeks since he also sent me blooms, so that I could compare it with my seedling double *nanus*. This *Rip Van Winkle* is certainly not the double *nanus*, nor yet do I believe this to be a true double form of *N. pseudo-Narcissus*, but "a cultivated double variety," possibly of *pseudo-Narcissus*, but certainly this can hardly be considered a true double representative of the single form. The narrow, multiple-hook perianth segments are peculiar, and give it "a look of *capax*," but what the latter *Narcissus* may have to do with *Rip Van Winkle* I am unable to say. This little stranger is a very pleasing variety, and I feel sure all lovers of *Narcissi* will welcome it as a decided acquisition to their rock garden, and in which it appears to be quite at home. Now, with respect to my seedling *Narcissus nanus fl.-pl.*, and which Mr. Burbidge thinks should have my name associated with it as its raiser, I must first apologise to Mr. Burbidge for my silence to his question as to the history of this seedling. First, then, let me say its history is a very simple one. I grow some hundreds of *nanus* as edgings (in conjunction with *Scilla sibirica*) to some large rockeries, and every year I collect seeds and sow them in spare beds; the seedlings are left to take care of themselves until large enough to transplant. The flowers sent by me to the conference were the produce of one of these bulbs, and I have pleasure in saying that I believe that twofold not three more of my *nanus* seedlings will turn out to be double. One of these appears to be larger and broader in foliage than the type, and the bud is not exactly the shape of the true double *nanus*; of this it will be impossible to speak for the present. Whether my rich soil may have anything to do with this doubling of seedlings, I am unable to say with any degree of certainty, but I think not. I have never seen any of my mature bulbs turn double, but rather the reverse, for several groups of double *Poet's Narcissi*, *Codlins and Cream*, *Eggs and Bacon*, and *Butter and Eggs* have partly become semi-double and single, but possibly these may revert again to their normal form, as the soil is in good condition and the bulbs not overcrowded.

I see that Mr. Hartland speaks of a dwarf form of *cernuus* grown in Ireland, and he thinks that possibly this may be the single form, or missing link, of *capax*. Will be kindly tell us if the double *cernuus* resembles *capax*? I think not. What have Messrs. Burbidge and Barr to say on this point? Does anyone know the single form of the *Queen Anne double Daffodil*? A short time since a correspondent wrote respecting the giant Welshman "Sir Watkin," stating that he believed climatic influence had a great deal to do with its large growth. This *Narcissus* I have planted out in several positions, and have them also in pots in my alpine house, and in all cases they are conspicuous by their robust growth. Of their flowering capabilities I shall have something to say later on. In conclusion, I should like to draw your readers' attention to an old, late-flowering *Narcissus* that is rarely seen in gardens; it has everything to recommend it, and I fail to see why this is so scarce; it is cheap, easily grown inside or out, and for cut bloom when the true *Daffodils* are on the wane; it is a gem. Every lover of *Narcissi* should have *gracilis* well represented; it has given me great pleasure. Potted plants that have not been disturbed for three or four years give promise of abundant bloom; they come as mementoes of the past at this season, the last link in the

chain of the sweetest of spring flowers—the *Narcissus*. WM. HENRY BROWNE.

The Laurels, Aldbrough, Hull.

VALLOTAS IN SPRING.

IT would be interesting to know how the *Vallotas* lately shown by Messrs. Carter were induced to bloom at this time of year. Were they subjected to a forced rest by withholding water through the summer and started into growth in a warm temperature at the commencement of the winter, or were the flower-buds picked off when they showed at their usual time? The latter supposition is probably nearest the mark, as I have noticed that when a bulb misses blooming at its proper time it generally flowers in spring, but it is necessary to keep the foliage green and healthy and the bulbs at their normal plumpness; all the winter there must not be even a temporary loss of vitality. And here I may remark that no greater error can be made than in stinting *Vallotas* of water through the winter, and nothing will cause greater loss of vitality than neglect in this way after flowering in autumn. If the soil remains dry at that time, the fleshy roots shrivel and then probably decay. Not only will *Vallotas* remain as fresh and green in winter as in summer if the roots are kept active and the soil moist, but the bulbs will really increase in size between November and March, a fact which abundantly proves that naturally this Cape bulb never quite rests. Returning, however, to the question of spring flowering, I think that if the plants were placed about the end of May at the foot of a north wall or in some such position where they got no sun, but not drying them off, the flowering time would be naturally much retarded, and instead of throwing up for bloom in September they would probably not do so before November. Placed in gentle warmth in a light, airy house during the winter, they would develop their flower-stems and come into flower by now. Those having a number of *Vallota* bulbs and the convenience of warmth in winter would do well to try the experiment, for, valuable as the *Scarborough Lily* is as an autumn flowering plant, its usefulness would be immensely enhanced if it could be bloomed in early spring. In grace of growth and brilliancy it is unsurpassed by any flowering plant in cultivation. J. C. B.

BEDDING PLANTS FROM SEED.

WHERE large numbers of plants are required for summer bedding a great deal may be done with plants raised from seed sown about this time; in fact, many plants that used to be wintered as cuttings struck in autumn are now annually raised from seed, and thus a great saving is effected, not only in the way of labour, but also in that of space under glass. The following plants may be relied on to produce a brilliant display either in beds or borders, and with these and the beautiful hardy flowers now in cultivation there is really no need to have bed after bed filled with plants the exact counterpart of each other. *Amarantus*, of which there are several beautiful varieties, if sown in pans or boxes in gentle heat in March and grown on will be good sized plants before planting out, will yield some strikingly good fine foliage effects, but as they are rather tender they must not be fully exposed until the end of May, even in the south. A few cold nights cripple them sadly, and they take a long time to recover. *Ageratum Imperial Dwarf* is a most useful plant, as it supplies a colour that is usually rather scarce, viz., a bluish grey; moreover, while keeping very dwarf it continues to flower without intermission during the entire summer and autumn. *Chamæpence diacantha* and *Casabonæ* are very pretty Thistle-like plants that come in well for central figures in carpet beds. The several varieties of *Centaurea* are very beautiful, silvery-leaved plants that may be readily increased from seed if sown early; indeed, the well-known *candidissima* is perhaps the best of all white-foliaged plants. *Cineraria maritima* and *acanthifolia* are also most useful for the same purposes, and very hardy. On the

south coast they grow into large bushes, and form most useful winter-foliaged plants. *Eucalyptus globulus*, or *Blue Gum*, is, when young, a useful ornamental-foliaged plant, its blue-grey tint being very pleasing amongst brilliant flowers. *Gaillardia picta*, *grandiflora*, &c., are very effective flowering plants, and if sown about this date may be put out early in May; they produce striking combinations of colour, such as scarlet and orange. *Mimulus*, like the preceding, are brilliant in colour and most floriferous; they like plenty of moisture and a rich soil, and may be put out early, being moderately hardy. *Marigolds* are too well known to need description; they succeed in dry soils where *Calceolarias* fail and flower most profusely the entire season through. *Phlox Drummondii* has of late been so greatly improved, that its early form is now nearly forgotten. Sow in boxes, and prick the young plants off outside as soon as weather permits, giving each a square foot of soil to itself. They well repay good culture. *Petunias*, although generally propagated by cuttings, are so readily increased by seed, that for ordinary decorative purposes I find the latter mode the best. They show great diversity of colour, and a packet sown now and grown on gently will yield fine bushy plants by May. *Salvia patens*, still one of the most lovely of all blue flowering plants, is easily kept available by means of its fleshy roots, but in order to get up a stock in the first place, seed sown now will yield good plants by May, and a bed of this and the old straw-coloured *Calceolaria amplexicaulis* forms a striking combination. *Verbenas* in great variety may be readily obtained from seed sown now, and since they have been so decimated by disease many have taken to treating them as annuals, and they certainly are well worthy of culture in that way. In addition to the ordinary show *Verbenas*, the pretty small-flowered *V. pulchella* and *V. venosa* are well worthy of attention. *Violas* have of late become so popular and afford such a variety of colour, that where a good stock of plants to get cuttings from does not exist seedlings may safely be resorted to. J. G.

Hants.

SWEET PEAS AND THEIR CULTURE.

IN order to procure early blooms some sow early in November where they are to remain—a plan that I used to adopt, but during these last few years mice have proved too much for me in winter. Therefore I now adopt the system of sowing early in spring, as doing so mitigates the mice plague to a great extent, and the plants grow away at once. There is, too, no difference in the date of flowering between spring and autumn-sown Peas. The method adopted is to sow about a dozen seeds in an 8-inch pot, place them in a temperature of 55°; then gradually harden them off and plant out about the end of March. Protect them from cold winds with Spruce branches and stake them at the same time. Thus treated, bloom can be cut a month earlier than from plants sown in the open, in which it is well to make successive sowings up to the middle of May. In the case of a new or scarce variety a good plan is to sow each seed separately in a 3-inch pot and plant out a foot apart; by doing so I have formed a good thick row 20 feet long, out of that number of seeds. It is best to grow each variety separately—a plan which proves to be very convenient where cut flowers are greatly in request. They can be mixed if need be afterwards. If the seed-pods are kept gathered and they are well watered with liquid manure, they will continue to bloom until early frosts cut them down. I have had early-sown ones do that by treating them as just recommended. They require an open situation well exposed to the sun. Trench the ground for them deeply and work in plenty of good rotten manure; a change of soil, too, row and then is very advantageous to them. Avoid putting lime in the ground; they do not seem to like it; also mulch with good manure; it saves watering, for if once they are allowed to become really dry they do little good afterwards during the season. Sweet Peas have been greatly improved during the last few years. The first

great advance was Scarlet Invincible, still the best scarlet. Princess Beatrice, soft carmine-rose, is perhaps the most beautiful Sweet Pea in cultivation. This variety is a strong grower and a free bloomer. I have gathered flowers as late as the end of October. Butterfly White, with a border of pale blue, is also distinct and good. Violet Queen is lilac and Fairy Queen rosy white. Other good sorts are Old White and Invincible Purple, to which may be added Invincible Carmine, a new variety that received a first-class certificate last season. The above will give greater satisfaction than sowing a row of the ordinary mixture. R. D.

GARDEN YUCCAS.

THE usefulness of Yuccas for garden ornament was recognised long before Linnaeus's time, or more than 150 years ago, and they are to-day among the most popular of ornamental foliaged plants, both for indoor and outdoor gardening. From the four species known to Linnaeus, the number of species recognised by recent monographers (Engelmann and Baker) has increased to about twenty, whilst of varieties there are a great number, though probably a large proportion of these are distinct in name only. Omitting what are grown only in botanical collections and in the gardens of a few specialists, the number of distinct species generally known may be fixed at six or eight, three of which are not hardy enough to thrive out-of-doors in England, the others being undoubtedly hardy. Those which require the protection of a greenhouse are

Y. ALOEIFOLIA, a native of South Carolina, where it is found in abundance growing luxuriantly near the coast, and, according to Engelmann, under the direct influence of sea-water. In the gardens along the Mediterranean coast this species is met with frequently with stems from 6 feet to 10 feet in height, and bearing dense heads of rigid green foliage. The variety *conspicua* forms a large bush 20 feet high, with numerous basal branches. The variegated forms of this species are common plants in English greenhouses, and, from their being striped or margined with white, rose, and yellow, are very ornamental.

Y. TRECULEANA is a stout-stemmed species from Texas, and is the finest of all the Yuccas. It forms a stem 25 feet high with several branches, each bearing a tuft of long rigid foliage and a panicle of as many as 500 flowers.

Y. WHIPPLEI comes from the dry, rocky hills of California. It is a short-stemmed, narrow rigid-leaved species, not unlike the ensiform Agave. A plant of this distinct Yucca flowered in the collection of Mr. Peacock, Sudbury House, Hammer-smith, a few years ago. This specimen consisted of over 200 leaves, which formed a rosette, from the centre of which a tall erect flower-scape was developed, in height about 10 feet, the upper half being clothed with flowers, arranged on semi-erect branches and of a greenish white colour. In the extreme south of England this Yucca thrives out of doors, but generally it requires the protection of a greenhouse.

OF HARDY YUCCAS, there are about five distinct species which are among the most popular of dwarf Evergreens, their gracefully curved or rigid sword-shaped foliage, arranged in dense heads on short or somewhat tall stems, being most effective, both when seen in large isolated groups or in mixed shrubberies. But besides the ornamental character of their foliage, the large branching panicles of white or rose-tinted flowers which are developed in early summer by these hardy Yuccas give them a still stronger claim to be placed in the front rank amongst hardy plants for English gardens. The most popular species of Yucca is

Y. GLORIOSA, of which there are several (according to Baker ten) distinct varieties. It is a native of North Carolina and Florida, where it is found growing generally on sandy beaches. It forms a stem 1 foot to 6 feet high, with a few branches at the base, crowned with numerous crowded leaves 18 inches to 30 inches long and about 3 inches broad. The surface of the leaf is of a dull or glaucous green, the under side being rough or

scabrid. The flowers are borne on a panicle sometimes 1 foot high and 18 inches in diameter, each flower being about 3 inches wide, cup-shaped, and whitish, tinged with green, brown, or red. It flowers in the autumn. The varieties of *Y. gloriosa* are—minor, which is smaller in all its parts than the type; *superba*, a tall-stemmed, large-flowered form; *plicata*, with the foliage rather narrow and plicated; *recurvifolia* (syns., *Y. recurva*, *Y. pendula*, *Y. japonica*), a form with a shorter, but more freely branched stem, softer and more recurved foliage, the tip of which is less pungent than in the type; it bears a large and copiously branched panicle of whitish flowers. All these forms are handsome, and are distinct from the true *Y. gloriosa*.

Y. FILAMENTOSA.—An almost stemless species, with Reed-like, rough green leaves, the margins of which are clothed with long, curling, brown threads; the tip of the leaf is blunt and soft. The flower-scape varies in height, from 4 feet to 9 feet, and bears a panicle of numerous, almost horizontal, branches. The flowers are about



The Spanish Bayonet plant (*Yucca acuminata*) in flower.

3 inches wide, and are white, tinged with green. No less than ten varieties of this Yucca are known, all characterised by differences in the size, form, or texture of the foliage, or by distinct floral characters. The best, in a garden sense, is the variety *variegata*, or, as it is called by Baker, *maxima*. In this the foliage is very graceful, somewhat thin in texture, the margins thickly clothed with threads, and striped and margined with bands of pale yellow or pure white. It is a delicate plant even in the most favoured gardens, and is therefore happiest when grown in a cold greenhouse or frame. All the forms of *Y. filamentosa* are found in the coast regions between Maryland and Florida.

Y. ANGUSTIFOLIA.—A dwarf stemless species with stiff sharp-pointed leaves 2 feet to 3 feet in length, about half an inch wide, the margins sometimes clothed with pale brown fibres. The flower-scape is a simple raceme about 2 feet high, and bearing flowers from 2 inches to 3 inches in width and greenish white, or white tinged with brown. In a heavy soil this handsome little Yucca is not perfectly happy; it thrives better in a peat or light loamy soil. A native of New Mexico, &c.

Y. GLAUCA.—This bears some resemblance to the last mentioned, but differs in having a branched panicle and in the flowers being yellow; the leaves of this species also differ from those of

Y. angustifolia in being less rigid and of a glaucous hue when young. A very hardy species, the native country of which is unknown. A complete synopsis of the genus Yucca was prepared by Mr. Hemsley, of Kew, some years ago, and will be found in *THE GARDEN*, Vol. VIII., p. 129.

Y. ACUMINATA, the species herewith illustrated, is stemless, producing, like the common *Y. gloriosa*, a panicle of white flowers tinged with purple. It has long been grown in gardens, and Sweet gave a figure of it in the second volume of his "Flower Garden." It is undoubtedly a near neighbour of *Y. gloriosa*, but its erect growth, narrower and more sharply pointed leaves, together with its stemless character, render it at once distinguishable. Though Sweet states that its country is unknown, it is doubtless a native of the Southern States of North America, and the illustrations given herewith showing the plant at home were sketched on the spot. It is quite hardy about London, but is not common.

All the hardy Yuccas thrive in a well-drained soil. They are rather impatient of transplanting when old, and it is not unusual to see large plants of them ruined through an interference with them at the roots. It is worth noting that while the rootlets of Yuccas annually spring from the youngest parts of the rootstocks and decay again after a season, the rootstock itself increases often to a large size and irregularly branched shape. Some of the species have rootstocks which grow almost straight down to a depth of 2 feet, whilst others extend them horizontally. From these sucker-like growths are developed, but it requires some care to remove them from the parent plant without losing them altogether, and we have seen large clumps of some of the kinds, which had been formed from a single plant through this habit of branching below the surface, almost lost when it has been attempted to separate and replant them. By cutting through the underground stem during the growing season, and allowing these suckers to form roots for themselves independent of the parent rootstock, the danger of losing them is avoided.

In this country the Yuccas very rarely seed; in fact, *Y. filamentosa* is the only species which has ripened seeds in England. This persistent sterility among cultivated Yuccas is accounted for by the investigations of an American entomologist, Mr. Riley, who from observations made with plants in a wild state made the discovery that the aid of a moth (*Pronuba yuccasella*) was required for the fertilisation of the flowers of all the Yuccas. An account of this interesting discovery will be found in *THE GARDEN*, Vol. III., p. 500. B.

Seaforthia elegans.—This is one of the most useful Palms in cultivation. I know of no other which will grow well under such a variety of conditions as this *Seaforthia* will do. It succeeds admirably in any ordinary greenhouse or conservatory, in an intermediate house, stove, or room. We find it to be almost the only plant that will live and grow in a semi-dark lobby, and it stands room and house-work better than any other fine-foliaged plant with which I am acquainted. It grows very freely, and its graceful habit recommends it for all kinds of artistic decoration.—J. MUIR.

Agapetes buxifolia.—This is a plant very nearly related to the *Vacciniums*, and forms a compact-growing, much-branched bush, with glossy evergreen leaves and bright red wax-like tubular flowers about an inch in length. The blooms are borne so freely, that some small specimens of it in the temperate house at Kew form just now one of its most attractive features. This plant is a native of the Himalayas, and is said to often assume the character of an epiphyte, but under cultivation it succeeds well with the same treatment as that given to greenhouse *Rhododendrons*—that is, it likes a compost of good fibrous peat and a somewhat liberal supply of water during the growing season, combined with thorough drainage. It is by no means one of the easiest of subjects to strike from cuttings, yet at the same time they will root pretty readily, pro-

vided suitable treatment be accorded them. They should be taken during summer just as the young growth commences to acquire a woody character, or, in other words, when in a half ripened state. If the entire cutting is formed of these shoots, dibbled firmly into pots of sandy peat, and kept close in a temperature rather above that in which they have grown, the amount of losses will not be great.—T.

Leucojum vernum.—It seems to have been overlooked in the recent references to the different species of Snowflakes that the yellow spot at the points of the perianth is by no means a distinguishing feature of *Leucojum carpathicum*. In *L. vernum* the blotches are yellow when the flowers open, and as a general rule these turn to a decided shade of green as they begin to fade. Occasionally the spots remain yellow, but this is usually due, as far as my observation has gone, to premature fading from accidental causes. My stock of the spring Snowflake is only a small one—perhaps a dozen or eighteen bulbs in all, but possibly the notes made upon these may be of greater interest from the fact of all being the produce by division of one original bulb; yet these present several differences in height, size of flower, and colour of spots. Some have only four divisions, instead of six, of the perianth; but as yet there has been no instance of a twin flower. The three last flowers have been gathered to-day (March 18), all being now green-tipped; but three days ago all of them were as distinctly yellow-tipped. The species is undoubtedly *L. vernum*. It seems to be worth while to refer to this point, as it has been stated more than once of late in different gardening publications that the yellow spots were a distinctive mark of the Carpathian variety or species. The late Mr. Niven himself pointed out the fact of the change from yellow to green in the spots on the flowers of *L. vernum* so long ago as 1875 (*GARDEN*, Vol. VII., p. 156).—K. L. D., *Ashmore*.



The Spanish Bayonet plant in fruit.

Keeping bulbs out of the ground.—It is no new experience to find that most kinds of bulbous flower roots suffer considerably from being kept too long out of the ground, but I never had the fact so clearly demonstrated as I have this season in the case of some Crocuses which, being lifted and stored away in the autumn, were forgotten until long after the time they should have been planted. In fact it was the middle of December before the bulbs were planted. The result is that what few flowers have appeared did not show themselves until all the early planted stock had gone out of flower, and the blossoms have had hardly strength enough to get through the soil, while the foliage is still weaker and later in coming through. I have, indeed, serious doubts if more than half the number planted have flowered at all. I feel quite satisfied that late planting is the cause of their weakness. Those who advocate early planting of bulbs according to their seasons have thus had their case strengthened by my experience; on the other hand, those who plant late can only expect impaired growth and corresponding weakness in the flowers.—J. C. C.

The Weratah.—The following particulars respecting this plant I have just learned from a collector of thirty years standing. Scarcely anything has been done with it in Australia as a garden plant. "Transplant it to a border of good soil and you kill it. It grows most luxuriantly in dry, stony, exposed places, where there seems nothing for it to live on."—J. D.

KITCHEN GARDEN.

Vegetable Marrows.—Of the many excellent hints given us by Mr. Muir, none are more valuable than that wherein he tells us that Vegetable Marrows should be planted in loam only. To plant them on manure beds is merely to grow leaves and very little fruit; nevertheless, Lindley used to say that no kind of Spinach was so beautiful as the tops of Vegetable Marrows. To Mr. Muir's remarks let me add that ridge Cucumbers require exactly the same treatment as Marrows—no manure [being required if filling the gherkin basket is a consideration].—R. GILBERT.

Raising new Broccoli.—Three years back I carefully fertilised a dozen blooms of Cattell's late Broccoli with the pollen of Chou de Burghley; this cross has brought me three good additions

measure or weight. I find that Peas generally weigh a little over 14 ozs. to the pint, and an ounce contains from 65 to 99 Peas. The Peas that I have counted contain the following numbers in an ounce:—

	In a pint.
Stratagem	65 × 14 = 910
Pride of the Market	70 × 14 = 980
President Garfield	75 × 14 = 1050
Sharp's Invincible	75 × 14 = 1050
Telephone	83 × 14 = 1162
Telegraph	90 × 14 = 1260

The number of plants must be taken into account in an experiment, but one cannot expect to have as many pods from a low-growing Pea as from a tall one; the tendency to branch must also be taken into account. The wrinkled Peas will also weigh less than smooth round ones.—H. RICHARDSON, *York*.

Celeri Chemin.—Having grown this Celery somewhat largely last season and being highly pleased with it, I may perhaps be allowed to say a few words in its favour. In habit it resembles a good strain of Sandringham White, being about the height of that variety, stout in the leaf-stalks, and compact in growth. In a raw state some may think it somewhat strong flavoured if wholly unearthed, but for stewing it is excellent. If planted, however, in shallow trenches, so that sufficient earth may be drawn to it to keep the outer leaves well together, anyone who finds fault with its quality will be hard to please. My vegetable man condemns most novelties, but he says that "French Celery is a good thing."—THOMAS WOODFIELD, *The Gardens, Hurst Side, Hampton*.

5338.—**Hard Parsnips.**—The hardness spoken of (p. 252) was not caused by the application of the soot and guano to the seed at the time of sowing. The explanation is rather to be found in the unsuitableness of the soil. This root will not thrive on heavy land, but grows to perfection where the soil is moderately light and gravelly. It must, however, have sufficient depth to give the tap root full opportunity to strike downwards. When possible the plot should be selected in the autumn and turned up roughly, in order that it may be thoroughly pulverised by the action of the air and frost during the winter. Now is the time to plant, and the crop can be lifted in November or December. A very important point is to thin the young plants as soon as they are large enough to be distinguished, and then fallow them well with the hoe during the summer. The variety known as Hollow Crown is as good as any.—D. J. Y.

Origin of Ne Plus Ultra Pea.—This was raised by the late Mr. Brownlees, nurseryman, Hemel Hempstead. He told me it was a chance seedling from Knight's Tall Green Marrow. It was raised between the years 1840 and 1845, and distributed in the ordinary way of business. Messrs. Noble, of Fleet Street, were the first in London who catalogued it. A few years afterwards Mr. Payne selected from this one which he considered had larger and longer pods and was more prolific, and Messrs. Jeyes sent it out as Conqueror, but after a few years' trial it was found to revert to the old form of Ne Plus Ultra. A few years ago it was again sent out as a new Pea, but under what name I do not remember. Mr. Brownlees also raised Brownlees' Russet Apple, a valuable fruit which keeps well until May, and is good either for dessert or kitchen. It is of good size, and as free in bearing as Keswick Codlin. This he distributed in the same unpretentious manner as the Ne Plus Ultra Pea.—WILLIAM HEALE, *Manager Cranston's Nursery and Seed Company*.

Extraordinary Asparagus.—The inhabitants of Bristol have recently had an opportunity of purchasing various extraordinary seeds, bulbs, and plants, not the least wonderful among them being a new sort of Asparagus. If we are to believe the vendors, and whom, in fairness, I ought to add, are enterprising Frenchmen located in a prominent position for a short time only, a good time is coming for lovers of Asparagus. I copy the following from the advertising columns

to the Broccoli class. No. 1 we call the Burghley Queen Broccoli; this I exhibited at the Broccoli and Cauliflower show at South Kensington, where, although nineteen dishes of Broccoli and seven of Cauliflower were exhibited, I fortunately obtained the first prize. The heads were well protected, white as curds, and weighed 5 lbs. each. I look upon this Broccoli, which has all the marrow-like flavour of Chou de Burghley, as equal to young Cauliflowers, and it can be grown at one-half the cost. No. 2 is a mid-season Broccoli of great excellence; this has not yet been exhibited, so the public have had no opportunity of judging of its merits. No. 3 is a close relation to Chou de Burghley, the head being particularly firm, and when cut open in the spring it is absolutely filled with layers of Cauliflower and layers of leaves; this we call the Burghley Gem, which I intend to exhibit this spring. Three such novelties amply repay any trouble that may have been taken in producing them.—R. GILBERT.

Pea statistics.—I have had my attention called to the varying quantity of Peas in a given

of some of the Bristol daily papers: "New sort of Asparagus of Caucasus.—This Asparagus is fit for the table three months after planting. It is much larger than other sorts, and is very tender and delicious. Each root will produce three shoots the first time as large as a candle. They should be cut down close to the ground, when they will shoot out again, and produce five or six shoots. Each shoot will produce three or four bundles in a season. It will grow in any country or soil, is not affected by frost, and is obtainable all the year round except the three winter months. A few cultural instructions are added, and from these it appears that the ground should be prepared as if for Lettuces, the roots being planted about ten days after the ground is dug and 18 inches apart." They are only supposed to last about six years, and for this reason it is advised that some of the plants be allowed to seed, the seed being kept in a dry place till wanted for renewing the stock. A sample of the shoots preserved in a bottle of water and about the size of candles was prominently displayed, and several roots just commencing to grow were also placed in the window, but the first shoots in this case would scarcely attain the size of the most diminutive rushlight ever made. The bait seems most tempting, but, unless I am much mistaken, the shrewd Bristolians are not easily imposed upon.—W. I.

NOTES ON RECENT NUMBERS.

Edible fungi (p. 213).—It is to be hoped that someone will take up the idea of the artificial cultivation of some sorts other than the common Mushroom. The effects of a mistake as to a poisonous variety are so terrible and so frequent, that the "Toadstool fanciers" are not likely to popularise their favourites without some guarantee of security. Why should not the delicious (the very name sounds tempting) be grown in gardens as well as, and perhaps even more easily than, the common Mushroom? With all the wealth of vegetable life that there is in the world, we make use for food of but very few species comparatively, and one cannot help thinking that there must be many plants, at present useless, waiting to be developed into delicacies sufficient to satisfy the greatest epicures. Will not the vegetarians come to the rescue?

Tacsonia Van Volxemi (p. 219) often does not produce seeds; consequently but few know how good they are to eat—at least for those who like this style of fruit. It forms long yellow pods which look as if they had been filled with skinless Gooseberries, perhaps not quite so delicate in flavour as the common Granadilla, but still a good substitute for it. This last one seldom sees on a dinner table, but it makes a change to the ordinary run of dessert dishes, and it is not by any means unsightly among them. Why should not the flowers of the Tacsonia be fertilised artificially in order to grow a certain amount of fruit? It is vigorous and free blooming enough to spare a little energy for such a good purpose, and if too many set, they can easily be cut off; moreover, as it is such a continuous bloomer, a good succession might be arranged. Many people in all probability will say it is the "naiest thing they ever tasted;" many also will appreciate it and become fond of it.

Rot-proof scrim (p. 226).—It is satisfactory to read the testimony of one who has used this material "for the last few years," and gives one confidence in its value. As in the case of a "permanent" photograph, till a certain time has elapsed after the introduction of the novelty, one is a little doubtful whether the advantages claimed for it in theory will answer in practice. The Willesden process has had time to prove itself, and is, I believe, generally acknowledged to be satisfactory. Some time back a description was given in THE GARDEN of a method of rendering garden mats, &c., indestructible by the use of lime and a solution of copper. Has this been tried and found to answer by any of your readers? The merits would be that it might be employed by amateurs and in private gardens at a small cost and for

other things than those supplied by the Willesden Company.

Chisel-pruning Apple trees (p. 222) sounds very feasible, though, no doubt, a new idea to those who do not live in Somersetshire. Would not a chisel or sharp chisel-edged spud fixed at the end of a long pole be useful for cutting out the false leaders from Pines, &c.? Where they are at any height the difficulty is to get at the shoot, unless one has a fire-escape handy, for the top of the tree, of course, will not bear any weight, and it is important that the offender should be cut out early in his existence before he has done much mischief. A hook or pair of shears is all very well if the branch is growing horizontally, but when it goes straight up, it is almost impossible, except standing at some distance from the tree, to get it into the "jaws." A man or boy could climb as far as it would bear him, and then with one hand use a "chisel-stick."

Lachenalias (p. 230).—The increasing favour with which these are regarded will, no doubt, lead many to order and try to cultivate them. To such I would say, procure the bulbs as early in the autumn as possible and pot immediately on receiving them. Do not use heat, but keep them close to the glass when growing, for they are very liable to get "drawn." After flowering, dry off and keep without any water undisturbed in the pots till they commence to start, which is the time for repotting, if necessary; but they will continue to flourish thus for several years if well treated with liquid manure when making growth. I have in front of me a 6-inch pot which has not been disturbed for four years. It has forty-nine spikes on it in full bloom, with from sixteen to twenty "pips" and buds on each spike. Who has got a good stock of Lachenalias true to name? I have found poor old tricolor made to do duty for quadricolor, pendula, luteola, and others, much to the joy of the purchaser.

Eryngiums—"D. K." has done good service in his account of these most useful plants by showing which are the hardiest of the different species. Many are deterred from growing them by the supposed tenderness of the whole class, and when recommended to try them have shaken their heads dismally, saying, "But they will not stand the winter!" I had a packet of seeds of bromeliæfolium and pandanifolium (which, however, all "turned up" to be the former), and wonderfully useful they are when young as pot plants, when bigger for single specimens or for varied effect in borders, where all through the winter they keep their bright green colour and tropical summer appearance. Some of the leaves which I have just measured are 7 feet long.

Double Daffodils (p. 232).—There seem to be three parties to the question of Daffodils "doubling," and it is well that those who take an interest in the matter should see clearly the difference between them: 1, the "Conservatives" (like Mr. Barr), who say that a bulb which produces single flowers will continue to produce single, and that doubles must be the result of seedlings; 2, the "Liberals" (like Mr. Baker), who say that a bulb may, owing to special circumstances in its culture, produce double flowers, though it only had single to start with; 3, the "Radicals" (like Mr. Wolley Dod), who maintain that the ordinary pseudo-Narcissus may not only be made to become double, but will eventually produce flowers similar to those known as *Telamonius plenus*. Among the double Ajax (leaving *cernuus* and *capax* out of the question) there are some with a distinctly whitish perianth mixed up in them, some pure yellow, and among the pseudo-Narcissus naturalised or wild in different parts of England there are forms varying from a sharply contrasted bicolor to almost a pure self. The Italian singles, too, have such a range of colour, that it is not possible to draw a clearly defined line between one set and another, and one has a perianth which opens gold and pales to a straw colour with age. I remarked in these notes three weeks ago that it was curious that besides the fact that the doubles

would not go single again, they always retained the same amount of doubleness, and this I find in all the three forms I have—1, with unbroken trumpet; 2, rose shaped; and 3, stellate, like *capax*. For this assertion I was laughed at, but Mr. Wolley Dod says, "When Daffodils are transplanted from a transforming soil into an inert soil they retain the condition which they had when transplanted, whether single, or semi-double, or double, and the development which may have been in progress is entirely arrested. It is true, degrees of doubleness depend partly upon richness of soil, and may vary from year to year, but the general character remains." As to the doubling agent (iron), suggested by Mr. Engleheart, we have here iron and sand enough and to spare besides what we call black gravel, which is a mixture of both, and though the Daffodils grow and seed readily in it, never a bit of a double have I seen. Some of the springs round which they congregate are so full of iron, as to be worse than ink to taste. What would become of Rip Van Winkle in one of the transforming soils? Would that swell itself out to *Telamonius plenus*, too? As to Mr. Wolley Dod's P.S., it was suggested at the first meeting of the committee that the doubling might arise from starving as well as overfeeding, and that the form might vary accordingly. What is the history of the double forms of other bulbous plants—*Fritillaria*, *Colchicum*, *Lilium*, &c.? Is there something more vigorous in their constitution? Here the single Snowdrop dies out after a time, while the double makes a good fight for itself and thrives. Is it the same with Daffodils, that in some places the double form will increase and flourish where the single would gradually disappear? We have heard of a good many "conferences" of late; let us hope that the one connected with this subject will lead to some more definite results than some of the others have done.

Woods and forests (p. 251).—What is a forest without wild flowers? What is a garden without trees? Trees and flowers are, or rather should be, so intimately connected in the minds of most gardeners, that their appearance side by side in the pages of THE GARDEN must be welcomed by all its readers. How little the professional gardener knows and cares about trees unless they happen to get in his way, and how desirable it is that he should be taken up and taught better. Some fancy sorts of Evergreens may command a little interest, but not so deciduous trees, and of these latter we may hope shortly to have some good introductions as soon as the influx of flowering shrubs begins to fall off. We meet now and then with men who have done a little in the way of tree planting and tree culture, but they are the exception rather than the rule, at all events in the south of England; unless worked up to it by their employers, they do not trouble their heads much in the matter.

C. R. S. D.

Delphinium seeds.—Early in September last I gathered some seeds of some double Delphiniums and sowed them at once in a pan of soil. The pan was placed in one of the vineries, and there it remained all winter, the soil being watered as often as it got dry. The young plants are just now coming up freely after lying six months in the soil. There may be nothing very remarkable in this, but I direct attention to it because if I sow seeds of the common single Delphinium they vegetate in a few days.—J. C. C.

Tile edgings.—I have replaced all the Ivy edges in our kitchen garden with blue tiles—cable pattern. They look neat, and will save a deal of labour in keeping clean. Rows of Crocuses, &c., are planted just inside, and rows of *Nemophila*, *Gentian*, &c., also look well. There is no fear of the edging being killed by plants overhanging it, as would be the case with Box and other live edgings. The first thing which upset our Ivy edgings was *Potentilla Tormentilla*; it runs along amongst the Ivy and weeding it out left the Ivy gappy, so we decided to introduce tiles, a plan which I strongly recommend.—WM. MILLER, *Combe Abbey*.

TREES AND SHRUBS.

THE BLACK WALNUT.
(JUGLANS NIGRA.)

AMERICANS look upon the Black Walnut as one of the most valuable trees as well as one of the handsomest in their rich woods. In all parts of the United States it is famous for its timber, and in places where it does not grow naturally it has been planted both for its timber and for shade from time immemorial. Though it is pretty generally distributed about the States, it is on the banks and islands of the Ohio River that it reaches its greatest perfection. Michaux tells us that he has seen there Black Walnut trees with stems as much as from 3 feet to 6 feet in diameter and 60 feet or 80 feet high. Everywhere it is a beautiful tree, for in places where its size is not remarkable it always forms a well-balanced spreading head of elegant leafage.

The Black Walnut was one of the first trees brought to England from North America, but the exact date is not known, though it is certain that Tradescant grew it about the middle of the seventeenth century. It is now tolerably common, and there are some really fine trees of it in various parts of the country. There is an old tree at Fulham Palace about 200 years old, having been one of the trees planted by the good Bishop Compton.

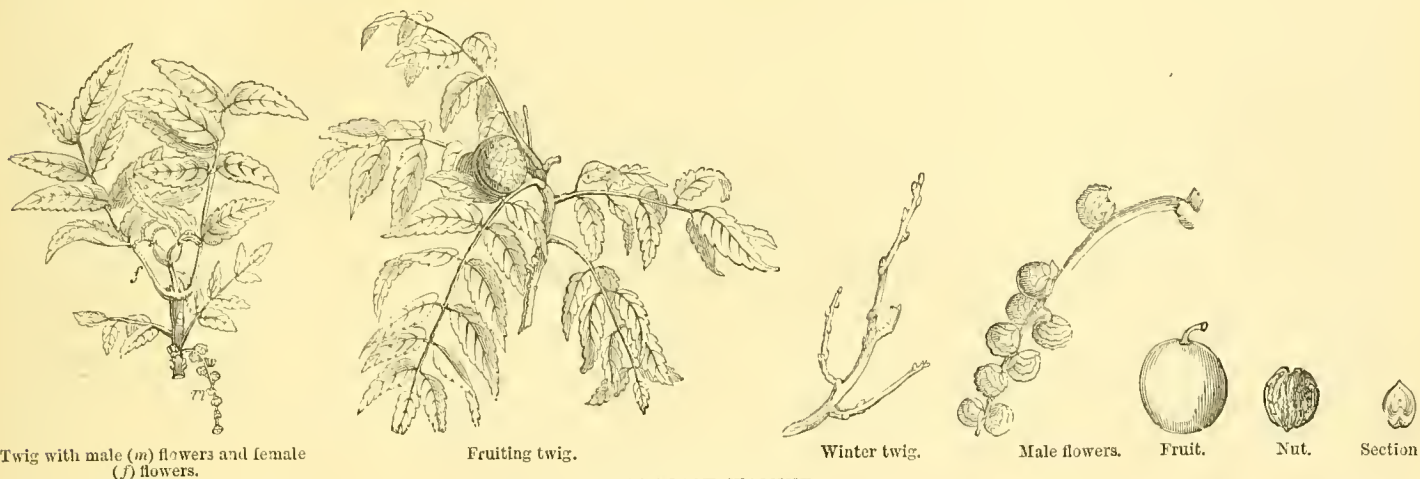
the sun. The shade is so complete, and the lower branches, which are rather pendulous, reach so near to the ground with their points, that you are here sitting not only completely out of the sun and without a hot roof over you, but you have at the same time the advantage of every breath of air that is stirring."

The Black Walnut in the forests of the United States is often seen from 60 feet to 70 feet in height, with trunks of from 3 feet to 4 feet in diameter, and occasionally much higher, with trunks of from 6 feet to 7 feet in diameter. According to Michaux, when it stands isolated, its branches extend themselves horizontally to a great distance and spread into a spacious head, which gives the tree a very majestic appearance.

The leaves are about 18 inches in length, composed of six, seven, or eight pairs of opposite leaflets, with an odd one. They are acuminate, serrated, and somewhat downy, and when bruised they emit a strong aromatic odour. It flowers in April and May. The male catkins are simple, pendulous, and cylindrical, unlike those of the Hickories, which are always compound.

The fruit, which ripens in October, is round, odoriferous, and of rather an uneven surface; it is sometimes 7 inches or 8 inches in circumference when fully grown, and it always appears at the extremity of the branches. The husk is thick, and is not, as in the Hickories, divided into

a grain sufficiently fine and compact to admit of a beautiful polish. It is made into cabinet-work, used in building houses, and also split into shingles 18 inches long and from 4 inches to 6 inches wide, which are employed instead of tiles or slates for covering houses. Its most appropriate use, however, is for furniture, which, when made from pieces selected from the upper part of the trunk close below the first ramification, is marked by highly beautiful curlings of the grain, though for cabinet purposes it is inferior to the wood of the wild Cherry. It is employed for gunstocks in America, as the wood of the common Walnut is for those of Europe. Posts made of the Black Walnut have been known to last in the ground undecayed for from twenty to twenty-five years. It makes excellent naves for wheels, and is well adapted for naval architecture, being more durable, though more brittle, than the wood of the White Oak, and not liable, like that wood, to be attacked by sea worms in warm latitudes. On the river Wabash canoes are made of it, some of them 40 feet long and 2 feet or 3 feet wide, hollowed out of a single trunk, which are greatly esteemed for their strength and durability. The wood is frequently exported to Europe, in planks of 2 inches in thickness, where it is used for cabinet purposes. As compared with the wood of the European Walnut, which it more nearly resembles than it does any other of the American



THE BLACK WALNUT.

Fine Black Walnuts may be seen also at Syon and Kew. The finest tree at the former place was in London's time as much as 80 feet high, so that it may be said to grow here quite as fine as in its native forests. Even in a small state it is a beautiful tree, but when it has a stout stem clothed with furrowed and rugged bark it is most picturesque.

AS AN ORNAMENTAL TREE, it well deserves consideration on account of its striking appearance when associated with other park trees; the light green foliage shows up conspicuously and pleasingly in contrast with the darker hues of the majority of summer leafing trees. When allowed plenty of room it has a wide-spreading, massive head, but at the same time it is by no means a heavy and dense-headed tree; its branches are so disposed as to admit of abundance of light and shade amongst the leafy branchlets that hang in graceful tufts. Cobbett was a great admirer of the Black Walnut, and in his "Woodlands" he thus alludes to it: "Of all the trees that I know anything of, nothing equals the Black Walnut as a single tree. Its spread is immense. If pruned up to about 10 feet or 15 feet high, and then left to take its own course, its great spread, its load of fine leaves, the shade that it gives, its erect and bold attitude, and its defiance of the winds make it one of the noblest objects that the eye of man can behold. When near to houses, it, in times of great heat, serves the family as a place to sit under during the intolerable ardour of

sections, but when ripe it softens and gradually decays.

The nut is hard, somewhat compressed at the sides, and furrowed. The kernel is divided by firm ligneous partitions. According to Michaux it is of a sweet and agreeable taste, but Catesby says that it is very oily and rank, and when fallen from the tree for some months, or gathered and laid by, is only eaten by squirrels or Indians.

In Kentucky the nut is nearly as large as that of the European Walnut, but in Genesee, where the climate is colder, it is not above half the size. Michaux says that the differences in the moulding of the fruit are so various as to induce Europeans to consider the variations in this respect as indicating distinct species. In England the tree attains as great a height as in North America, but the fruit is not quite so large. The growth of the tree is remarkably quick, more so than that of the European Walnut; the leaves come out in Pennsylvania in the second week of May, and in England about the beginning of June, before those of the common Walnut. At eight or ten years of age *J. nigra* begins to bear, and age increases its fertility. No tree will grow under its shade, and even Grass is injured by it. In forty years it will attain the height of from 50 feet to 60 feet.

The heart-wood remains sound for a long period when exposed to heat and moisture, but the sap-wood speedily decays. When properly seasoned the wood is strong, tough, and not liable to warp or split. It is never attacked by worms, and has

species, it is heavier, much stronger, susceptible of a finer polish, and not so liable to be injured by worms.

In Europe and in America the tree is universally raised from the nut, which, after being imported, ought to be sown immediately, as it seldom retains its vital power more than six months after it has ripened. Nuts of *Juglans regia* and *J. nigra* have been planted at the same time and in the same soil, and the latter have been observed to grow more vigorously and to attain a given height in a shorter time than the former. Michaux suggests that, by grafting the European on the American Walnut, at the height of 8 feet or 10 feet, their respective advantages in quality of wood and fruit might be united. In Europe, as we have already observed, the Black Walnut is almost universally raised from the nut; and, if the nut is planted where the tree is finally to remain, it will grow up with greater vigour, and not be retarded by that check which is always given to tap-rooted trees by transplanting. Nuts are best imported from America packed in moist loam or in moist Moss, and if they should germinate before their arrival, they will suffer little injury if planted immediately. It is always found naturally in good deep soil in forests accompanied by the Locust tree, *Gleditschia*, Sugar Maple, red Elm, Hickory, Nettle tree, and others.

In Europe, Michaux thinks that this tree might be employed along high roads to succeed the Elm,

for experience has proved, he observes, that to ensure success in the continued cultivation of either ligneous or herbaceous plants in the same soil, species of different Natural Orders must be made to succeed one another.

Oso-berry tree (*Nuttallia cerasiformis*).—This pretty and interesting shrub is in flower at the present time, being thickly studded with drooping racemes of small white flowers, very much like those of the Flowering Currant (*Ribes sanguineum*); the blossoms are accompanied by the tender, green unfolding leaves, which add to the beauty of the bush. A fairly cool and moist soil seems to meet its requirements. The propagation of this shrub is easy enough, as suckers are pushed up in quantities around the main stem so much as to form a thick mass when in a flourishing condition, so that in such a case all that is necessary is, during the winter, to detach carefully as many rooted suckers as are required. The Oso-berry tree, as this shrub is called in California, its native country, is quite hardy in all parts of this country.—W.

Planting Hollies.—The Holly is most sensitive to injury, unless planted or transplanted at the right season—and that is either in April and May, or in August and September. Planted any time during the summer, it often succeeds, but winter planting as often kills it. May is the best time in the whole year for putting out plants that have no soil to their roots. Few will fail if they are got out of the ground with reasonable care, and are not left too long exposed to the air.—W.

Catkins.—There has lately been a deceptive greenness diffused over the hedges in consequence of the numbers of Hazel catkins which, in this part of Surrey, they contain. We fancied weeks ago that spring was come or very near, but were deceived. Hazel catkins are very numerous this season, hanging all over the bushes; they are of a light yellow-green, and, if examined closely, each "lamb's tail," as it is sometimes called, will be found to be full of little bunches of yellow stamens, each bunch being protected by a green umbrella, as it were, from the wind and wet of February and March. Close beneath the hanging catkin grows the wonderful little nut-blossom. How small it is, yet how brilliant the crimson of the fertile flower on which the pollen of the stamens will drop and the Hazel nut will grow! The catkins of the Willow, which we call Palm, are the most beautiful of all the catkin family. The stamens stand upright, and are of a brilliant golden colour; the fertile catkin grows on a separate bush, and is less pretty and interesting to look at than the other.—M. A.

Daphne Mezereum.—This is flowering wonderfully well with us this season. Certainly the flowers are set more thickly on the branches, and the flowering portion of them longer than usual. Except *Rhododendron Nobleanum*, this *Daphne* is the most effective hardy early flowering shrub. Here in the west it began to unfold its blossoms early in February, and is now, at the end of the first week in March, just at its best. It promises to be well out in flower for fully six weeks, and although common it deserves a place in every garden.—J. C. C.

The Cherry Plum (*Prunus Myrobalana*)—With the exception of the Sloe (*P. spinosa*) the Cherry Plum is the first to expand its blossoms among the many kinds of Plums and Cherries. When allowed to assume its natural character of a low, much-branched tree, it is highly ornamental at this season, if the blossoms are not cut off by frosts.—W. T.

Forsythia viridissima.—The pale golden blossoms of this shrub when associated with dark-leaved Evergreens, produce a pretty effect at this season. The rambling growing *F. suspensa* or *Fortunei* (for I fail to see any difference between them), plants so named, is usually trained to a wall, which it will quickly furnish with gracefully disposed drapery, but other ideas might be carried out in planting; for instance, I have seen a specimen of it planted in the open ground and secured to an upright stake till it reached a height of 12 feet, when the plant was allowed to grow at will, and the long flexible branches were hanging on all sides in graceful profusion. From the progress with which a specimen here is making its way in

but are usually naked for a considerable space, the principal portion of the foliage being gathered towards the ends of the branches. This variety often turns a brownish tint during the winter. Another variety (*variegata*) has branches of a creamy white colour intermixed with those of the ordinary tint. These are the principal distinct varieties, though other names are often found in catalogues.—W. T.

Camellias out-of-doors.—The largest Camellias grown as standards that I have seen in the open air in England are at Powderham Castle, in South Devon. Some of the bushes are 150 years old, and the main branches are so thickened that large sections exhibiting the character of the wood were sent to the late forestry exhibition in Edinburgh. Powderham is also noted for its fine specimens of *Eucalypti*. One of *coccifera*, already noted once or twice in THE GARDEN, is over 60 feet high. If anyone wishes to know the capabilities of Camellias for improving a lawn, let him by no means omit seeing the fine trees at Powderham when in bloom. In Cornwall, too, many of the villa gardens have Camellia bushes on the lawns.—M. C.

Variegated Oval-leaved Privet.—This variegated Privet is one of the brightest of golden-leaved shrubs, the greater part of the leaf being of a beautiful yellow colour with just a narrow edge of red. The colour remains good throughout the year, for it is evergreen in character, except in very cold and exposed positions, when some of the foliage is shed during the winter, but even then the remainder is still bright and cheerful. I recently saw a bed or mass of this Privet near one of the Golden Enonymus, and the Privet was by no means second best in point of colour. It is quite hardy and can be readily propagated by cuttings taken during the early autumn and inserted in a sheltered border.—A.

Osmanthus myrtifolius.—This is a pretty little evergreen shrub differing from the other *Osmanthes* in having smaller leaves, like those of the Myrtle. They are also devoid of spines except just at the tips. It forms a much branched small evergreen shrub with dense foliage of a deep green colour, and assumes the character of a globular-shaped bush when allowed to grow naturally. It is quite hardy and will strike easily from cuttings of the half ripened wood.—W.

Erica codonodes.—I look upon this Heath merely as a form of the Tree Heath (*Erica arborea*), which, as seen in some of the sheltered spots along the south and west of England, it is a beautiful object, but where the weather is at all severe it is very liable to be injured

The Black Walnut (*Juglans nigra*) in the United States.



an old Hawthorn, it bids ere long to be quite a prominent feature.—W. T.

The Savin and varieties.—Somehow or other the Savin (*Juniperus Sabina*) is rarely planted, though it is among the most beautiful of low-growing conifers, and so hardy that the severe frosts we have had make no impression on it. Recently I saw it in an old churchyard, planted on the graves, and I thought it beautiful and appropriate, probably owing to being elevated above the surrounding soil, and that rather light in character. They were lower in stature than usual, but still in perfect health. Isolated specimens of Savin are very handsome, but it looks best planted on sloping banks and such-like spots. There are a few well marked varieties, the principal being *tamariscifolia*, in which the branches are more plum-like, the leaves of a deeper green, and the plant somewhat more upright in growth, while in *prostrata* the branches are quite procumbent, and will spread along the ground for some distance,

during winter. *E. codonodes*, on the other hand, is harder in constitution, and the flowers are rather larger than those of *arborea*. The blossoms resemble tiny white bells, and are borne in such numbers, that every slender shoot is thickly wreathed with them. Where it thrives well it is undoubtedly one of the best of early flowering shrubs. Another large growing Heath now in bloom is *E. mediterranea*, in which the blossoms are reddish in colour, and, though small, they are borne in great profusion.—W. T.

Chimonanthus fragrans, or, as it is sometimes called, *Calycanthus precox*, is, as "R. D." says, one of the sweetest of early flowering shrubs. On the south front of the mansion here there is a plant of it covering a space of about 60 square feet which recently has been covered with its fragrant yellow and purple blossoms, borne in wreaths on the underside of the previous year's growth, and on dry days its perfume is delicious. Although this shrub will flower

more freely on a wall, owing, no doubt, to the wood being better ripened, it is sometimes planted in sheltered localities as a lawn shrub, a large specimen at Longford Castle being a notable example. Against a wall the growth will be slower, but it will amply repay with a larger profusion of its welcome blossoms. The Carolina Allspice (*Calycanthus floridus*) is an allied species, which, in company with others of the same family, is, on account of its curious and aromatic scented flowers and wood, well deserving a place in a select shrubbery.—M. C. MARS.

SOCIETIES.

ROYAL HORTICULTURAL. MARCH 24.

THE show on this occasion consisted chiefly of Hyacinths, Tulips, Cyclamens, Daffodils, and Amaryllises, and, being sent in large numbers by various nurserymen, they gave the conservatory in which they were displayed a gay appearance. There were, however, comparatively few new and interesting plants and none out of the ordinary run.

First-class certificates were awarded to the following:—

AZALEA ILLUMINATOR.—This variety pleased us much; it is in the way of the well-known *amœna*, but the flowers are larger, more numerous, and of a brighter hue. Mr. Bull showed a beautiful bush of it, the long twigs wreathed with bloom being allowed full freedom, *i.e.*, they were not clipped or contorted into a symmetrical head. It will doubtless become popular.

AMARYLLIS PARAGON.—A grand flower, one of the finest of all Messrs. Veitch's yearlings. The bloom is large, perfect in form, and brilliant scarlet, with a star-like centre, not, however, so white as could be wished.

CHIONODOXA SARDENSIS.—A real gem among spring bulbs; some think it even more beautiful than its relative, the popular *Lucilia*. It has small flowers, and instead of having a palish centre they are wholly of a rich deep blue like *Scilla sibirica* with just a white spot—the cone of white stamens. Messrs. Barr, of Covent Garden, deserve credit for introducing us to this spring beauty.

ODONTOGLOSSUM WILCKEANUM ALBENS.—One of the so-called hybrid varieties which are so similar to each other, that it requires the eye of an expert to detect their differences. The present plant seems to be a trifle paler than that called *pydenn*. It is handsome in its way. Mr. Measures, of Sydenham, showed it.

RHODODENDRON TEYSMANNI.—This appears to be an introduced species, though at first sight one would take it for a beautiful Javanese hybrid. It has canary-yellow flowers, not so big as those of the hybrids, but good in form and no doubt will be as fine in truss. It may lay the foundation of a new departure among greenhouse Rhododendrons. It came from Messrs. Veitch.

ROSE GENERAL GORDON.—This and the following are the latest productions of Mr. Bennett, the Rose hybridist, of Shepperton. This one may be best compared with *Niphetos*, as it is of the same form, particularly in bud, and there is the same suggestion of bluish pink in the centre. As a pot Rose in early spring it will be difficult to beat.

ROSE PRIMROSE DAME.—A Tea-scented variety, which puts one in mind of *Mad. Hippolyte Jamin*. The colour of the finely-shaped flowers is a soft sulphur-yellow, with a pinkish centre. It is particularly beautiful in bud and half opened, and its scent is delicious. The plants shown by Mr. Bennett carried a number of blooms, showing their productiveness.

CALANTHE SANDERIANA.—A new species distinct from the rest, but nearest the new *Regnier* and others of that stamp. It resembles *Turneri* in growth, its bulbs being similar, and the tall spike carries a number of flowers in a loose way. Their colour is a claret-red, deepening towards the centre. Mr. B. S. Williams showed it.

PRIMULA WULFENIANA.—One of the exquisite little alpine Primroses which Mr. George Paul, of Cheshunt, is doing his best to bring into popularity. It is a tiny plant with proportionate sized leaves, but the flowers are as big as *Periwinkles*, and like them, too, in shape. The colour is a mixture of magenta and lilac-purple, very pleasing and bright.

CAMELLIA COMMENDATORE BETTI.—A cumbersome name for a really fine double Camellia as large probably as any yet raised. The flower is beautifully imbricated, perfectly circular, and of a soft carmine-pink colour. A small plant shown by Mr. B. S. Williams bore half a dozen blooms—the little bush seemed indeed to be all flowers.

AMARYLLIS THE QUEEN.—The chief beauty of this sort is the colour, which is white, streaked, netted, and splashed with crimson. Other sorts are far before it in form. It came from Messrs. Veitch.

AMARYLLIS NIOBE.—Flower large and finely formed, the sepals being broad and overlapping, and each of a vivid scarlet, with a centre stripe of white and a pale centre. Also from Messrs. Veitch.

Among the crowd of other things shown we singled out the following as the most noteworthy: Two of the most interesting plants in the show were undoubtedly *Andromeda japonica* and a *Laurustinus* named *lucida*. The *Andromeda* was the admiration of everyone, as each of the bushes shown of it was literally hung with drooping clusters of wax-like bells, and these midst the shining evergreen foliage had a pretty effect. It is an invaluable hardy shrub, which, though uncommon at present, must undoubtedly become popular. A group of it was well shown by Messrs. Veitch, and another by Mr. Anthony Waterer. The *Laurustinus* was by far the finest we had seen, the flower-heads being twice or thrice the ordinary size and pure white. The foliage, too, is handsome, being larger than that of the common kind, more leathery and glossy, and of a deeper green. It is also a most valuable shrub, and if not new it is singular that it is so little known. Two fine bushes of it full of bloom came from Messrs. Cutbush, of Highgate. A boxful of wreaths of *Clematis indivisa* from Mr. Walker, of Thame, was quite a revelation to many visitors who had not previously met with this lovely New Zealand twiner. No cool greenhouse should be without it. The miniature fairy Roses which Mr. George Paul showed attracted the attention of all, the profusion of the tiny rosettes, some white, others delicate pink, and one quite a crimson, rendering them distinct from other Roses. Two of the best are *Mignonette* and *Perle d'Or*. Orchids were singularly few in number. The finest specimen shown was a *Trichopilia suavis* from Dr. Soper's garden, Clapham Road; this was considered to be one of the best that had ever been shown. The plant, though not very large, bore no fewer than thirteen spikes of its most exquisite flowers, so delicate in colour and so delicious in perfume. A cultural commendation was deservedly accorded to Dr. Soper for this plant. Some marvellously fine forms of *Cattleya Trianae* came from Messrs. Thomson, of Clovenfords, Galashiels; both were remarkable for size, and one was, indeed, quite a rival to the famous *Leana* variety. An early *Mendel*, good in form and colour, also came from Clovenfords. Mr. Bull showed a good form of *Dendrobium nobile* named *insigne*; it is of high colour and has large flowers. A few *Odontoglossums* bearing some queer kind of names, such as *Euosme*, *metra*, *pasicharis*, came from Mr. Measures, but none of them seemed remarkable.

HARDY FLOWERS, particularly alpine, were prominent, Messrs. Paul showing the bulk of them. Among their *Saxifrages* were the rare *S. retusa*, *oppositifolia minor*, *aretioides primulina*, *sancta*, and the *Primulas* included such rarities as *Venzoi*, *tirolensis*, *biflora*, and others, besides such gems as *rosea*, *minima*, and others. There were also *Soldanella minima*, *Androsace Laggeri*, and two forms of *Anemone Pulsatilla*, the typical and the *patens* variety, the latter by far the finest in form, larger and brighter. Mr. R. Dean showed

some interesting alpine *Primulas*, as well as some of his noted coloured *Primroses*. The name, *P. pedemontana* stood for three distinct plants; which one it correctly fitted was not clear. Each was pretty and distinct in itself. Mr. Ware showed the new *Megasea Milesi*, which, though absolutely different from all others in cultivation, does not promise well as a garden plant. It may, however, improve.

NARCISSI gave a yellow glow to the conservatory. They were everywhere in large masses, being shown by various well-known nurserymen, and Mr. Hartland even sent a collection all the way from Cork. Some of his sorts, such as double *cernuus* and starry *princeps* (*Northern Star*), were noteworthy, but his *Rip Van Winkle* is still as unlovely as ever, though it may possess a charm for the students of Daffodil doubling. Mr. Scrase-Dickins sent from Coolhurst an interesting collection of *Tazetta* forms, and in Mr. Ware's group we found the rare *N. pachybulbos*, an Algerian species with big bulbs and the tiniest of flowers, pure white like miniature Paper-whites. Mr. Ware's group contained a host of interesting Daffodils, as did also that of Mr. Barr, who showed in a row the tiniest of all Daffodils (*minimus*), then the next largest, minor and nanus, and so on up to the large *maximus*, and other giants among trumpet *Narcissi*. A great feature of Mr. Barr's group was a large collection of *Narcissi* from Tresco Abbey, in the Scilly Islands, where *Narcissi* seem to be in the height of their season judging by the present collection.

AWARDS.—Silver-gilt Banksian medals were taken by Mr. B. S. Williams for large and finely grown groups of Hyacinths, Tulips, Cyclamens, Lily of the Valley, Primulas, Amaryllises, and other spring flowers; by Messrs. Veitch for very fine collections of Hyacinths, Tulips, and seedling Amaryllises, *Narcissus*, &c.; by Messrs. Cutbush for groups of Hyacinths and Tulips; by Mr. Clark, Twickenham, for a magnificent display of Cyclamens of various sorts; and by Mr. Bull for a large miscellaneous collection of flowering and fine-foliaged plants. A silver Banksian medal was awarded to Messrs. Barr for an extensive array of Daffodils of all descriptions now in flower, *Anemones*, and a host of other interesting spring flowers. Bronze Banksian medals were taken by Mr. Ware for a group containing early *Narcissi*, *Lachenalias*, *Scillas*, &c.; by Messrs. Paul, Cheshunt, for a pretty group of miniature *Roses* of the *Polyantha* type, together with an interesting collection of alpine plants, including numerous kinds of *Primulas*, *Saxifrages*, and others; by Messrs. Collins & Gabriel, Waterloo Road, for a large collection of *Narcissi* and a particularly fine group of Crown *Anemones* and *fulgens*; and by Mr. Anthony Waterer for a large and beautiful group of *Primroses* in all colours.

Fruit.—There were only a few Apples submitted to the committee. Mr. S. Ford showed a fine dish of Mincing Pippin, a cooking sort—some baked fruits on the table showing its excellence in this respect. Pecks's Pleasant Apple was sent by Mr. Ross, of Welford Park, and Dr. Bull, of Hereford, sent a good dish of Herefordshire Beaufin.

The following were the chief subjects of discussion by the scientific committee:—

Cypripedium, semi-double.—Dr. M. T. Masters exhibited a very curious blossom of *C. Hookeri*, a double *Lapageria rosea* from Mr. J. C. Bowring, of Forest Farm, Windsor, and specimens of *Arum italicum*, gathered at Folkestone, the foliage being much larger than that of *A. maculatum*, and also earlier.

Mr. Wilson exhibited some trusses of Indian *Primulas* which had withstood severe rain, snow, and a temperature of 24° without injury.

Mr. McLachlan mentioned that bulbs of *Iris reticulata* received from Professor M. Foster and others were often attacked by millipedes after a year or two of cultivation.

Mr. Plowright sent Daffodil bulbs received from Dr. M. Foster attacked by some species of *Pleospora* (*Spheria*) with sketch of fungus; also Sweet William leaves attacked by *Puccinia Dianthi*, one

of the *Leptopuccinia*, the spores of which germinate as soon as they are ripe. Like *P. malvacearum*, the mycelium is confined to limited circular areas, where after a time it kills the tissues of the leaf—in some cases quite through, so as to cut out or punch out a circular hole. From the same source came branches of Willow attacked by the Cabbage gall, the tufts of leaves still adhering to the ends of the branches, and a branch of Juniper, exhibiting the fungus, *Podisoma Sabinae*, just commencing to appear.

A so-called hybrid *Begonia* between *socotrana* and *subpeltata* was sent by M.M. Thibaut and Keteleer. It has rosy pink blossoms and cordate, not peltate, leaves. The question was raised whether it was a hybrid, as it appeared to show no trace of *B. socotrana*, while the figure of *B. subpeltata* was hirsute and not smooth, as was the specimen sent.

ROYAL BOTANIC.

MARCH 25.

THERE was the usual bright gathering of spring flowers at Regent's Park on Wednesday, but, coming as it did the day after the show at South Kensington, there was a conspicuous sameness in the two shows. It seemed as if the whole of the Kensington groups had been transmitted bodily from one place to the other; about the only things different were the competing exhibits, but these were almost the same as in former years. The great feature of the show was the *Cyclamens*, all the most noted growers of this beautiful flower about London being represented either in the competing classes or otherwise. Nothing in the way of *Cyclamens* could have been finer than the dozen plants which Mr. H. B. Smith, of Ealing Dean, showed in the nurserymen's class, or the equally fine group from Mr. Little, of Hillingdon. Each plant in these groups was a marvel of skilful cultivation, a triumph indeed of the difficult art of *Cyclamen* culture in which so few excel in this or any other country. The diversity and richness of colour which both Mr. Smith and Mr. Little have infused into their *Cyclamens* is astonishing compared with what *Cyclamens* were in point of colour a few years back. No part of the show was enjoyed by visitors so much as the glorious banks of *Cyclamens*, and to those who had not previously seen west of London *Cyclamens* their effect must have been surprising. The forced pot *Roses* from the Cheshunt roseries of Messrs. Paul won many admirers. They were not large, but the number of kinds was great, and each plant was charmingly flowered. There were a good many old favourites among them, such as Duke of Teck, M^{me}. de St. Joseph, Dr. Andry, Jean Ducher, and others, besides some new and little-known kinds, such as *Etoile de Lyon*, a charming sulphur-tinted Tea Rose, and President Senala, a dark crimson Hybrid Perpetual, which stood out conspicuous from the rest. The little Burgundy and Paquerette *Roses* charmed everyone, both being so different from the ordinary run of *Roses*. The first is the old *Rosa provincialis*, one sort having crimson-pink rosetted blooms, the other a white and crimson centre. The polyantha varieties, particularly those named Mignonette (pink) and Anna Maria de Montravel (white), are most useful for cutting, their tiny blooms being borne in wide-spreading, many-flowered clusters.

Amaryllises from amateurs showed a decided advance upon any that have previously been shown here, and we think that Mr. Douglas, of Great Gearies, Ilford, has achieved wonderful success in this line, inasmuch as he showed a group of twelve plants in flower all raised from seed sown in August of 1882. All the seed was from one kind, Empress of India, and the progeny from this superb variety even eclipses the parent both in form and colour. A few of these seedlings have been named; one called Great Gearies, the name of the garden at Ilford where it was raised, we thought was one of the finest seedlings we had seen this year. The form is exquisite and the colour quite a dazzling scarlet. Another named Helen Lodge was equally as fine in many respects, though it lacked the brilliancy of colour. It seems as if amateurs are

really beginning to understand *Amaryllis* culture, for even those who have hitherto shown inferior collections had some creditable plants. The Chelsea *Amaryllises* being so fine make inferior starry flowers quite intolerable nowadays, but the amateurs' plants on this occasion could well compare with the collections from Messrs. Veitch, who showed a group of their finest seedlings. The prizes offered by an amateur for seedling *Amaryllises* were competed for at this show, the first prize for six plants being taken by Mr. Douglas, the second collection being from Mr. Butler, who has made good progress since last year. Mr. Douglas took all the prizes for the dark and light seedlings, the kinds being those named. Dutch bulbs, such as *Hyacinths*, *Tulips*, *Polyanthus*, *Narcissi*, and *Crocus*, &c., were on the whole as fine as usual, though the *Hyacinths* scarcely appeared so fine in spike; the two collections of twelve in the amateurs' class were so equal in quality, that the judges must have had a difficulty in deciding which was the better of the two. The large groups of bulbs from the various nurserymen constituted the greater portion of the show, and besides these there were extensive displays of cut *Daffodils*, *Anemones* from the sunny Riviera, all adding to the brightness of the show. The *Lilies* of the Valley were remarkably fine, and, singularly enough, the finest half-a-dozen plants came all the way from Newcastle-on-Tyne. Everyone admired these superb plants, the spikes being wreathed with flowers twice the ordinary size. Mr. Watson, the exhibitor, not only deserves great credit for his skill, but also for his courage in coming so far. He also showed admirable *Hyacinths*, *Tulips*, and *Narcissi*, but in these he was outdistanced by home exhibitors.

NEW PLANTS were as plentiful as ever, no fewer than eighty being submitted to the judges for certificates. These, as may be supposed, were not all of equal merit, some being really old, and never ought to have been shown as new plants. Botanical certificates were awarded to Mr. Bull for *Lycaste Skinneri* alba, *Hæmanthus Kalbreyeri* maximus, *Dendrobium nobile* insignis, *D. Ainsworthii*, *Bentlinckia condapanna*, *Masdevallia Wagneri*, *Sarracenia Atkinsoni*, *Oreodoxaplumosa*, *Odontoglossum Rossi* concinnum, *Selaginella amoena*, and *Lomaria heterophylla*; to Messrs. Veitch for *Rhododendron Teysmanni*; to Mr. Little for *Dendrobium crassinode* album and *Lycaste Skinneri* magnifica; to Messrs. Paul (Cheshunt) for *Anemone Pulsatilla* patens and *Primula Wulfeniana*; to Mr. B. S. Williams for *Calanthe Sanderiana* and *Dendrobium nobile nobiliss*; to Messrs. Barr for *Chionodoxa sardensis*.

FLORICULTURAL CERTIFICATES were awarded to Messrs. Thibaut & Keteleer (Sceaux) for *Begonia Gloire de Sceaux*; to Mr. Douglas for *Amaryllis Helen Lodge* and *A. Great Gearies*; to Messrs. Veitch for *Amaryllis Ne Plus Ultra*, *Perfection*, and *Rasilisk*; to Mr. B. S. Williams for *Camellia Commendatore Betti*; to Mr. James for *Cinerarias* Mrs. A. Sutton, Viceroy, Paragon, Mary Anderson, General Gordon, and Rob Roy; to Mr. Little for *Azalea* Mad. J. N. Verschaffelt and *Primula* The Queen.

A list of awards is given in our advertising columns.

GREAT QUINQUENNIAL EXHIBITION OF BULBOUS PLANTS AT HAARLEM.

THIS great show of the beautiful flowers and plants, for which this city and neighbourhood are so famous, was opened on Friday last, the 20th inst., in the fine hall of the Haarlem Assembly Rooms by the president of the society, Herr Krelage, and the city burgomaster, who presented to the former, in the name of a large number of subscribers, a handsome silver statuette of Flora bearing wreaths in her hands in commemoration of the completion of the 25th year of his presidency. The plants exhibited completely filled the large hall on the ground floor, and also two smaller rooms and a couple of corridors upstairs. The *Hyacinths* of course formed the great feature of the show, being arranged to the number of over 4000 in a wavy line five deep round three sides of the great hall; the fourth

side was occupied by three splendid groups of *Amaryllis* (*Hippeastrum*) in full and beautiful bloom, which were exhibited by Messrs. Schertzer and Messrs. Van Eden, of Haarlem. *Tulips* were also exhibited in large quantities, but being all grown in pots and forced in order to get them into flower in time for the show, they did not appear at all to advantage, especially in the dull, cold, sunless weather which prevailed. Silver and bronze medals were awarded by the jury to five of the new *Hyacinths* exhibited for the first time. Singles—1, Sophie Charlotte, a lovely shaded rose-coloured variety, with fine large individual pipes of great substance; 2, Correggio, fine pure white, with good spike of flower; 3, City of Haarlem, fine pale yellow, with good spike. Doubles—4, General Gordon, good double, deep rose colour; 5, Duke of Norfolk, fine long spike of double purple flowers of deepest shade. An interesting collection embracing no less than fourteen distinct named varieties of the pretty little family of *Muscari*, or Grape *Hyacinth*, was exhibited by the president of the society, but among them we failed to notice one of the most distinct, *M. lingulatum*. *Polyanthus Narcissus* were finely shown in three groups of distinct and handsome varieties; the following (most, if not all, of which are well known in England) were the most conspicuous: Grand Monarque, Bathurst, Gloriosa, Chlorus, Newton, and Bazelman major. The various other forms of *Narcissus* and *Daffodil* were well represented in large groups, all grown in pots, and all more or less forced, consequently not in many instances producing as fully sized blooms as those to which we are accustomed when grown naturally in the open air. Some collections were also shown grown in glasses filled with water and bearing very fine flowers. A most effective method of growing *Hyacinths* by planting ten carefully selected bulbs of one variety in a pan quite close together in vogue in this country produced a most brilliant display when several collections of pans so filled were grouped on a raised stand together. Perhaps the greatest novelty in the show was the pure white form of the pretty little Siberian Squill (*Scilla sibirica* alba), of which a single bulb bearing three spikes of bloom was exhibited in a small pot carefully covered with a glass bell shade.

W. E. G.

QUESTIONS.

5339.—Garden hose.—Which is the most durable, the red rubber hose or the ordinary white kind? also which is the most expensive at the outset?—A. B.

5340.—Heating.—Could anyone inform me if the high pressure system of heating, as used for mansions, &c., has ever been tried for horticultural purposes, and with what result?—G. H. S.

5341.—Trees and shrubs for Florida.—I shall feel grateful to any correspondent who will kindly favour me with the names of various trees and shrubs which can be raised from seeds suitable to the climate of Florida, and a light soil resting on clay?—W. N. N.

5342.—White Indian Azalea.—Has any correspondent of THE GARDEN any experience in planting out *Azalea indica* alba? I have a lot of large old plants of which I should like to make a bed, but am doubtful if they are sufficiently hardy to bear our climate.—WEST SURREY.

5343.—Valuing cottage gardens.—Can any of your readers inform me as to the proper method of valuing cottage garden land for out and in-going tenants? It is now cropped with winter Onions and spring-sown Onions, Parsnips, Potatoes, Peas, and similar material. Is there any rule, say so much per rod, or is the matter left to one's own judgment?—G. E.

LATE NOTES.

Chrysanthemum seed (W. W.).—Try Messrs. Smith, Caledonia Nursery, Guernsey.

Cinerarias (*Cicaras Collier & Co.*).—We consider the flowers you send excellent, being large, good in form and substance, and rich and varied in colour.

Naming plants.—Four kinds of plants or flowers only can be named at one time, and this only when good specimens are sent.

Names of plants and trees.—Dr. P.—*Polygonatum oppositifolium*.—W. Churchill.—*Iris sibirica*.—H. Hill.—*Stautonia latifolia* (green), *Hardenbergia bimaculata* (blue), *Asplenium viviparum* (Fern).—E. C.—Small *Narcissus* is N. minor nanus, other is N. *Telamonius* plenus. —E. Hyons.—*Dendrobium heterocarpum*, *Odontoglossum gloriosum*.—J. E.—We cannot undertake to name varieties of *Camellia*.

WOODS & FORESTS.

RAILWAY RATES AND CARRIAGE OF HOME-GROWN TIMBER.

THE cost or question of railway transit is at all times a most important matter to us who have to sell or buy timber. I think, however, that the step you are taking in your articles on forest machinery is in the right direction, and one towards solving this difficulty. If properly elucidated, it must tend to arouse our estate owners and agents to the importance of developing to the fullest extent the resources of the material they have standing ready at hand. As the writer of your articles remarks in the opening paragraphs, what can be a more suicidal policy than selling valuable wood on the spot at a low price, and then paying heavy charges on imported stuff that for many purposes would not be nearly so durable? The absurdity of the arrangement becomes more apparent when the estate lies at a distance from a railway station. Then, in addition to the rail rates from the nearest port, another heavy charge for cartage is incurred. The same thing applies to the timber grown on the estate and sold to the merchant. He has to haul it to the station to get at his market; therefore the value to him on the estate is this much the less. It is within the knowledge of the writer where it is (or was a very short time ago) the custom to sell the timber grown on the estate, such as Oak, &c., at a very moderate price, and replace gates, fencing, &c., with foreign Fir that would not last half so long as the native wood. This may be an exceptional case, but it nevertheless tends to show the little regard that is paid to our own productions. Suppose that the cost is equal, what an important thing is the matter of durability. Look at our old houses that have stood the test of centuries. Now they have to come down to make room for more modern erections. What do we see? In the majority of cases the timber sound and intact. Will this be the case a century or two hence with the buildings by which they are being replaced? It is a serious question for proprietors of woods, and one that I hope will be discussed fully. REFORMER.

SELLING PLANTATION WOOD.

I HAVE read "Glendye's" contribution under this heading, but I cannot see that his reasoning is logical. When he says that the returns derivable from forest produce are not satisfactory, he propounds a statement that no one can gainsay. It is when he sets about finding the remedy that I cannot follow him. According to his reasoning, the owner of an estate must personally do all the work of cutting and selling his wood, as growing timber will not warrant a profit to any but the grower. Well, suppose he does so; he is merely stepping into the timber merchant's shoes to meet his troubles and pocket his profits. So far, so good; but where I cannot follow him is where he begins to talk about competition. He says, "There would doubtless be keener competition than now, but more competitors there would not be; seeing there are as many with wood to sell now as there would then be, only many more might sell wood who do not do so at present just on account of the extra low prices offered."

I have read this carefully again and again, but I cannot understand what is meant. Will "Glendye" explain? When he goes on to say that the producer has quite enough to compete against in the heavy importation of foreign timber, I am again quite ready to agree with him, but to what extent is he himself (the producer I mean, not the writer) the cause of this competition is a point that seems to be overlooked. The writer of the article on forest machinery in your last issue refers to the practice of selling good home-grown timber, and buying foreign stuff of inferior quality in place of it as a suicidal policy. In this I quite agree with him. We all know that the importation of foreign wood is ruining the prospects of any profits from our woodlands, and still the very individuals encourage it by buying it unnecessarily. If you can succeed in bringing

about a change in this direction, you will have accomplished a greater work than the mere upsetting of the timber merchant without giving us something better in his place. D. J.

WHAT TO DO WITH OUR TIMBER.

YOUR correspondent "D. J." is quite right in saying that the marketing of our timber is of quite as much importance as planting; in fact, it is from this point of view owners of woods regard it principally, and in the depressed condition of the land interest a good deal more timber than usual has been lately thrown upon the market, and will continue to be. Upon the whole, during the past year the home timber trade has been fairly active, but prices have been low. Ten years ago or more gentlemen who owned woods near railways, and even at a distance from these, might have disposed of every foot of timber they could afford to cut at good prices, but missed their opportunity either through their own reluctance to cut the trees down or the obtuseness of their foresters. On all estates much depends on the facilities for removing the timber. Proximity to a railway and good roads will make a considerable difference to the price per foot. Much of the wind-fallen timber lying in out-of-the-way places that was blown down two years ago has, I hear, been all but given away for the fetching, and portable saw mills are being set to work to cut it up on the spot. As an example of the advantages of convenient transit, I may mention the case of two private sales of mixed timber that happened not long since, and of which I have the particulars. In one case the fall was a good bit from the railway and in the other close to it. The lots belonged to two different proprietors, and amounted together to about 30,000 feet. The same timber merchant bought both lots, and for the lot near the railway he paid about 2d. per foot more. Proprietors stand in their own light when they do not provide facilities for removing the timber. The preservation of game, too, is an obstruction in this respect, as unless the buyer can remove the lots when the keeper pleases, he cannot have it, or, as happens sometimes, he will not have it. Every yard the trees have to be dragged costs money, and buyers like to make one shifting do whenever they can, that is to take the wood direct from the plantations to the customer. The prices recorded at sales are, we fear, sometimes misleading. In South Yorkshire and the midlands and elsewhere the highest price that some extensive lots, consisting principally of Larch, Scotch Firs, some Sycamore and Ash, &c., have fetched lately has been about 43d. per foot, the proprietor felling it. These lots were described as "straight, sound, and well grown," and about 3 miles from the station. Oak poles under 10 feet have been sold during the past two years as low as 8d. and 9d. with the bark, the lots being taken standing at the buyer's risk. Trees in lots standing of 10 feet and upwards have gone for from 1s. to 1s. 6d. "D. J." says "the prices in many parts are irreconcilable," but when circumstances, situation, and the quality of the timber is taken into consideration, that is not the case. For many miles round this part the estimates of foresters and valuers correspond pretty nearly. Trade is bad—that is the worst thing, and proprietors want to sell. Many buyers have had thousands upon thousands of feet standing peeled for nearly three years, and still seek further indulgence in that way from the owners of the land. Proprietors may object to their sales being published, but there need not be any mystery on the subject in any district where large lots are sold by auction or even private tender, nor is there so much mystery on this point as "D. J." thinks.

As for selling to the consumer, although we have less reason than many to complain of want of trade on that head, I have little faith that the practice can be carried out successfully on estates. The timber merchant has the advantage, because he has always a supply of timber of all descriptions on hand, saw-mills for converting the timber, and a constant staff of men and means wherewith to turn even the rubbish to good account in the shape of charcoal, &c. In order to enter

the lists against him the forester would have to found a depot of his own, convert all his own timber, and, in short, keep a timber shop. Unless the estate was extensive enough to provide a constant supply of timber of all kinds that might be wanted, cut up and prepared for customers, and keep a staff employed, the forester would have to buy timber from other sources in order to provide for and retain his customers. Every timber merchant knows how difficult it is to get custom back once it is lost. The plan, to my knowledge, has been tried on estates, and it was found better in the end to deal with the middleman, who took all and sold all, taking all the risk. Take ourselves, for example, and several neighbouring estates I know well. We could not supply orders of different kinds of timber just as wanted, like pounds of tea out of a grocer's shop, because circumstances prevent us cutting it down otherwise than at certain seasons and in a methodical manner; and after all, neither the quantity nor the kind would enable us to compete with the timber merchant who buys when or where he likes so as to meet all demands. As a rule timber merchants have their own districts, and there is very often an understanding amongst them, but they are obliged to be reasonable as well, and I find that when properly treated they often take stuff the forester could not readily dispose of elsewhere. WOOD AGENT.

THE AUSTRIAN FIR.

I HAVE much pleasure in answering "Glendye's" further enquiries on this head, anticipating that by this time he has transferred his interest to *Woods and Forests* in its connection with THE GARDEN. I quite agree with "Glendye" that the examples of the Austrian Fir beating the Scotch Fir may be exceptional. No one has a better opinion of the Scotch Fir for general planting purposes than I have, but here it is second best. Our situation is inland, and just about equidistant from the German Ocean and the Atlantic. Being high as well, we are much exposed to north-east and easterly gales, which, when robbed of their moisture by travelling over the land, have a most destructive effect upon most coniferous trees, as everyone knows about here. Perhaps "Glendye" will hardly credit it, but it is a fact that some years about the month of April we could show him the evergreen *Cedrus Deodara* as destitute of leaves as the Larch is in winter. The leaves fall off some seasons altogether after spells of cutting east or north-east winds, which have a destructive effect on other trees as well. Neither here nor on any estate near is the common or Silver Spruce found in a healthy state. I do not know of one fair specimen within miles. So long as either have shelter from the north and east winds they grow well enough, but as soon as they overtop their neighbours they shrivel up. One sight of some of these would satisfy "Glendye." On a lofty ridge on our land the Scotch Fir was planted most extensively perhaps eighty or one hundred years ago, and now there is not one healthy specimen in the lot. Thousands of feet have been cut down for estate purposes—either dead or dying—and soon none will be left. This is on one of the loftiest and most exposed positions in Yorkshire, if we except the moors, but not higher than where the Oak once thrived and attained to giant dimensions, as exemplified in many old trunks still standing. In the case of young plantations, be the soil good or bad, the Austrian Fir has the best of it, especially after being transplanted when of good size. We have a large tract of Scotch, Austrian, and Corsican Firs growing on an elevated plateau, perhaps 1100 feet above the sea and fully exposed to the gale, and all are at present looking well, the Austrian and Corsican Fir particularly so, for the last is equally as good as the Austrian when it does take to the soil. Only the other day I was struck by the luxuriant appearance of these on a spot where deciduous British trees become mere scrub.

The fact of the matter is, we are all short of data about the habits of many kinds of trees that

are planted for ornament or profit, and it is only by an interchange of ideas on such subjects that we can arrive at any correct conclusion regarding them.

YORKSHIREMAN.

FORESTRY AND GARDENING.

As an attentive reader of *Woods and Forests* from the beginning and one interested in woodcraft, I much regret the necessity of its discontinuance in a separate form. Considering how many are interested in forestry directly and indirectly, and that, practically speaking, it has till very lately not been represented in the press by any organ of its own, one felt disposed to predict a successful career for *Woods and Forests*, and the lively and interesting nature of its correspondence has shown what a field of almost unexplored enterprise and industry lies before landowners and others interested in tree culture in this country, and that a journal like *Woods and Forests* is the great want of British arboriculture at the present time. Better half a loaf than no bread, however, and the arrangement to combine *Woods and Forests* with *THE GARDEN* has some compensating advantages. In the first place, such a journal will be handy for readers of all degrees. The gentleman or lady who happens to be interested in one subject, say gardening, will gradually, let us hope, become interested in forestry as well, and at all events both will see that the last is a subject well worth their attention, for it is a lamentable fact that forestry has been too much left to the woodman and neglected by the proprietor hitherto. In the second place the gardener and the woodman will be mutually benefited by rubbing their heads together, and I venture to think the advantage will be greatest on the side of the latter. My own opinion, and the opinion of a good many others to whom I have spoken on the subject, is that the woods on gentlemen's estates in this country have suffered by the attention bestowed on the garden—which has been kept too exclusively to itself, so to speak. Both ought really to be looked upon as one—regarded as pleasure grounds at least—for after all is said and done the flower garden would be nothing without trees and woods, which have an interest and grandeur wholly their own. The occupation of the forester is quite as ennobling and every way as interesting as that of the gardener, and has been regarded as an honourable occupation from time immemorial. For these reasons and for the reason of the importance of forestry in its other aspects, I hope it will receive that attention in *THE GARDEN* which it deserves. To excite the attention of proprietors to the subject, and through them the woodman, is the main need at the present time. It is a well known fact that the woods on many estates are neither well managed nor remunerative, while in many cases they are conducted at a dead loss. There are plenty of well-kept woods—that is, woods in nice order; but the ultimate expectations of the proprietors have not been fulfilled in regard to them, or, in other words, they will not stand being measured by a debtor and creditor's account. Our scientific forestry has not been paying forestry as a rule, and the reasons "why woods do not pay" are among the problems to be solved. Where to plant, what to plant, when to thin, how much to thin, when to fell, cost of transport of timber from woods to the market, buying and selling, the uses to which different kinds of timber are put, the demand, and a host of other matters—are all waiting to be investigated more or less, and to that end no more potent means could be provided than the public press. It would hardly be credited how much practical woodcraft alone has suffered for want of those means of interchange of ideas that have done so much for horticulture. The woodman, master and man, has been almost shut out from communication with his fellows hitherto. Hence there is not that uniformity of practice in things belonging to wood management that exists in gardening. In many instances customs and practices prevail that prevailed generations ago, retained not because they are good, but because no others have even been heard tell of, or that prejudice has been too strong to get them

uprooted. With the aid of *Woods and Forests* in conjunction with *THE GARDEN* we shall, however, hope for better things, and it will lie with owners of woods to take the initiative and do what they can to get their woodmen to take a more intelligent interest in their business. I would also like to point out how important it is for young gardeners to acquire a knowledge of forestry. There is no better qualification for a forester than the training of a gardener in the first instance. More than one excellent authority on forestry has pointed this out, and many gardeners have to undertake the duties of forester as well. A good gardener knows everything a forester ought to know, and more so far as relates to all the operations of planting, pruning, soils, plant life, and vegetable physiology, &c., and a little aptitude will soon enable him to master the mere routine of woodcraft. Hence it is, that although a gardener can undertake the duties of woodman, the woodman could not discharge those of the gardener. The best abilities of the woodman or forester are called into action principally in the laying out, planting, and management of plantations. If he can grow the trees, he will find the means of disposing of them when the time comes.

WOOD AGENT.

PLANTING RAILWAY EMBANKMENTS.

I HAVE been hoping to see this subject opened up in your paper, but as yet it has not been done. There are, no doubt, thousands like myself who are impressed with the desolate appearance of the average railway station-yard and embankment, and yet they have not sufficient taste or knowledge to suggest a good remedy. One thing is clear to me, and that is, it would be inadvisable to plant trees likely to become of sufficient size to endanger the safety of travellers by their being blown across the rails, but there must be in the list of our hardy trees and shrubs a wide range for selection without going to this extreme. In many cases beyond the result of pleasing the eye there may be a fair prospect of return on the outlay of planting. Take the case of the Larch, for example. Many railway companies are annually paying thousands of pounds out of their exchequer for this wood for fencing, and the supply is fast diminishing. Now, what could be more beautiful than belts of this graceful tree, with its lovely light green foliage?

A railway passes through every variety of soil; therefore the companies have an advantage in this respect that no one else possesses. The Larch is not particularly fastidious, so long as the soil is deep and porous and well drained. These conditions would in the great majority of cases apply to waste railway lands, and they would also have the advantage of not being before used for growing a coniferous tree. To my mind the Larch to commence with has a great claim to attention from the railway authorities. Let us hear what your readers say, and what other trees or shrubs they can suggest to relieve the existing desolation.

D. J. YEO.

LIGHT AND AIR IN WOODS.

THE writings of practical foresters all allude to the importance attached to what is called the free circulation of air in woods. It may not be useless to examine the grounds on which this question of air circulation rests. In the first place, let us state the question in the words of your correspondent, Mr. Coupar, who, in writing on the subject, says: "In the centre of a wood, if moderately close, it will be found that the bark is very much thinner, because of the want of air and light, which are so important to the free exercise of the functions of the bark." The bark consists of three layers, and acts first as a protective covering to the cambium or wood-forming layer; and, secondly, the bark is the principal medium for the descent and distribution of the sap which has been under the influence of light and air in the foliage. It is the last layer or endophloeum, as it is called, that is in contact with the sap. From this layer light and air are excluded by

another. Though it is impossible to exclude air from a tree, it can avail itself only of an amount of air commensurate with the superficial area of its leaves, and the removal of its nearest neighbour does not at once enlarge its breathing area; consequently does not increase its demand upon air. The removal of contiguous trees no doubt admits of a greater movement in the air, but the argument for a free circulation of air is not obvious; on the contrary; and as a matter of fact, the evils resulting from such a circulation of air are great. Then we cannot admit into a plantation a rapidly moving current of air without also admitting much light, and this doubtless is opposed to the growth of clean timber. A tree's branches partially excludes the light from its stem, and what the branches of an individual tree do mechanically, proximity of others does for each in a mass. It is the opinion of some of our most practical foresters that if the admission of light in a plantation was well managed, the circulation of air might be left to manage itself; and certainly when one considers the important changes which light can produce in the form and character of a tree, its importance in the economy of tree growth becomes at once apparent. When light is properly regulated in a plantation, timber grows without the necessity of pruning. Only close order among trees admits of light being properly regulated; in other words, the power to regulate light consists in the means to exclude it to some extent. I am aware that books on forest management impress the necessity of a free circulation of air in woods, but, considered from the standpoint of practical forestry alone, it is doubtful whether all that has been written about it is of much value.

THOS. WILSON.

Edinburgh.

TIME FOR FELLING OAK.

THERE was enquiry recently in your pages respecting the proper age for felling Oaks. This query cannot be answered in a few words, and it is necessary to know the circumstances of the case. Does the enquirer mean to ask the period at which Oaks shall have come to their maturity, and are no longer improving as timber trees, or does he mean at what age Oaks should be cut down, so as to make the best return in point of profit? In either case it is not easy to give a precise categorical answer. To take the first case, it should be remarked that Oaks, like all other trees, vary exceedingly in their growth, according to soil, situation, &c. Consequently, some will come to maturity much sooner than others, and will attain, in a given time, to a much larger size.

No one fixed period, therefore, applicable to all, or even the generality of cases, can, as I conceive, be accurately determined at which these trees shall have arrived at perfection, as this must differ according to circumstances. Without laying down precise rules, a practised eye will be able readily to decide when a tree is ripe for the axe; in other words, when it has come to its best. There will be no longer any vigorous shoots in the extremities (in woodman's phrase, "no twig"), but instead a curling or crinkling of the spray or terminal branches, with scarce any perceptible growth; dead branches or small arms will occasionally be seen towards the top, &c.; and, above all, there will be a tightness—a contraction—of the bark on the stem of the tree; i.e., the bark ceasing to expand will, of course, no longer exhibit those light red or yellow perpendicular streaks in its crevices which are a certain proof of its expansion, and of the consequent growth of the wood beneath. If the woodpecker has been busy about a tree, it is a sure indication that it is time, and more than time, to fell it, for this bird never attacks a perfectly sound tree, though often unjustly accused of so doing. But, as already said, an experienced eye will at once perceive the state and condition of a tree without minutely attending to these and the like particulars.

As to the enquiry "at what age Oaks should be cut down so as to make the best return in point of profit," the answer to it involves matter of nice and complicated calculation, besides that much

will depend on the demand for timber of this or that particular size and quality in each neighbourhood respectively. It is proverbially said that "an Oak tree is a good banker;" but I have some misgivings as to the truth of that position. The Oak is unquestionably a tree of slow growth; and hence it is proverbially said again that "a Withy will buy a horse before an Oak will buy a saddle." It is held by some as an established maxim that if an Oak were to be cut down when it was worth a pound, and the money put out to interest, it would produce a much larger sum than the tree would sell for when arrived at maturity. This may probably be very true; but then, were such practice universally adopted, it is evident there could be no large timber grown—nothing but mere poles; and what a woful deficiency would ensue of fine ornamental Oaks! If your correspondent could ascertain the period "at which the increase of a tree becomes so small as that it would not pay the annual interest of the sum which the tree would sell for," and, having satisfied himself on this point, should forthwith proceed to cut down all the delinquent (*i.e.*, unprofitable) trees, I greatly fear he would commit sad havoc on his estate.

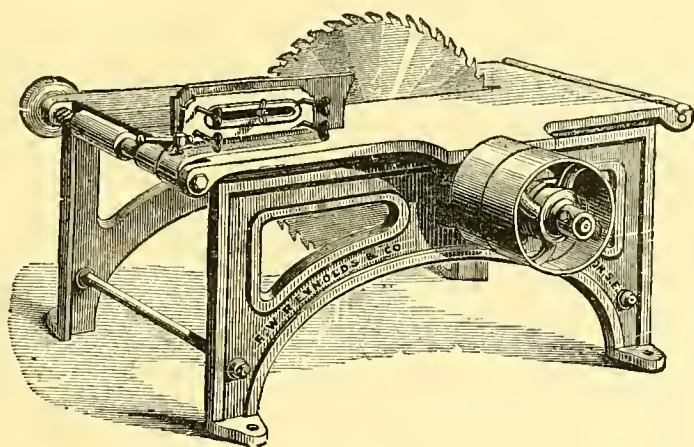
The proper management and nursing of timber require some judgment and attention, of course, and more knowledge of the subject, as well as

a succession of young trees, which would have been certain to spring up in their room, according to that just, though homely, adage of our provincial woodmen, "cut wood and have wood." I could point out instances of woods which are absolutely going to ruin for want of thinning, and out of which the present owners might enrich themselves and at the same time benefit their successors. The subject of a succession of trees in woods is not enough attended to. It will perpetually happen that a thriving tree—one that is "paying money" (as the phrase is)—must yet be sacrificed for the sake of some four or five, or perhaps half-score, young saplings which stand around it, and which, of course, will be entirely spoiled by the overshadowing branches of their usurping neighbour, if the latter be allowed to remain for another term of ten, twelve, or more years. In cases like this, therefore, there is scope for the judgment and discrimination of the forester; and I admit that it is often not a little painful and perplexing to come to a decision.

FOREST MACHINERY.

THE PUSH BENCH.

THE annexed illustration represents a small bench adapted for the lighter work of converting partly-



The Push Bench.

more taste, than perhaps most proprietors are possessed of. Doubtless, near a man's residence, profit must, in numberless instances, be sacrificed to ornament, shelter, &c. Ancient venerable trees form the noblest appendage to an estate, and one which, indeed, it would be sacrilege to destroy. Trees, too, of extraordinary beauty, or those presenting any remarkable peculiarity of growth or singularity of conformation, should, of course, in all cases as far as possible be preserved as curiosities. At the same time, with regard to woods—woods, I mean, designed principally for profit—there can be no question but that the prevailing fault with most proprietors is that of being too sparing with the axe, leaving too much and allowing Oaks to remain long after they have ceased to remain with profit. A landed proprietor very naturally and properly wishes to encourage the growth of Oak timber on his estate; accordingly, when a wood is to be cut, directions are given to the bailiff, or perhaps even to a common labourer, carefully to preserve the Oaks; and the consequence is, that trees of this kind are spared time after time which do not increase one shilling in value by the time the wood comes round to be cut again, a period, it may be, of from ten to fourteen or sixteen years. Now, the evil of this system is twofold; first, there is the positive loss to the proprietor of the interest of the money which the trees would have sold for had they been felled; and, secondly, what is far worse, by allowing them to encumber the ground, a stop is put to

sawn logs or small sizes of round timber into their final shape. As in the case of the larger bench, there is an almost infinite variety of these benches made, and the majority can claim to answer the purpose for which they are especially intended, but for the purpose of our portable forest mill, we do not know of any better than this with which we are dealing. It is constructed in a lighter manner than those benches intended for continual work and high speeds, and can therefore be readily moved from place to place as required. It can easily be fixed by means of four coach screws to a floor of two transverse deals or pieces of scantling wedged into the ground. The fence plate is made to cant to any angle for feather edging, and can be turned off the table for cross cutting. This latter is a very convenient feature, as by this means it becomes available for cutting up firewood; a vast quantity of this may be prepared in a very short time. There is also a fine screw adjustment, by means of which the distance of the fence from the saw may be regulated with the utmost accuracy. The table is fitted with a roller at each end to assist the wood on and off. This is manufactured by Messrs. F. W. Reynolds & Co., of Acorn Works, Blackfriars Road. The same firm also manufacture a bench of a stronger build, fitted with improved pulleys, of which the speciality is that the loose pulley is made smaller in diameter than the fast, having a bevelled flange on the side towards the fast pulley to guide the belt easily from one to the other. It is claimed

that this management, by slackening the driving belt when on the loose pulley, saves considerable wear and tear to the bearings of the spindle. The tables are slotted to take saws up to 30 inches and 36 inches respectively.

HOLLOW V. SOLID SHAFTING.

A SHAFT made in the shape of a tube is said to be stronger than it would be if made of a solid bar of the same dimensions. From this, however, it does not follow that a solid shaft is increased in strength or better prepared to stand a sudden twist if a portion of the material is bored out along its central line. Frequently workmen entertain the idea that the core of an axle or the bearing of a shaft is a hindrance in the way of strength, and is one of the reasons for making them hollow; this is not so, as it is merely the arrangement of the material that improves its strength. Boring out a solid shaft lessens both its weight and its strength, but the material is removed from the portion where the least resistance is offered; therefore the loss of weight is greater than the loss of strength. The particles on the outer surface are tested to their utmost when those in the centre barely perceive any action at all, and from this line to the circumference they are gradually being brought into use until those on the outside are ready to break apart when the limit of strength is reached. In tests that have been made results have shown that the weight may be reduced sixteen per cent. by boring, whilst the strength would not be lessened by more than one and a half or two per cent. The success of many designs lies in so arranging the material that where any fracture is likely to occur, as much metal may be used as is likely to be wanted to stand the increased strain.

D.

PESTS AND DISEASES.

DESTROYING THE PINE BEETLE.

(HYLURGUS PINIPERDA.)

A RECENT correspondent in *Woods and Forests* states he has had his young Pines attacked and thousands of his largest and healthiest trees bored and destroyed by these tree pests, and asks if anyone can suggest a cure other than the drastic remedy of burning all the trees of the Pine tribe in the nursery and getting a new lot of seedlings from some distant nursery. Your correspondent's best plan is to trap the insects, and as next month (April) is the proper time for doing so, he had better procure some recently-felled Scotch Fir poles, not of too large a size for the sake of convenience, say about 8 inches in diameter; these should be laid down in three or four different lots of about a dozen poles in each lot convenient to the nursery. About the beginning of April the beetles pair and leave their present quarters in search of suitable trees for breeding purposes; and as the poles left in the vicinity of the nursery are suitable for their purpose, it is more than likely that they will be attracted to them for a breeding ground. The forester should examine the poles occasionally, and when he finds that the insects have taken possession and engaged in excavating their subcortical tunnels below the bark to deposit their eggs—which can easily be known by removing a small portion of the bark, or by observing the matter brought to the surface by the insects in the course of making their burrows (this matter has the appearance of fine sawdust lodged in the chinks of the bark)—he should then collect a lot of dry branches or rubbish of any kind that will burn freely, and place it in a regular manner over the whole surface of the poles and set it on fire, and by the time the stuff is consumed the beetles will be destroyed. The poles can then be removed and used for estate purposes. Hand-picking is sometimes resorted to, but this a troublesome and expensive plan; besides it is like "locking the stable after the horse is stolen," for the mischief is done; the parent insect should not have had a chance to breed.

Your correspondent says that he is at a loss to know how the beetle first got into the nursery, as

there are no Fir plantations within two miles of it, and he has not observed any beetles in the plantations on the estate. The plantations may be perfectly clean and free of beetles, yet these insects fly about in quest of suitable trees where they may propagate their species, and I know from personal experience and observation that one great source of danger lies in using Fir poles for fencing purposes without removing the bark. In thinning young plantations, farmers and others often purchase such thinnings for fencing and a variety of other purposes about their farms, and as they are seldom at the trouble to remove the bark, the beetle soon finds the fences, and as they are in prime condition for their purpose, they at once take possession, and there they multiply their species below the bark in thousands without ever being suspected or attracting the least notice. In the erection of fences of this sort the bark should be removed in order to prevent these pests from using them for such a purpose, and it would also be advisable as a precaution to remove the bark from such poles as were to be sold and used by farmers and others in the locality, charging them a little extra in price in order to cover the cost of the additional labour. The fact is when these beetles once get established on a property and no proper means are used to eradicate them, the consequences are often of a very serious nature indeed, so that the cultivator will require to have all his wits about him, as he will find he has a very active enemy to contend with.

J. B. WEBSTER.

THE CAUSE OF ROT IN LARCH.

IN the various communications to *Woods and Forests* relative to this subject nothing satisfactory seems to have been discovered. I therefore venture my opinion, which is, that this decay proceeds from the too rapid growth of the trees when young and from their very slow growth when aged.

When Larches and Spruce Firs are young they grow often rapidly, and the wood formed at that period is very porous both in the trunk and roots. As the trees advance in age the supply for their growth is less, from the soil being greatly exhausted, and often from the trees not having been thinned out in proper time. The outer case of wood then formed is less porous, and becomes in time too compact to admit air to the early formed wood within. This latter being of a coarse grain, the dry rot begins to infect it in the same manner as it attacks wood which has been painted in a green state, the paint excluding the air from the inside wood.

The decay in the trees goes on more or less rapidly, according to the grain of the wood. It ascends the trunk and makes its way along the roots; at least those first formed which have become the conducting tubes to the trunk from the smaller roots and fibres. As the disease advances, the sap collected in the fibres passes with difficulty through the decayed conductors to the trunk, and the trees become sickly, although the small roots and fibres where the sap accumulates are healthy. As further proof that decay proceeds from too quick a growth, the trees that have grown beside decayed ones, but happened to grow slowly, have been found sound; and it may often be observed in trees partly decayed that it is the quick growths in the trunk that are rotten. Decay may, in some cases, have proceeded from other causes; when trees make unusually large growths, such wood cannot last long.

IS SOIL THE CAUSE?—The supposition that the soil is the cause of rot is in a great measure correct if climate be taken in conjunction with soil. It is a common observation that a tree has got down to a soil which it does not like. If the soil were in fault, the wood grown then would be bad, whereas in reality it is the best. The error lies in the supposition that the decay proceeds in age from soil and climate, but its foundation is actually laid in the youth of the tree. In proof of this, it is a known fact that trees grown in cold and barren situations are always sound. Their growths are small, and the wood in consequence is durable.

The best and soundest Larches have been grown among rocks. When planted there was hardly soil enough to cover the roots, but the foliage annually falling and decaying in the crevices of the rocks formed sufficient soil for them, and the supply increases as they advance in age. As these trees must have made strong growths, they may appear to offer a direct contradiction to the above statement, namely, that overgrowth in youth and undergrowth in age combine to cause the rot. It may be alleged that trees grow thick together in their native forests, and yet produce the best wood. This is true, but it must be remembered that the trees are in their natural climate, which is much colder than ours, and of course make slow growths. Those made while the trees are young are often the smallest, reversing the growth of our climate, where the trees that have grown quickly when young are often starved in their aftergrowth. This is not the case in natural forests, where trees find abundant nourishment from the mass of decayed vegetable matter which falls from the trees and is not swept away like that in artificial plantations.

THE PROBABLE CAUSE.—From the rot being more prevalent now than it was formerly, it has been supposed that the trees are of a different kind from those first planted. This I do not believe; but if it were true, it is not probable that they were natives of colder regions than those first planted here, and if so, they would not produce wood of coarser grain or more likely to decay. If there are some varieties raised in this country from the original stock, they would be more likely to become naturalised here, and would perhaps stand better than the original trees; yet it is a well-known fact that some of the progeny of the ancient trees have been infected with the rot. The question then is, how comes it that the disease has been on the increase of late years? One thing to be considered is, that there have been more trees planted, especially Larch trees, and less care has been taken of them than formerly. The trees are often left thick together to form cover for game; the soil in consequence soon becomes exhausted, and the thinning at last comes with a vengeance, but too late. Another question is, why Fir trees die when they become hollow, whereas many other trees live to a great age as hollow as a drum? The case of the Firs is, however, different from that of their hollow neighbours, their disease being internal, both in trunk and root, while other trees often grow hollow from some external injury to branch or trunk, which does not affect their roots, so that they often grow vigorously while their rind and bark continue sound.

If I am wrong in the opinion that the rot proceeds from the external wood excluding the air from the heart or inside of the tree, at least there can be no doubt that the seeds of decay are first sown by too rapid growth; and little do planters think, when they admire the rapid growth of their Larches, that the young trees are carrying in their trunks the foundation for heart rot.

OLD FORESTER.

PRUNING IN CLOSE AND OPEN WOODS.

THE most economical plan of rearing coniferous trees for profit is to thin them in such a way that the trees will prune themselves, and in the interior of a plantation this can always be done without drawing the trees too much up, and fine clean stems may be produced without knots or blemishes of any kind, a fact which every experienced forester will endorse. Trees, however, growing in isolated positions and along the margins of plantations should have the side branches cut off as soon as they begin to decay, otherwise they will become as hard as a piece of bone, and as they retain their position for many years the newly-formed rings of the wood gradually close over such pegs and produce a loose knot in the timber, which falls out when cut up and seasoned, thereby much lessening its value.

In thinning young plantations on exposed situations, I have occasionally stem-pruned trees as were intended to be removed in order to give more space to those to be retained, and thus pre-

vent sudden exposure; and in after years while cutting out and removing such trees, I found that they had not only made less wood than such as were unpruned, but likewise were deficient in roots, and the stems too cylindrical in shape, and altogether wanting in that stamina and vigour which is so desirable in all sorts of trees in early life. When the side branches of Larch trees have lost their vitality they sometimes remain on the tree for a considerable time, and in such cases these may be broken off with advantage, and in cases where the trees have been grown as nurses for hardwoods, I have even occasionally removed live branches of the former to give more space to the latter without any bad results; but to say, as some writers do, that coniferous trees, as a general rule, should be stem-pruned, only "leaving three tiers of branches at the top and four tiers on exposed situations, until sufficient length of stem is obtained," is advice which I fear few will follow.

J. B. WEBSTER.

RATIONAL CULTURE OF TIMBER TREES.

THERE is an old proverb, "In the number of counsellors there is safety and wisdom;" but I think had the writer lived in these times he would perhaps have given us a second edition, more in keeping with the times, by telling us that in the number of counsellors there is confusion, particularly with regard to the treatment of timber trees for profit. A recent writer on this subject commences an article on the rational treatment of timber trees by telling us that "it has been contended by some that a well-prepared soil and good culture occasion a too hasty growth, and, consequently, the deterioration of timber, and by others that the fibre of the wood is strengthened by a vigorous growth, and that the best culture will, with a suitable soil, give the best timber." The writer, however, considers that neither of these opinions is entirely correct, and then gives us the benefit of his own, by telling us that in every case, for the rearing of the best sorts of deciduous forest trees, a preparation of the soil by trenching is to be preferred where practicable, and the liberal use of the hoe, and even shallow digging in the winter for three or four years after planting, will much benefit the plants. That trenching the ground and the liberal use of the hoe to stir the surface and keep down weeds for the first three or four years after planting will be of great service in giving the trees a good start, no one will deny. In the formation of ornamental plantations, whether in groups, belts, or masses, and where economy is only a matter of secondary importance, such a system of management is highly commendable; but for forest trees planted for utility and profit, I fear there are but few who will follow this advice; the writer should have given figures based upon experience, giving a clear account of the profits derived by such a system of management.

In the first place, ground cannot be trenched for less than about £8 per acre; then if we add cost of draining, fencing, planting, and price of plants, say other £8, or £16 per acre at the start, then we have the cost of digging in winter and hoeing in summer for the first three or four years, all of which put together would amount to some £20 per acre as the cost of the formation, and before the trees can be said to be thoroughly established in the ground. Such a statement would deter any landowner from ever attempting to plant his waste land and improve his property. Landlords, however, are pretty well acquainted with rural affairs, and would doubtless take such statements and advice at their proper value.

J. B. W.

Weakly Scotch Fir and Spruce.—We can find no trace of disease in the plants you send, neither do they appear to have been at any time affected by insects or other pests. It is our opinion that they were transplanted direct from the seed-beds without having been previously transplanted in the proper way. We think they will soon grow out of their present condition.

"This is an Art
Which does mend Nature : change it rather : but
THE ART ITSELF IS NATURE."—*Shakespeare.*

HARDY CYCLAMENS.

HARDY Cyclamens, a lovely class of plants, are not so popular as the Persian kinds are, but they only require to be better known to at once take a foremost place amongst hardy garden flowering plants. Anyone who grows alpine or rock plants will find Cyclamens a valuable addition to them, and if after being planted they are not disturbed, they will produce fine masses of flower in autumn and spring. They may also be planted in masses in borders, where they look well, but for my part I like to see them in some half-shady nook, where, if kept free from weeds, they soon make a grand display, their lovely flowers being of various shades of colour, set off to advantage by luxuriant foliage, in some instances of the deepest green and in others beautifully marbled. Cyclamens belonging to the class under notice do well in many kinds of soil, provided it is not too stiff; a light loam mixed with leaf-soil suits them well, as does also peat, but of the two I would recommend the former. The true Atkinsii type contains many shades of colour between white and crimson and purple; and in *C. macrophyllum*, which should be in every collection, we have a charming kind that bears large bright rosy-coloured flowers, and its foliage is very large. The following kinds are also all well worth attention, viz., *C. Clusii*, *C. Coum*, *C. europæum*, *C. hederæ-folium*, and *C. repandum*. These and the various forms of Atkinsii will make a good collection of these charming flowers. People even who possess no glass need never be without flowers all the year round. They have only to make a start and no fears need be entertained as to the result. Those who would like to grow the hardy Cyclamens just named should, I think, obtain them in pots. If planted now they will soon make good plants, and the kinds which bloom in autumn will produce some fine flowers this season. If retained in pots, too, good results may be obtained therefrom by plunging the pots in ashes during the summer months, and placing them inside the greenhouse or cold frame in the autumn; still, they look best when planted out.

W. C. LEACH.

Stamford.

IMPROVING MOSSY LAWNS.

ALTHOUGH it is now getting rather late for laying turf, it is a capital time for sowing Grass seeds and improving patchy or bare lawns, which ought also to be cleared of Moss and weeds. A good way of getting rid of Moss is to give a dressing of freshly slaked lime, which may easily be put on by mixing it with fine soil that is a little damp. The two can be scattered over the surface regularly, and rubbed in amongst the Grass with the back of a rake. After the lime has been on a few days the Moss will turn rusty, gradually dry up, and shrivel away. Moss may also be eradicated by means of an iron rake, which will tear it up and prepare the surface for seed sowing, which should be done as soon as the Moss is swept up and cleared away. The seed should be covered slightly by giving a top-dressing of fine mould to keep birds from picking it up and induce germination. As soon as the young plants show themselves, the lawn ought to be rolled, but it is necessary to do this when the surface

is a little dry, or it will become crusted and hard, which is bad for the Grass. As to seeds, lawn mixtures, consisting of small growing grasses, are the best for the purpose, and yet some save and use seeds from mangers, with the result that the lawn gets filled with the coarsest of weeds. In cases where these prevail they should either be spudded out or burnt up by applying a drop of vitriolic acid to each, which is a quick way of extirpating them. Have a little in a large-mouthed bottle; in that dip a stick and just touch the crowns of the weeds with it, after which they turn black and soon die. If a new lawn has to be made, the mode of procedure should be to dig over and thoroughly level the ground, afterwards tread and rake it in order to get an even surface free from all stones, then sow the seeds and rake them in. If this is done at once, the first shower will bring them up, and it will not be long before a fine sward is obtained.

S. D.

Notes from Baden-Baden.—The weather, though we have had many fine bright days, has been, notwithstanding, unfavourable to the development of vegetation, and plants are on the whole backward. *Tecophylæa* is most beautiful just now, and I have in flower a very fine violet variety. The late Mr. Nelson, of Aldborough, raised a very fine variety of *Iris reticulata* which he called major. It has flowered well here, and is a very distinct and desirable variety, not so much from its size, for among my own I have fuller and larger flowers, but from the peculiar shape of the falls, which in the typical form are narrow and bending downward at their broadest end, whilst in the variety they are spreading, and thus present to the eye a very large surface. Among my seedlings some have shown an almost black-maroon colour. The original *Anemone stellata alba* I have by repeated sowings much improved in colour, which is now a pure white; *Aubrietia tauricola* is the dwarfiest and most floriferous species; the colour is likewise very good, a bright blue with a purple tinge, contrasting effectively with *Aubrietia deltoidea* Leichtlini, with bright crimson-lake coloured flowers. In *Primulas* of the Scott Wilson race I have made a good approach to pure blue. *Fritillaria bucharica* deserves a place even in a select collection; the flattish cup-shaped corollas are white.—MAX LEICHTLIN.

New Imantophyllums.—Seeing what the old *I. miniatum* was a few years ago, it is nothing less than remarkable that it could have been improved in such a short time as to have yielded such numbers of beautiful varieties as may now be seen at the present time. We have to thank our Belgian friends for a good deal of this *Imantophyllum* improvement, for they have for some years past been indefatigable in raising new varieties, although they had such scanty material to work upon. Whether they have confined their attention solely to the old *I. miniatum* is not clear; some are under the impression that the bright colours which they have now managed to infuse into their latest productions have been derived from intercrossing with *Clivia nobilis*, which has smallish flowers, but of a much brighter colour than *I. miniatum*. In view of the growing popularity of these plants in this country, Mr. B. S. Williams turned his attention to them a few years since and formed a collection of all the best varieties procurable, and also began to raise new varieties himself, until now he has by far the finest collection of varieties in London. So large is his collection, that it occupies a large span-roofed house, and as most of the plants are in bloom, the house is gay with colour. There are now about a dozen distinct varieties, which form the cream of the collection. The finest of these in point of colour is named General Gordon. It is by far the brightest yet raised, and not only is the colour so rich, but the trusses are massive and the blooms well formed. *Lindeni* is another new sort remarkable for the perfect shape of the flowers and huge spike. Marie Reimers, though now several seasons old, is still among the best for colour. Ambroise Verschaffelt has a large

and dense spike, while the flowers, though not brilliant, are of admirable shape. M^{me}. Van Houtte, *aurantiacum*, *cruentum*, and *robustum* are other very fine sorts, and the latter is particularly noteworthy on account of its being, as it were, the foundation of the massive spiked sorts which have lately appeared. Among Mr. Williams' seedlings there is one which for brightness of colour eclipses all the rest, but it lacks size and form of flower. It is between Marie Reimers and *intermedium*, the latter giving it the colour, the former the size. Mr. Williams is sanguine of producing a large and finely formed flower of high colour now that he has obtained the "break" from the original orange-red, the colour of his seedling being more of a scarlet. The great want in *Imantophyllums* now is variety of colour, and could this be obtained we should have a still more valuable class of plants for the cool greenhouse in spring than they are at present.

The Chionodoxa best in stiff soil.—From time to time complaints arise against the admiration expressed for this new Scilla-like plant. It would be interesting to know if the writers of such notes stated if their soil was light and sandy or strong soil verging on potters' clay. For really heavy soils I venture to think *Chionodoxa Lucilæ* the best addition to early spring-flowering bulbs that has been made for many a long day. On light and sandy soils it does not seem so desirable, and in several instances has looked washy and inferior in colour and beauty under such conditions; hence I imagine those who depreciate this gem have not had to struggle with a heavy, cold soil, that is death and destruction to many a spring bulb, but in this case gives a vigour and colour to it that is simply wonderful when three-year-old clumps are in full beauty. A singular feature of this plant is the different blooming time of individual bulbs. In one clump the finest bloom opened on February 28, and in that same clump fresh leaves and flower-buds are still pushing up, which bid fair to continue blooming for ten days into April.—E. H. W.

COLOUR IN FLOWERS.

TO THE EDITOR OF "THE GARDEN."

SIR,—It sometimes occurs to me that there are occasions on which the correspondence between individual horticultural amateurs may have interest for others of the brotherhood. The following letter is an answer to a friend, who, seeing my praise of *Chionodoxa sardensis* in a late number of THE GARDEN, is still somewhat unwilling to believe that it deserves such good words, though he admits that he has not as yet grown it very well. My friend also takes me to task for recommending *Iris tuberosa* as an interesting and beautiful study of colour. As I have had many inquiries about *Chionodoxa sardensis*, and as the question of colour in flowers is often coming forward, you may think the letter worth printing:—

"Dear Mr. —,—Though you do not agree with me about *Iris tuberosa*, I think there can be no two opinions as to the beauty of *Chionodoxa sardensis*. N.B.—I believe *sardensis* is an unscientific name. I heard Mr. Baker say lately that no specific distinction was recognised in *Chionodoxa*; however, from a garden point of view, they are decidedly distinct. To return to the question of colour in *Iris tuberosa*, which you dismiss 'offhand as a 'dull-coloured' (underlined), 'ugly curiosity' (doubly underlined). If you have a copy of Ruskin's 'The Two Paths,' read appendix v. at the very end of the book, where you will find as the heading of the last paragraph, 'The finer the eye for colour the less it will require to gratify it intensely.' Probably you have given no pains (few people have) to delicate eye-training in the matter of colour, rather rejecting at once all flowers that do not come up to a certain standard of even brilliancy of positive colour. This liking for positive colour only is the æsthetic view in the true sense of the word as distinguished from the artistic, which I hold to be the higher, the latter, when acquired, being certainly the more delight-giving, though it by no means excludes the simpler form of enjoy-

ment of brilliant colouring, such as is shared by less trained eyes. Please note that I have no sympathy whatever, but on the other hand nothing but unqualified detestation for the totally sham and false liking for dull colours that has infested most of the educated classes for the last few years, and for the extreme nonsense that they have talked and acted about it.—Signed, G. J."

This curious rage for dull colours appears to have originated in persons who pretended to have a delicate perception of colour, or in ignorant imitation of those who had. Presently the false taste spread and it became a fashion. A demand arose which created the supply of a class of product which might be called shop art. This in due time was discharged into houses, to their gloom and confusion. Possibly nothing so foolish has infected educated people since the false and pretended estimation of *esprit* and mental acquirements that raged in Paris more than 200 years ago—a state of things so finely scoured by Molière in his "Les Précieuses Ridicules."

I trouble you with this explanation because nothing is commoner than to find people, other than trained artists, confound the sincere and reverent admiration of such wonderful colour-harmonies as are found in *Iris tuberosa* and *I. persica*, and indeed all sections of the *Iris* family and hundreds of other modestly-coloured flowers, with the pestilent and ignorant gloom-worship just described.

G. J.

PLANTS IN FLOWER:

Rhododendron Mrs. James Shawe.—Mr. H. Glover sends from Orrell Lodge, Wigan, some trusses of a lovely white-flowered *Rhododendron* under this name. It was raised by Mr. Davies, of Ormskirk, who has originated and distributed other beautiful varieties, such as Countess of Sefton, Duchess of Sutherland, and others. The flowers of the Mrs. James Shawe variety are smaller than those of either of these, but are pure white and delightfully scented. For greenhouse decoration at this season it is most valuable, and particularly for cutting from.

Acacia affinis.—I send you a branch of this beautiful yellow *Acacia* from a tree here fully 30 feet high, and which is covered with bloom from top to bottom. It is almost hardy with us, only having been cut to the ground by frost once in some twenty years. After being so cut down, a number of suckers came up; two or three of these were left. These now form a mass fully 30 feet high and 20 feet through.—W. SANGWIN, *Trelisick, Truro*.

* * This is the same *Acacia* that has been so common in the flower shops for some time past, having been imported largely from the south of France, we believe. The flowers are bright yellow and the foliage silvery, but the leaflets are not so broad as in *A. dealbata*, neither are they so silvery. The fact that it grows so large at Truro indicates the mildness of the climate in that district.—ED.

Rhododendron Dennisoni and Williamsi.—Amongst numbers of greenhouse *Rhododendrons* we have lately seen none has pleased us so much as *Dennisoni*, which in our opinion is one of the loveliest of all. Its chief beauty lies in the contrast of the pure white expanded flowers with the buds, which are of the most delicate shade of rosy pink. The flowers are not large, being only about a couple of inches across, but they are borne in big clusters, and as they open a few at a time one may always see the lovely buds with the full-blown flower. The scent, too, is delicious. It is, moreover, unusually floriferous, hence a capital one for affording cut bloom. It is now in great beauty in Mr. B. S. Williams' nursery, at Upper Holloway, where there is now a large house devoted entirely to these greenhouse *Rhododendrons*, which are fast rising into popularity. Among other beautiful kinds with which this house is filled there are in bloom the noble *R. Dalhousianum*, one of the finest of the Himalayan species.

It has huge clusters of bell-shaped flowers of a creamy white hue. A new variety which will be distributed from this nursery this year is one called *Williamsi*. It is a hybrid between *R. ciliatum* and another presumably *R. ponticum*. The flowers are small, but are gathered in large dense clusters. The remarkable point about it is that when first opened the flowers are decidedly pinkish, but in a few days this colour quite disappears, leaving the flowers snow-white. It will therefore prove an invaluable variety for cutting from for bouquet and wreath making. As every twig bears a truss of flowers, it affords a plentiful supply of bloom. Among other large varieties in flower are *R. Veitchi*, *Gibsoni*, Countess of Haddington, and among the Javaese class the brightest coloured is *Duchess of Edinburgh* with deep crimson-red blooms.

Erythronium grandiflorum.—This Californian Dog's-tooth Violet is among the prettiest of spring flowers. Though not particularly attractive in colour, the flowers possess that refined form which is so much admired. They are turban-shaped, and each petal reflexes elegantly. The colour is a soft sulphur-yellow with just a dash of brownish red in the centre. Three or four flowers are borne on the strongest stems, which rise some 9 inches or 12 inches high; the foliage, too, is prettily mottled. It is now beautifully in bloom in the Hale Farm Nursery, Tottenham, where many rare and interesting spring flowers are in bloom, among them being some rare *Fritillaries*, such as *F. oranensis*, *lanceolata*, *lilicea*, and others.

Flowers from Hill of Howth.—"St. Brigid" sends a gathering of open-air flowers from her wind-swept hillside garden. Among them are sturdy Daffodils, vivid scarlet Anemones, some uncommonly fine stems of *Chionodoxa*, each bearing about a dozen flowers, and some charming Primroses of all shades of colour. The finest of the Daffodils is the true *Irish maximus*, whose large bright yellow flowers eclipse those of all others in the same class. There is also the giant *Sir Watkin*, or one very similar to it and apparently quite as big. The *Campanelles* and *Tazettas* are also good, and the scarlet Crown Anemones, both single and double, are larger than any which "St. Brigid" has hitherto sent us.

Acacia lineata.—Among the vast number of *Acacias* now in flower this is one of the best for growing in small pots; it forms neat little bushy plants that when not more than a foot high are quite a mass of bloom, while many require to be grown into large specimens before they show themselves off to the best advantage. The leaves are narrow, while the flowers resemble tiny golden balls. For greenhouse decoration at this season it is invaluable, and under ordinary treatment it will last a long time in perfection. The rich golden tint is very distinct from, and more attractive than, the paler blooms of the better known *A. Drummondii*.—T.

Lachenalias and Hoop-petticoat Daffodils.—We send you a few spikes of our *Lachenalia versicolor* which is now in its glory. The plants average 23 blooms on a spike, are very easy of culture, and last a long time in flower, both on the plant and in a cut state. We value them very highly for supplying cut blooms, their delicate, bell-shaped flowers of a green and yellow colour being well adapted for bouquet making or for vase decoration. We also send a few blooms of the beautiful Hoop-petticoat *Narcissus* (*N. Bulbocodium*), which is just commencing to flower. Should the weather continue to favour them, they will look grand in a week or two.—HUBERT & MAUGER, *Doyle Road Nursery, Guernsey*.

* * The *Lachenalia* appears to be a finely coloured form of *L. luteola*, but longer in the spike and more floriferous than that kind. This, however, may be due to good culture. The *Narcissus* is *Bulbocodium* conspicuus, than which we have never seen finer blooms, the cups being 1½ inches across and of a clear glowing yellow. A bed of it must be a fine sight.—ED.

A good white Lilac.—Among the many kinds of Lilac suitable for forcing early, *alba virginialis* has the reputation of being the best of the single whites. We saw it a few days ago in Mr. B. S. Williams' nursery, where it is considered to be the best for that purpose, and the fact that plants of it are sold as soon as the flowers open shows how popular it is. The flower clusters are large, and being snow white they contrast charmingly with the tender green of the young foliage.

Double Sparmannia.—The much-talked-of double flowering variety of *Sparmannia africana* may now be seen in bloom in Mr. B. S. Williams' nursery, Upper Holloway, where there is a large standard specimen of it in the cool *Rhododendron* house. This variety differs in nowise from the original except in the flowers being double. These are borne in the usual clustered manner, but instead of the tuft of yellow stamens the whole flower is made up of narrow white petals. Hence they look like tiny white rosettes gathered together in clusters. This cannot fail to become popular, particularly for cutting from, as the flowers are so pure and endure a much longer time than those of the original. As this plant is large and is developing numerous flower clusters, it may be in beauty for some time to come.

Hardy plants at Hurworth Grange, Darlington.—The following flowers were in full beauty on April 1 in this northern garden:—

<i>Auriculas</i> of sorts	<i>Myosotis dissitiflora</i>
<i>Anemone blanda</i>	<i>Omphalodes verna</i>
<i>fulgens</i>	<i>v. alba</i>
<i>Aubrietia græca superba</i>	<i>Polyanthus</i> in var.
<i>Arabis alba variegata</i>	Primroses, double and single
<i>Crocuses</i> of sorts	<i>Primula cashmeriana</i>
<i>Chionodoxa Lucilia</i>	<i>denticulata</i>
<i>Bulbocodium vernum</i>	<i>Polygala Chama-buxus purpurea</i>
<i>Berberis Aquifolium</i>	<i>Pulmonaria azurea</i>
<i>Draba cuspidata</i>	<i>Saxifraga oppositifolia</i>
<i>Dondia Epipactis</i>	<i>o. major</i>
<i>Daphne Mezereum</i>	<i>o. splendens</i>
<i>Erica carnea</i>	<i>o. pyrenaica maxima</i>
<i>o. alba</i>	<i>Scilla sibirica</i>
<i>Erythronium Dens-canis</i> vars	Snowdrops
<i>Gentiana acacioides</i>	<i>Sisyrinchium grandiflorum</i>
<i>Hepatica angulosa</i>	<i>Triteleia uniflora</i>
<i>triloba</i> in var.	<i>Violas</i> in var.
<i>Iris reticulata</i>	<i>Violets</i> in var.
<i>Jasminum nudiflorum</i>	
<i>Leucojum vernum</i>	

—T. SIMPSON.

The Mango.—A large plant of *Mangifera indica*, the common Mango of India, is now flowering in the Palm house at Kew, and is interesting on account of the importance of the tree as the finest of cultivated Indian fruits, rather than for any floral beauty it possesses. In English gardens the Mango has never borne fruit, and it will, therefore, be of some interest if the efforts being made at Kew to obtain fruit from this flowering specimen are productive of success. The flowers are in terminal panicles, closely packed, and are small and yellowish. There are many varieties of the Mango in cultivation in India—almost as many as there are Apples with us; in fact, the Indian people cultivate Mangoes as largely and for the same purposes as we do the Apple. A very large and interesting collection of Mango fruits preserved in spirit was exhibited at the Health Exhibition last year by Assam contributors, and those who saw them were surprised at the variety of form in the different sorts shown. No doubt the flavour, &c., of these different kinds is equally variable. This collection was obtained for the Kew museum, and is now incorporated with the extensive collections of preserved fruits possessed by that establishment.

Primula obtusifolia.—Mr. Wolley Dod's note on this plant is not without interest, seeing that seeds of a pale form of *P. involucreta* are being distributed for it. In *P. involucreta* we get a distinct white form and also a purple, and as *P. Munroi* is synonymous, it may be found convenient to keep up both names. *P. obtusifolia* is figured in Royle's "Illustrations," tab. 77. In appearance it comes much nearer *P. denticulata* than *P. involucreta*; flowers deep purple, with yellow eye, and much larger, though perhaps fewer on a scape.—K.

FLOWER GARDEN.

SPRING-FLOWERING CROCUSES.

Now that the common Dutch Crocus (*C. vernus*) and its innumerable varieties are in full flower it may be well to direct attention to a few other species less common, and in many cases prettier and more interesting, but which are elbowed out of gardens by their more popular relatives, which everywhere monopolise so much attention. At this season one may see the Dutch Crocus in every garden, both small and large, but in very few gardens indeed do we find any other among the seventy odd species of Crocus, except the yellow Dutch and, perhaps, such equally common sorts as the Scotch Crocus (*C. biflorus*) and the Cloth of Gold (*C. susianus*). The absence of other kinds in gardens is, however, we feel sure, not owing to lack of beauty, but rather to their not being known. So numerous, indeed, are the species and varieties of Crocus, that a most interesting spring and autumn garden could be made of them alone. Of late years, thanks to such Crocus lovers as Mr. Maw, our gardens have been enriched with twice as many Crocuses as we had a dozen years ago, although in Dean Herbert's time there existed in gardens a greater number of Crocuses as well as of other bulbous plants than now. The whole of the seventy species of Crocus now known are divided into autumn and spring-flowering sections, although in mild winters there is no cessation of flowering kinds between the two groups, and generally there is a continuous succession of bloom from August to April. Beginning in August with the earliest autumnal varieties, such as *Scharojani* (orange) and *vallicola* (yellow), we follow with September Crocuses, such as *nudiflorus* (purple), *pulchellus* (lilac), and in October we have *speciosus* (blue), and following these in October and November we have such as *Salzmanni*, *asturicus*, *Clusii*, *cancellatus*, and others. A connecting link, as it were, between the autumn and spring flowerers is the beautiful *C. Imperati*, which frequently commences to bloom before January is past, and then follow in quick succession a host of others, a selection of which would include *susianus*, *biflorus*, *etruscus*, *suaveolens*, *versicolor*, *vernus*, *dalmaticus*, *banaticus*, *Sieberi*, *chrysanthus*, *aureus*, *sulphureus*, *stellaris*, *Olivieri*, *minimus*, and *Balansæ*, all of which flower in succession in the

order named. Here, then, is a wealth of beauty which one might have in the way of Crocuses if the gardening public would create such a demand for them as to make it worth the while of nurserymen to import the best of the kinds in quantity. We feel sure that it is

protection of a handlight or frame, so as to keep the cold and damp from injuring their delicate blooms. All interested in Crocuses and their culture should read Mr. Maw's account of them published in *THE GARDEN*, Vol. XXIII, p. 548. The five species of spring-flowering Crocuses herewith

illustrated were selected from the large collection in Messrs. Barr's grounds, at Tooting. All are beautiful little species, varying a good deal in colour. *C. biflorus pusillus* is a miniature form of the Scotch Crocus; it is lilac inside, and has the outsides of the sepals whitish, heavily pencilled and feathered with black. *C. leucorhynchus* is a very distinct and beautiful variety; it is probably but a form of *C. vernus*; its flowers are a deep purple, and each sepal has a distinct white lip—a charming contrast of colours. *C. etruscus* is an Italian species not long introduced; it has lilac-purple flowers, and when expanded in full sunshine is very beautiful. *C. Balansæ*, a miniature species, has yellow flowers with their exterior delicately feathered with black. *C. reticulatus* is an old species in gardens, and may be at once recognised by the delicate network of fibre which envelops its bulbs. The flowers are pale lilac inside and streaked with black outside.

Zephyranthes candida.—In *THE GARDEN* (p. 142), "C. R. S. D." says "He had bulbs of this in several places out-of-doors, but it never flowered." I do not know where the writer lives, but at Trafford Park, near Manchester, there are two borders, one on either side of the central doorway into the long range of glasshouses filled with this *Zephyranthes* and *Oxalis Bowieana*, which have stood and flowered freely there during these last four years. From September to November there must have been many hundreds of their white Crocus-like blooms produced. Mr. Sargesson, who has a good knowledge of old-fashioned plants, tells me he planted both kinds over twenty years ago, and that no difficulty is experienced with them. They are growing in the ordinary kitchen garden soil. There is also a remarkable *Auricula* growing in Trafford

Gardens. Mr. Sargesson told me he found it there when he took charge of the gardens forty years ago. It has a strong Cowslip odour, which is delicious. I have not met with it anywhere else. I would not recommend it to growers of choice *Auriculas*, but at the same time it is worth a place in the flower garden.—D J. NORTHWOOD.

*Crocus biflorus pusillus**Crocus balansæ**Crocus leucorhynchus**Crocus reticulatus*

SOME SPRING CROCUSES.

PINKS AND THEIR CULTURE.

WHAT is the Pheasant-eyed Pink of the wholesale seedsman? It would appear that, according to Maddock, the improved varieties of what were formerly called Pheasant's-eyes are now the florist's Pink of the present day; but the Pheasant-eyed Pink found in catalogues must be different from this, or it could not be sold so cheaply. As far as I am able to ascertain, it does not represent the common name of any variety of *Dianthus*. One can readily understand that the original Pheasant-eyed Pinks were white with a dark centre or eye, and the word Pink is said to be of Dutch origin, and means an eye. The dark disc surrounded by a white zone would readily suggest the name of Pheasant's-eye. It is reported that the Pink, represented by *Dianthus plumarius*, was first cultivated about the year 1629. Maddock, in his "Florists' Directory," published in 1792, says he may "venture to assert that a Pink called Major's Lady Stovedale, raised from seed in the southern parts of England by the person whose name it bears, was the first that deserved to be classed among such as are held in esteem by florists. It was raised about twenty years since (1770), and was the first Pink possessed of that singular and beautiful ornament called a lacing, which is a continuation of the colour of the eye round the white or broad part of the petal that gives it a most elegant appearance."

Maddock gives an excellent engraving of a double-laced Pink, in all probability representing an ideal rather than an actual flower in cultivation in his day; it is large and full, laced throughout with great regularity, but with the edges of the petals deeply toothed or serrated. This characteristic belonged to the Pink for many years after. The first coloured illustration I can meet with is that of Revill's Lady Wharncliffe, which appears in the *Floricultural Cabinet* for September, 1833. The flower is small, consisting of three rows of petals, the lacing dense and well defined, the petals serrated, but not nearly so much as in the case of Maddock's diagram. It was raised at Pitsmoor, Sheffield, in 1831, and "was judged by eminent florists to be the best variety of its class." It is stated that the drawing represented the flower half its natural size, having been sketched in an imperfect state. Two years later the *Florists' Magazine* gave coloured illustrations of Princess Victoria and Sir Walter Scott, two flowers that, in respect to size and arrangement of the petals, came very near to Maddock's diagrams; the former was the finer flower, but with the lacing less perfect than in the case of its companion; but while the petals of the latter were much serrated, those of Queen Victoria were only slightly so—in fact, as pictured, almost smooth. The latter was raised at Mitcham, the former at Walworth Common. The *Florists' Magazine* during the short period of its existence gave other illustrations of Pinks, among them a charming picture of the old Anne Boleyn, and they indicated the steady progress that was being made towards larger refinement, as was seen in Smith's Dr. Coke, shown in 1840. Coming on to 1848, the first volume of *The Florist* gives coloured illustrations of Young's Double X and Mr. Edwards, two flowers in the collection of Mr. C. Turner, then in business as a florist at Chalvey. Great improvement had then been effected in the Pink, particularly in that characteristic then regarded as most essential—smoothness on the edges of the petals. Most of the new flowers were free from the serrature that disfigured the old varieties. The smooth edge to the petal was the goal steadily kept in view by the florist of that generation.

There is some difference of opinion in regard to the size of Pink flowers between the northern and southern growers. The former favour smaller and more symmetrical flowers than do the latter. Marking more than a great fullness of petal is required in the north, and it is not uncommon at some northern shows at which Pinks are exhibited to reduce the number of petals, taking out those that are incompletely marked and leaving those only on which the lacing is approximately perfect. The northern grower somewhat contemptuously calls the large southern grown flowers "mops."

As the Pink is grown in the open air, and not in pots, as in the case of the Carnation and Picotee, the bed should be planted in October; and the opinion is held by florists that if the bed cannot be planted until after this date, it is better to winter in pots, because it is so important that the plants be firmly established in the soil before the winter sets in. The preparation of the bed is a matter of great importance. In order to have the flowers well laced a rich soil is of the first importance; therefore well-decomposed manure should be dug into the soil each time the bed is turned, so that the roots may have something to feed upon at blooming time. The Pink does well in a good loam; a black one like that seen in the London market gardens suits it. Another point of great importance is, and particularly so if the soil be heavy, the raising of the beds above the level of the surrounding soil, say 6 inches, 9 inches, or 12 inches above the walks on either side, and then rounding off the side edges of the bed in order to throw off the heavy rains that generally fall in autumn and winter. During the winter, while the weather is favourable, the surface soil may be stirred with advantage, and if the action of sharp frost has tended to loosen the soil about the plants it should be pressed firmly about them. The usual practice with growers of Pinks for exhibition purposes is to top-dress the beds in March, and even if the cultivator does not exhibit, a top-dressing at that period is always of the greatest advantage, and at the time of top-dressing it is customary to raise the sides of the bed by means of shallow boards, turf, tiles, &c., thus bringing them nearly to a level, so that the plants may receive copious waterings when necessary. And it is well to give three or four good soakings with weak liquid manure water during the time when the plants are forming their buds.

It is in June when the Pink flowers are at their best. If the weather is hot and dry, full supplies of water will be needed, as this is essential to the swelling of the pods and to ensure fine full flowers. If starved for want of moisture at this period, the plants are apt to become infested with greenfly, grow lank and weak, and the blooms perish in the buds. As a matter of course the grower for exhibition needs glasses for forwarding blooms, shades, labels, &c.; the plants have to be gone over daily, and the most promising buds are selected and carefully tied to supports; others tied a day or two previously are carefully examined, so that if the after growth has caused them to become too tightly fastened they should be released and retied.

Pinks are propagated by means of pipings or cuttings. This is how the operation is performed by a successful cultivator. He states, "I consider piping the safest and most expeditious method of propagation. About the middle of June I commence operations, choosing as the most suitable situation a border under the southern fence of the garden, where the soil is of an open texture. I work the soil freely with a fork to the depth of 4 inches, and on the top I lay a mixture of three parts leaf-mould and one of silver sand, and smooth off the surface with the back of a rake. I then take my hand-glass and mark out its dimensions by pressing it down on the soil. These preparations having been made, I break off the grass (shoots) from the side of the plant, stripping the foliage from the stem to the third joint, and with a sharp knife cut off close under the bottom joint, taking particular care not to injure the bud. The pipings thus prepared are placed in water to stiffen that they may be the more easily planted in the ground, and these I take each separately and plant them in the mould, within the form of the hand-glass, about an inch apart, and having filled up the space, give them a slight watering, taking care not to put down the glass close until the plants are perfectly dry, as if wet they are liable to rot off. In this manner I proceed until I have gone over the whole of my collection, being careful to protect them from the mid-day sun by placing hoops covered with light calico over the bed. These shades remain over the young plants from eight in the morning till about five in the even-

ing, and at the end of six or eight weeks the hand-glasses are entirely removed, and in seven or eight days the plants may be planted out about 3 inches apart to strengthen." A professional florist, who propagated Pinks largely for sale, makes up a bed of fresh stable manure, which is allowed to ferment, and after a time a bed of light sandy soil is placed upon it, and in this the pipings are inserted in the way previously recommended and covered with handlights, and when the cuttings are rooted they are planted out in store beds.

Some cultivators have successfully grown Pinks in pots. It has been found that varieties generally laced very well appeared to be smoother on the edge than those grown in beds, clean, and mostly with pure white grounds. For early shows Pinks grown in pots have been found very useful, as they can be advanced a week or ten days in bloom by placing them in a frame. The pots need not be larger than 8 inches in diameter, but the soil should be rich and good. Experiments have been made as to whether Pinks do best in pots when potted into the blooming pots in autumn, or when wintered in 4-inch pots, placing them in the blooming pots in March, but there was no perceptible difference in the flowers.

Twelve of the finest show Pinks in cultivation will be found in the following: Bertram (Turner), red, broad lacing, full size, extra fine; Boiard (Turner), a fine large, full flower, good broad, smooth petals, handsomely laced with bright red, extra fine; Emerald (Hooper), red lacing, large and full; Eurydice (Fellowes), rosy red, very good; Godfrey (Turner), bright reddish purple lacing, extra fine; Harry Hooper (Hooper), reddish purple, the lacing bright and showy, quite distinct and extra fine; Modesty (Paul), reddish purple, extra fine; Mrs. Waite (Turner), rosy red; Prince Frederick William (Hooper), rosy purple, large, full, and very fine; Reliance (Hooper), red lacing, large and fine; Tottie (Paul), bright red; and Victory (Hooper), rosy purple, full and good.

Then there is a very useful group of forcing Pinks, comprising the following varieties: Anne Boleyn, pale pinkish purple, an old and most useful variety; Derby Day (Clark), deep pink, laced with red, large and full; Lord Lyon (Clark), deep rosy purple, a large, full, smooth flower, very free, and quite distinct; Mrs. Sinkins (Sinkins), pure white, large and full, and very sweet scented, a most useful variety; and Rubens, dark purple, dwarf, good in habit, and very free.

Forcing Pinks must be grown in pots, and in order to have them with fine heads of bloom, it is essential to have them well established in their pots, and they need to be brought on gradually, and not forced on in too great a heat. They should be placed as near the glass as possible, and when they are coming into bloom have a little weak manure water about twice a week. The best soil for these is a good yellow loam, well decomposed manure, leaf mould, and sand, not made too light, and the plants should be firmly potted. With reference to the propagation of these, as soon as pipings or cuttings can be obtained they are found to strike freely on a gentle bottom-heat in spring; they should be planted out in a well prepared bed in the open ground as soon as ready, kept growing freely all the summer, and potted in early autumn to flower; it is not at all necessary to overpot them, but it is requisite that the plants be firmly potted.

R. D.

Peach blossoms (J. C.).—Without examination on the spot it is difficult to say what is the cause of your Peach blossoms not opening properly, but it may, we think, be attributed to the roots having descended into a cold clayey subsoil. Should you have reason to believe that such is the fact, then the remedy is obvious—viz., lift the tree and remake the border, previously concreting the bottom to prevent a similar mishap recurring. Of course it is too late to do such work now, but if done with care early in October next it will not prevent the tree fruiting next season just as well as if it had never been moved.—W. W.

INDOOR GARDEN.

THE MAGUEY PLANT.

(AGAVE AMERICANA.)

In this country the American Aloe is generally known only as a quaint-looking exotic, and as such it is frequently employed for purposes of contrast in outdoor gardening during the summer. It is also popularly known as the Century Plant, from the belief (a fallacious one) that it requires a hundred years to grow to maturity, when it flowers and dies. Of course, it is possible that when placed under adverse circumstances the American Aloe may be retarded in its development so much as to prevent it from flowering under twenty, or fifty, or even a hundred years, but when favourably situated a period of about ten years—sometimes less—is sufficient for this plant to reach the flowering stage. Neither does the plant die immediately after flowering, the leaves and flower-stem only perishing, while the root-stock remains and pushes forth numerous suckers, such as are shown in the annexed woodcut. It will be remembered that the leaves of this Agave are clothed along the margins with stout spines;

soap, which lathers with salt as well as with fresh water, a gallon of the sap yielding about a pound of soap-like extract. The flower-stem when dried forms excellent razor-strops, and it is said that wall plaster impregnated with the juice of this stem is proof against the ravages of white ants, which are great destroyers in tropical countries. It will be seen, therefore, from what is here said that the American Aloe is of vast importance to the inhabitants of tropical countries. Nor must we forget to add that in the sandy waste lands of India this plant is largely used as a railway fence and sand-binder, purposes for which the accommodating nature of this Agave renders it specially adapted, for besides its indifference to drought, the Maguey Plant is equally at home both in warm and moist climates and in the driest wind-swept regions where frost is not unfrequent. We in this country are well acquainted with the extraordinary hardship this plant will go through with impunity. B.

HUMEA ELEGANS.

THOSE who sow the seed of this in spring and hope to have it in full beauty by mid-season or in

or 10-inch pots, and if plunged in these in the flower beds they may be conveniently taken indoors in the autumn for winter use. A rich sandy soil suits them best at all times; throughout the first summer they will succeed in a cool frame, and they do not require more at any time than a greenhouse temperature. J. MUIR.

IRON AND WOOD FOR HOTHOUSES.

THE remarks of a recent writer in the *Field* on this subject are very suggestive, and the facts as there put in connection with this matter cannot easily be controverted. As regards the merits of wood and iron, there is something to be said in favour of both. If the question of durability only was involved in the case, of course iron or some other metal would have preference, and even as it is, I admit that it has the best of the argument; but I cannot go so far as to say that metal of any kind is more suitable than wood for all the purposes for which such houses are required. The perishable nature of wood, I consider, is quite made up for by its non-conducting properties as compared with iron; wood also affords both shade and shelter in a greater degree than iron, because it must be of a greater consistency. It is only during the very darkest days of winter that we hear complaints made of a properly-constructed house being too dark for our plants, and even then the woodwork which creates the darkness counterbalances, to a great extent, such a defect by being to a great extent a non-conductor. The fluctuations of temperature inside are much less under a wooden roof than under an iron one. I have had, during my experience, to deal with houses made with iron and glass only, and also houses with wooden rafters and metal sashbars, and I should certainly hold up both hands in favour of a combination of wood and iron or other metal in preference to all iron and glass, and this more especially for forcing houses as well as those for plant growing. But, when we come to consider the expediency of using iron for large and lofty conservatories where architectural embellishment becomes a necessity, I would certainly in that case prefer iron to wood, or even to a combination of both, the cultural requirements of such structures not being of paramount importance. What the writer just referred to says about the stability of cheap houses is true enough, but we must not forget that these cheap houses have given a wonderful impetus to horticulture, and that many have derived pleasure therefrom who never could have done so in the times of dear glass and in the absence of machinery. Their lasting quality is, however, quite another matter. I have myself seen examples of these cheap houses so utterly unstable in less than twenty years after they were erected, that they had to be pulled down; and I always regret to see landed proprietors and others, who hope to hand down to their heirs all their possessions, putting up these cheap houses. It is not possible for them to give uninterrupted satisfaction for many years. If, however, we have good materials and good workmanship, wood is not to be despised. We have here abundant evidence to support this statement. We have two houses that have stood where they now are for forty-six years. They had done duty in another garden for some years before that, how many I cannot ascertain, but no doubt they have been built sixty years, and with care they will certainly last twenty years longer, and most probably even double that number. It is only right, however, to say that they have been well cared for, as regards being painted, &c., as often as they required it. The main timbers of these houses are much stouter than what the present race of builders use. The rafters are 9 inches deep and the top lights 5 feet wide; the wood is the best red deal, now so hard to get. We have also some pit lights which are known to have been in constant use for over forty years, and they are in better condition now than some which were new only nine years ago. These lights cost 17s. 6d. each, glazed and painted, and sent free by rail. It is probable the old lights cost double or even treble that sum; but even if they



The Maguey, or American Aloe (*Agave americana*).

these are not shown in the woodcut. But besides the usefulness of the American Aloe for horticultural purposes, it is of far greater importance economically, the leaves and stems yielding a strong and valuable fibre known as pita or vegetable silk; the roots are sometimes used as sarsaparilla and as food, and the sap forms the pulque beer of the American Spaniards. This pulque, which is known as maguey, is an important article of commerce in Mexico, and it is stated that about 50,000,000 bottles of this intoxicating beverage are annually introduced into the city of Mexico alone. The method of collecting the juice is as follows: As soon as the plant has attained to maturity it develops its tall, stout flower-stem, and on the leaves beginning to show signs of decay a hole is scooped out of the bole of the plant and an elongated tube-like gourd is thrust into this hole. Into this gourd-bottle the sap flows freely, and when filled the vessel is emptied into a larger one, generally made of sheepskin, the sap being then conveyed to vats, where it is allowed to stand for about two days. This causes fermentation, by which the yellow or greenish liquid is changed into a milky white. In addition to this favourite beverage the Mexicans obtain a spirit known as mezcal, also a kind of brandy of good quality, as well as other useful produce from the Maguey Plant. It may also be mentioned that the juice is made into

the autumn will be disappointed, as it does not bloom until the second year. The best way is to sow the seed now, grow the little plants on throughout the season in 5-inch or 6-inch pots, and use them for decorative purposes the following season. When fully developed this *Humea* is one of the most graceful of plants, its warm rose-tinted floral plumes hanging down in delightful profusion. It may be either grown in pots for the greenhouse or conservatory or planted out in flower beds; it forms a beautiful object in the centre of any bed on the lawn, and it may also be used for house and room decoration; in fact it is most useful in many ways and deserves to be generally cultivated. I have seen it used in the open air all summer, lifted in autumn, and kept in full beauty throughout the winter. The leaves have a distinct and powerful perfume enjoyed by many. The best way in which to obtain a stock of it is to sow seed of it now in a 6-inch or 8-inch pot in light sandy soil, placing it in a house or frame where the temperature is 65° or thereabouts. The seeds are sometimes slow in germinating; indeed I have known them to remain dormant for five or six weeks. As soon as they gain a height of 2 inches or so they should be potted singly in 3-inch pots, and as these are filled with roots re-pot into 6-inch ones; they will then require no more potting for another few months, or indeed until the following spring, when they should be put into 8-inch

did they are much cheaper than these London-made lights. Their condition now is such that they will outlast another set of the cheap glass—a clear proof that the best in the end is the cheapest.

The writer I have already referred to appears to have lost sight of one important fact in connection with wood for hothouse building; not that it seriously affects his argument, but still it places the value of wood for this purpose under different and, as I think, more favourable conditions. I allude to the improved systems of glazing, by which the greater part of the woodwork is under the glass, and not so much exposed to the influence of the elements as under the old system; therefore there cannot be a doubt that all houses constructed on the new principle, even although less substantially built than formerly, will last a considerable time longer even than they did. From my experience of this system of covering in the wood, I must vote in favour of it for any structures to which it is applicable; and I have no hesitation in saying, as respects the stability of such systems of glazing as have come under my observation, that they are likely to maintain the character which the promoters of them promised they would do. The only objection I see in them is, that for forcing houses they are not sufficiently air-tight. The cost of maintenance is, however, a striking feature in favour of them, and I cannot think it has been sufficiently recognised. I have proof of this here in the case of a large house built eight years ago and glazed on a patent principle. Such of the woodwork as is under the cover of the glass is in an excellent state of preservation, or rather, I should say, the surface is as regards paint, and it is quite likely that none of the internal woodwork will want painting for several years to come. The little woodwork exposed, which does not amount to one-sixth part, costs but a mere trifle to keep painted compared with the old system. I think that the system of covering all the woodwork with glass demands the attention of all who are interested in the maintenance of a garden. Hothouses glazed on the old putty principle, we all know, used to be very expensive to keep in good condition. J. C. C.

EUPHARIS AMAZONICA.

IN December last one potful of this lovely Lily was nicely in bloom, and we placed it in a large drawing-room where it was much admired, but it was there too long, and when brought into the stove again the leaves became yellow and withered off. The whole of the bulbs were then turned out of the pot, the old soil shaken from them, and repotted. As the bulbs were very numerous, we made several potfuls of them, and after potting, they were placed in two lots for different treatment. One lot was watered thoroughly immediately after potting, and they have been kept watered ever since, but their growth has not been satisfactory, as the leaves did not come away freely, and when they did, they were not of that healthy green colour which one likes so much to see. Their growth now is very slow and weak, and they look as if they were wrongly treated. The other bulbs were treated differently; they were potted in the same soil and placed in the same pit, but the soil was not watered after potting, nor for some weeks afterwards, and shortly after potting healthy looking leaves were produced from the top of each bulb, and developed in a most satisfactory manner to a considerable extent before the plants received a drop of water. They are now much in advance of the others, and promise to become finely furnished plants in a very short time. The soil at potting time was in good working order, and the young roots evidently prefer to begin growing in a dry soil rather than in soil watered in the usual way. None of the pots were plunged, but they were placed on an iron stand over hot-water pipes, and all derived a little heat from this source. Judging from the plants before us, those started under what might be termed the dry system are infinitely the best, and if I had any more bulbs to deal with I would have no hesitation in treating them all in this way. CAMBRIAN.

Loncera semperflorens.—This is well adapted for a cool house, particularly one in which no space can be had to plant it out in a border, for it will not only grow, but flourish in a small pot for a long time, provided during summer it is freely watered at the root and occasionally with liquid manure. At this time of year it is useful for furnishing cut blooms; it can be cut with impunity, as it breaks freely again. Its flowers last, too, a long time in a cut state. It is easily propagated by means of cuttings.—E. MOLYNEUX.

Dalechampia Roeziana rosea.—When this singular and really pretty plant was first introduced, it was, I think, predicted that it would make a good market plant—a prediction which time has not verified. Its flowers are slightly fragrant, but its chief attractions are its rosy bracts and the dense tuft of yellow filamentous inflorescence which surrounds both male and female flowers. It seeds freely with us, and self-sown plants are always plentiful on the moist bed of sifted ashes on which it stands.—A. M., Cranmore.

Camellia leaf-eaters.—The insects of which I send specimens attacked our Camellias last year and nearly destroyed the foliage, giving it the appearance of being riddled with small shot. They are planted against the back walls of Peach houses, and some of them look very unhealthy. The young growths, I find, are again attacked, and I am anxious to prevent further injuries. I have killed numbers at night both on the plants and on the soil, but they are difficult to extirpate. For any information on the subject I will be grateful D. R.

* * * The beetles attacking your Camellias are the clay-coloured Vine weevil (*Otiorynchus picipes*). You cannot do better than continue to search for them at night; placing a white cloth under the plants will help you to see them when they fall, which they generally do when a bright light is suddenly thrown on them. They hide themselves very cunningly during the day. Small bundles of Moss placed in the angles of the branches should prove good traps for them. These weevils attack the foliage of Vines, wall fruit trees, and various plants. Their grubs are very destructive to the roots of Primulas, Cyclamens, Ferns, &c.—G. S. S.

Alonsoa incisa.—This old-fashioned plant is now rarely seen, yet for greenhouse decoration in winter and early spring it supplies a colour but little represented; added to which it is a plant of the easiest possible culture, and one that continues in flower a long time. We employ it extensively for conservatory embellishment, and also for cutting from, as the flower-spikes last a long time in water. The colour of the blooms is bright red, and though individually only about half an inch in diameter, yet every shoot is terminated by a many-flowered spike, so that the plants when at their best make a fine display. Cuttings taken at any time of the year whenever obtainable strike readily, but I prefer putting them in in spring, as they can then be grown on during the summer, and make good flowering plants by winter. After ours have passed their earlier stages, they are plunged out of doors in order to ensure short, well-ripened growth that will flower freely.—H. P.

Hyacinths at the Bristol Spring Show.—At the recent spring show held in the Victoria Rooms, Clifton, Hyacinths were shown in great numbers, and included many excellent examples of popular as well as rare sorts. The best exhibited were General Pellissier, Incomparable, Linnaeus, Queen of Hyacinths and Macanlay, single red; La Joyeuse, Lady Franklyn, Princess Charlotte, single, rose and blush; Alba maxima, Grandeur à Merveille, La Grandesse, l'Innocence, Madame Van der Hoop, Paix de l'Europe, single white; Blondin, Charles Dickens, Princess Mary of Cambridge, Regulus, Lord Derby, Pieman, Czar Peter and Grand Maître, single pale blue; Marie, King of the Blues, Surprise, single blue; Baron de Tuyl, General Havelock, Masterpiece, single dark blue; Obelisque, Ida, Victor Hugo, good yellow; Empress of India, double

red; Susanna Maria, double rose; Miss Nightingale, double white; Louis Philippe, Laurens Koster, double blue; and Jaane Suprême, double yellow. Messrs. Garaway & Co., Clifton, also staged upwards of 200 well-grown Hyacinths, consisting of all the foregoing and many new sorts not yet in commerce.—W. I.

Martynia fragrans.—This Mexican annual is not often met with now-a-days, but, nevertheless, it well deserves attention. It bears large, bold Gloxinia-like flowers, the colour of which is purplish crimson, with a rich yellow throat, and, moreover, they are sweet-scented. It will hardly succeed out of doors except in very favoured positions, though we have had fine plants of it in autumn in a warm season. They should be raised in heat early so as to have strong well-rooted plants to turn out in June in light rich soil. For pot culture, the kind of treatment that produces good Balsams will grow this plant to perfection; if seeds of it are sown now in heat, and the young plants when up potted on in good soil as necessary, and kept in a little heat, fine specimens 2 feet or 3 feet high and as much through may be had. If very large plants are wanted, or if it is wished to delay their flowering, the first terminal spikes of bloom should be pinched out; and although succeeding flowers will not be so fine, they will last much longer in perfection and also be more numerous.—A. MOORE, Cranmore.

The Zephyr Lily (Zephyranthes Treatiae).—This little Amaryllid, a native of the Southern States of North America, is at present very little known, and certainly deserves a wider reputation; its delicate white fragile flowers are well worth the little trouble which its cultivation entails. Grown as a cool frame bulb in rather sandy soil, it requires little attention beyond potting and careful watering to ensure a few of its lovely flowers at Easter, a season when white flowers are especially valuable. Some varieties are tinged with a pale rose colour, but the tint is not decided enough to dispel the idea that the flower has become stained, and therefore this variety is not very valuable. Whilst in Georgia and North-west Florida last spring, where the Zephyr Lily is very common, I noticed that the finest flowers were those that proceeded from very large clusters of bulbs growing in a poor sandy soil, and, judging from their size and form, I should say that it would be well not to break up the bulbs when repotting, unless stock is wanted, but to grow large clumps in pans or large pots. In a warm sheltered corner they will grow in the open, but they should be well protected from frost by a good coat of ashes, or, what is better, lift them and store them in dry sand, planting out again as soon as growth begins to show itself, care being taken to protect it by pieces of evergreen.—JOHN W. ODELL, Barrow Point, Pinner.

Aralia Sieboldi from home-saved seed.—This Aralia is valuable for room decoration where large quantities of plants are required for that purpose; its pendulous leathery, palmate leaves give it a graceful, yet bold, appearance. It is one of the few plants that will do fairly well in living rooms. If the leaves are kept frequently sponged, to free them from dust, they have a bright, glossy, fresh appearance, which is at all times pleasing, and the plant being nearly hardy in the southern part of the country it will stand cool, draughty places much better than many greenhouse plants. I have tried more than once to raise this Aralia from bought seed, but I could never get it to germinate. Last autumn we had two or three plants in pots which threw up some fine heads of bloom, and I thought if I could get the latter to set I might be able to obtain seed; I therefore had them put into a warm plant house (I tried to get them to seed in former years in a greenhouse temperature, but did not succeed, as they dropped their bloom without setting) and in this they set and ripened a good crop of seed, which was sown soon afterwards. Every seed must have germinated, for the pots are as full of young plants as they possibly can be. These will be pricked off into shallow boxes and grown on in

DWARF ALPINE MEADOW RUES.

THE Meadow Rues, or *Thalictrums*, consist of about sixty reputed species and quite as many varieties; they appear, like most other *Ranunculads*, to run into each other somewhat largely, though the cultivated forms are pretty distinct. As a matter of fact, few of them are introduced to our gardens, but a comparatively small number are worth a place therein; most are but tall herbs, and yet if not fit for garden decoration they serve in a way to render the few dwarf alpine species which we possess all the more interesting and valuable. Of the latter class all are worth growing, more especially now that rock gardening is becoming so popular; their foliage is of a pleasing Fern-like type and looks well in broad patches. In noticing a few of these Meadow Rues one may surely include our pretty native

T. ALPINUM. In dry situations it seldom grows more than 3 inches or 4 inches in height; it is quite a characteristic plant, one which can hardly be killed when once established. True, the tawny flowers are insignificant, but the twice-ternate leaves and wedge-shaped leaflets, with the upper surface of a dark and shining green, form lovely garnishing for rockwork. It is interesting from the many parts of the world in which it occurs; it is a true alpine and has numerous habitats in the Welsh and Scottish hills.

T. FÆTIDUM grows about a foot high; it is largely found in alpine parts of many countries in Europe, including Siberia and Russia, mostly on limestone rocks. It is the *T. saxatile* of Villars, and used to be called *T. styloideum*. The nodding flowers have yellow anthers and reddish sepals and are borne in spare panicles; the stems are clammy and the thrice-divided leaves somewhat spare; leaflets cordate and lobed at the apex. It has been cultivated since 1640.

T. SQUARROSUM is another dwarf species from Siberia. It differs mainly from the last in having nearly entire leaflets.

T. MINUS is a beautiful native plant, and under cultivation grows about 8 inches or 10 inches high. The small flowers are not of much value; the sepals are pale purple and white, the anthers yellow. The glaucous foliage, however, is dense and produced on mealy stems; the leaflets are small and the habit compact. The plant may be strongly recommended for its pretty foliage.

T. ADIANTIFOLIUM, a form of the last named, is fast becoming a popular garden plant. In rich soil I find it grows a little taller than the type. Its foliage is, perhaps, rather less glaucous and the petioles more slender, characters which tend to render the plant somewhat like a Maiden-hair Fern. It is worthy of note that to the number of specified forms referable to the widely-found minus not only are the medium-sized fetidum and saxatile nearly allied, but such tall growers as majus, pubescens, and a few more are recognised as being of the same type. *Adiantifolium* is at once pleasing in its growing state and useful when cut. It enjoys a little lime like the type.

T. COLINUM (Hill Meadow Rue).—This is another somewhat dwarf form—in fact is the minus of Sprengel; was brought from Saxony, and has been cultivated since 1800. There is nothing very noticeable about it, but the foliage may be said to be more profuse than in most kinds, and it is green on both surfaces; height a foot, more or less according to situation and soil.

T. ANEMONOIDES.—This is truly one of the sweetest little flowers one can grow. I say flowers because, though otherwise very distinct not only from those mentioned, but from nearly the whole genus, its most noticeable feature as a *Thalictrum* is its flowers; they are large, numerous, and beautiful, and last for a long time. In a wild state it is somewhat dwarf, but it not unfrequently grows 2 inches or 3 inches higher under cultivation. It is a native of North American woods, but it thrives in our climate if exposed. It belongs to the small section with roots tuberous, and is the *Anemone thalictroides* of Lin., Juss., and Willd. A glance at its blossoms readily brings to mind the Windflower. It is a May bloomer,

and dies down somewhat early; it prospers in silky loam. There are two varieties of this species, *multiplex* and *uniflora*. J. WOOD.

NEW DAHLIAS OF 1884.

By these I mean the Dahlias sent out in May of last year. Some of them are pretty certain to have appeared as seedlings previously, but not all, and it sometimes happens that a first-rate flower is not seen until it is sent out. It is more than probable that some of your readers may be desirous of knowing something about the character of these flowers before giving their orders during the next month; my notes of them as seen are before me, and I think they will be found, on the whole, pretty accurate.

The finest new Dahlia of last season was Mrs. Gladstone, a kind raised by Mr. Hurst; it was originally exhibited under the name of Mrs. Gladstone, but afterwards changed to that of Mrs. Gladstone. The ground colour is pale creamy white, suffused with a very soft, delicate pink; it is of good size, perfect form, and very constant. I saw it at several provincial shows as well as in London during the season, and always good. As an exhibition variety it stands very high. Next in point of value comes Mrs. F. Foreman (Keynes); this is a fine glowing lilac self, large, full, and of the finest form, in all respects a grand flower. Statesman (Keynes) is a very fine, rich crimson self, very constant and always good. Muriel (Fellowes) is a full-sized, clear yellow flower of fine form and very constant, but last season—and a season too that one would regard as favourable to keeping large flowers within due bounds—it came rather coarse, but it will make a fine decorative variety for garden purposes. Mrs. Jefford (Keynes) is also a very deep yellow self, large, always to be had, and, therefore, very useful to an exhibitor. Lady Eckford (Eckford) is a very free-flowering fancy Dahlia, and desirable in point of colour, white, striped with purple, and of the finest form. Ruby Gem (Harris), clear ruby-crimson, is very pretty in colour and has a good outline and centre, but is what the Dahlia exhibitors term "difficult to get," that is to say, it is of uncertain character. Lucy Berry (Keynes) is of a clear white ground, or base of the petals, which are in great part lilac in colour, fairly constant, but difficult to get large enough for show purposes; therefore should be grown well and freely disbudded. Alderman (Keynes) is a capital fancy flower also, the ground colour lilac, heavily striped and spotted with purple; it is somewhat novel, and singularly dwarf in point of growth. Reporter (Keynes), a very rich maroon or deep shaded crimson, is both useful and constant, and will be much appreciated by exhibitors during the coming season. Mr. W. Hoskins (Keynes) is of a lovely tint of fawn, most delicately suffused with pink, very pretty and finely shaped, a variety that tells on the exhibition table. Mrs. Staples (Keynes) is a perfect model as to form in a Dahlia, but very difficult to get to anything like size for show purposes; the ground colour is yellow edged with crimson. Goldfinch (Keynes) is a very attractive fancy sort, the colour yellow, striped with purple and tipped with white, but wanting in form; it betrays a tendency to come flat and rough. Dewdrop (Keynes) is of a very dark primrose colour, but scarcely attractive enough; it is of good form and constant. Grand National (Eckford) is another yellow self, large, but with that fault common to some yellow selfs—apt to come coarse. Duchess of Albany (Turner) is a sport from the fancy *Gaiety*, and comes into the same section; it has a pale orange ground colour with rich crimson stripes, but without the white tip found in *Gaiety*. So much, then, for the new Dahlias of 1884. Those to be sent out in May next shall be passed in review in another paper. It will be observed that I have not kept

FANCY AND SHOW DAHLIAS, as they are termed, in two distinct sections. Really it is difficult to say which are fancies and which are not. Two tipped Dahlias may be compared; to all appearance there is no difference between them regarded merely as tipped flowers; one is a

white ground flower tipped, I will say, with yellow; that is a show flower; but let the ground be yellow and the tip white, then it becomes a fancy Dahlia. It is so difficult to draw a line between fancy and show flowers, that in the case of country Dahlia exhibitions all self flowers are regarded as show Dahlias, and all tipped flowers as fancy varieties. He would be an unwise judge who attempted to disqualify flowers in the latter case, as it is far better to interpret a schedule widely than narrowly; and in the light of what has been permitted at previous exhibitions it is not to be wondered at that the uninitiated cannot see the supposed difference between a show and a fancy Dahlia, while those who may be regarded as Dahlia experts are sometimes puzzled how to correctly assign a flower to its proper division. R. D.

DOUBLING OF DAFFODILS.

COMPARING Mr. Wolley Dod's letter in THE GARDEN (p. 232) with my own (p. 207), it is evident that I am the sceptic, he the advanced believer—I the infidel, he the man of faith; but I am perfectly willing to be convinced and converted by trustworthy evidence. It appears, therefore, that there are three parties or states of mind with regard to this question. There are the sceptics, like Mr. Barr, Mr. de Graaf, myself, and others, who, before they can assent to the proposition that a single flowering Daffodil bulb may, by being planted in certain soil, be made to produce double flowers and continue double for the whole future of its existence, notwithstanding its removal to an inert soil—who, before they can assent to this as a fact, ask for such proof as will satisfy a scientific enquiry, and until such proof be forthcoming, without any hostile animus whatever, simply prefer to return an open verdict, "not proven." Then there are the believers—those who, like Mr. Baker, think they have sufficient proof to show that singles will turn into doubles of a like character, *i.e.*, single pseudo into double pseudo, single cernuus into double cernuus, a single Jonquil into a double Jonquil, and so on, but who cannot at present assent to the further proposition upheld by the advanced believers—Mr. Wolley Dod and others—that single pseudo will turn into double Telamonias, the common great double Daffodil, and so continue for aye. I do not think it is waste of time or of space to put the three issues thus clearly and plainly (as I hope) before the committee who have undertaken to investigate the subject; it may possibly help them so to arrange their experiments as in the end to set the whole matter at rest to the satisfaction of all who are interested in it. My own soil is sand full of lumps of iron conglomerate, that if any virtue resides in iron sand I may hope to succeed, but I should greatly like some one to lend me a square yard at Alton as well.

W. WILKS.

HABERLEA RHODOPENSIS.

THIS plant seems to be looked upon as hardy, and if it should prove to be perfectly so, we shall have a gem for our rock gardens of no ordinary kind. I have little doubt of its ability to withstand our lowest temperature, but, being hirsute, our fogs and long spells of wet weather might injure it. It has also the disadvantage of being flat in habit, but if judiciously planted that may to some extent be got over. It is a native of the Balkan range of mountains, and, presumably from the specific name, found mostly on the Rhodope section; its habitats are the shady moist rocks where Mosses grow. It has been compared with *Ramondia pyrenaica*, and, as a whole, it closely resembles that plant, but it may also be termed an alpine *Gloxinia*, minus the tuber. The fitness, too, of such a common name is well supported by the rich colours of the flowers both inside and outside; briefly, it may be stated that it is capable of being grown into strong clumps, when its rosy purple, yellow-throated flowers appear in great quantities. The leaves are less round, hairy, and wrinkled than those of *Ramondia*, though the two latter features are highly developed; the

leaves are sessile and the plant stemless. It seems to send out young rooted growths freely outside the rosettes, and not between the leaves, as in *Ranunculus*. I mention this because this habit offers a ready means of propagating it. It may likewise be added here that those who begin to cultivate so expensive a plant will do wisely to grow it in a pot until a duplicate or more has been obtained, when a spare specimen may be put out in spring on a rockwork facing the north. In the meantime it may be grown in a pleasing manner along with such things as *Pinguicula*, *Cortusa*, *Ranunculus*, *Primula*, &c., such plants also loving shade and moisture. It should be potted in large-holed pots in peat, leaf mould, grit, and a little chopped *Sphagnum*; the pots should be plunged in a bed of sand made well up to the glass—aspect north, not, however, shaded or darkened by any means. Under such conditions the plants have been had in a thriving state, and the shelter from winter fogs so obtained will keep them in better health than open-air specimens. This may account for sheltered specimens blooming with extra freedom. Of fully exposed plants I have no experience, but from the flat habit and hairy quality of the foliage, it is quite clear that the plants should be so set in sloping seams of soil that they may not catch or hold more wet than can be helped, and yet there should be no lack of root moisture. Such positions, combined with shade, are readily found on all well-constructed rockwork. J. WOOD.

Kirkstall.

NARCISSI FROM THE SCILLY ISLES.

ONE of the finest collections of *Narcissus* blooms shown in this country was contributed to the Bristol spring show (March 18 and 19) by Mr. J. Dorrien Smith, proprietor of the Scilly Isles. About 100 sorts were represented, and in some cases large bunches of fine blooms were sent. All were grown in the open air and arranged according to Mr. Baker's classification. As far as general appearance was concerned, it would have been better to have had more regard to the size of the blooms, as a judicious mixture would have had the effect of enhancing the attractiveness of the whole, whereas many of the smaller sorts or those represented in small numbers were completely dwarfed by their coarser neighbours. Some of the most attractive kinds in the Ajax or trumpet section were—*A. bicolor lorifolius*, sulphur perianth yellow trumpet; *A. bicolor Emperor*, deep primrose perianth, rich yellow trumpet, very fine; *A. bicolor Empress*, white perianth, pale yellow trumpet, good; *A. bicolor Horsefieldi*, white perianth, deep yellow trumpet; *A. obvallaris*, or Tenby Daffodil, a well known kind with yellow perianth and rich yellow trumpet; *A. princeps*, sulphur-white perianth, yellow trumpet, very fine; *A. rugilobus*, pale yellow perianth, rich yellow trumpet; *A. Telamonius fl.-pl.*, two shades of yellow; *A. William Goldring*, white perianth, pale yellow trumpet, distinct and pretty. The *Incomparabilis* section included several very handsome varieties, notably double *Incomparabilis* (Butter and Eggs), double Sulphur Crown (Coddins and Cream), double Orange (Bacon and Eggs), all very fine doubles; *I. concolor* Frank Miles, yellow perianth, cup large and fine flower; *I. Leedsi* C. J. Backhouse, yellow perianth, orange-scarlet cup, a very attractive sort; *I. pallidus aurantius*, pale yellow perianth, yellow cup; *I. Leedsi amabilis*, large white perianth, long cup, pale primrose, a very distinct and good sort; *I. L. Gem*, neat white perianth, yellow cup; *I. L. Circe* (late gloriosus major), white perianth, very pale yellow cup; *I. Barri albidus*, sulphur white perianth, yellow cup; *I. gigantens* (Sir Watkin), pale yellow perianth, yellow cup, very fine; *I. Mary Anderson* (single orange Phoenix), white perianth, cup orange-scarlet, pretty and distinct. The *Polyanthus* group included *P. Bazelman major*, white perianth, orange cup; *Jaune Suprême*, primrose perianth, orange cup; *P. Grand Soleil d'Or*, deep yellow perianth, orange cup; *P. Bathurst*, pale yellow perianth, orange cup; *P. Her Majesty*, broad white perianth, orange cup; while the *poeticus* *Burbidgei*, *poeticus* J. M. Absolon, and

poeticus ornatus were also noteworthy. The list might be still further extended, as nearly every variety had some peculiarity and distinctive feature, but enough has been given to show that the collection was a good one. It naturally attracted considerable attention, and well deserved the silver medal which the judges unanimously awarded it. Evidently the climate and soil of the Scilly Isles is most favourable to the growth of the *Narcissi*, and in time Mr. Dorrien Smith and his tenantry will be in a position to supply great quantities of early blooms as well as bulbs of the best quality. Already quantities of blooms are being sent to the principal towns in this country, and probably *Narcissi* culture will soon be the principal industry of those highly favoured isles. W. I. M.

5334.—*Ivy in ferneries*.—There is not much danger of the Ivy overrunning the Ferns if the small-leaved variegated kinds are employed, although they grow more freely in the cool moist atmosphere that Ferns love than elsewhere. We have here a small fernery which is bordered with the small-leaved variegated Ivy, the stems being trained over rootwork. It has a very pretty appearance, as the absence of dry heat causes the variegation to be very clear. In summer, when the Ferns are in full growth, the Ivy affords a pleasing contrast to them, and in winter when the verdure is gone there is still something bright to look at.—J. C. B.

Arum italicum.—A clump of this *Arum* just when the leaves are first expanded is so beautiful as to suggest the thought that if it happened to be a plant that required peculiar hothouse treatment it would be classed among the best of fine-foliaged subjects, but being hardy its claim to recognition is nearly or quite ignored. The leaves are arrow-shaped, as in many of their class, the ground colour being a deep glossy green, while the veins are marked with creamy white, thus forming a network of that tint on a dark green ground. This *Arum* is one of the first to push above ground amongst plants that remain dormant throughout the winter, and very striking it is in a mass, especially where somewhat sheltered from frosts and cutting winds.—H. P.

Violets from seed.—In a former article I stated that good results might be obtained by annually raising *Violets* from seed, especially in the case of soils not very favourable to the growth of this fragrant flower. I have just been looking at some patches of seedling plants, the appearance of which seems to confirm this statement. The plants are self-sown, and have formed a colony at the foot of an *Arbor-vitæ* in the sunniest and driest place in the garden. They are now quite a sheet of blue; I think, indeed, I never saw *Violets* so full of bloom. In such a dry position, and after a very parching summer, I am certainly surprised to see them so vigorous and loaded with bloom. I do not think that other than seedlings would have thriven so well under such unfavourable conditions.—J. C. B.

Helleborus abchasicus.—In THE GARDEN (p. 235) "Argus" proposes a task, which at any rate am not prepared to undertake. One lost *Hellebore* discussion, though brought to a satisfactory issue, is enough for the present. If "Argus" will refer to my article in THE GARDEN (p. 183), he will not find that I professed any exclusive knowledge, but only the knowledge of experience; my arrangement explained itself, and it was given subject to correction—correction by "Argus" if he feels competent to undertake the office. Whether or not if "Argus" had read "Hellebores, which do we mean?" he might have learned so much at least, that there would have been no necessity to ask Mr. Frockbank which *Hellebore* he meant when he talked of "*abchasicus*." The name, right or wrong, has long been thus applied, not first by me, and it continues to be so applied. I am responsible for originating the name "*abchasicus albus*" for the white variety, which up to that time had been, I may safely say, improperly sold as *olympicus*. If the name is to be given up, I

hope "Argus," instead of looking out for a new lost *Hellebore*, will find a name for the *abchasicus* we have, since it is too much distinct and too widely cultivated to be left nameless. As I have been obliged to refer to the article I wrote on this subject, I may say that already I should be prepared to make some alterations in details, in many cases, for instance, by substituting the term permanent variety instead of species, but as a popular arrangement I have been encouraged to hope it has been useful as it is.—T. H. ARCHER-HIND, *South Devon*.

Grape Hyacinths.—As it may interest some of your bulb-growing readers to know the names of the unusually complete collection of *Muscari*, or *Grape Hyacinths*, exhibited by Messrs. Krelage at the Haarlem show, which I have reason to know does not include their complete collection, as several varieties were not yet in flower, they are as follows: *M. conicum*, *moschatum majus*, *m. minus*, *commutatum* (very pretty), *botryoides*, *racemosum*, *botryoides album*, *atlanticum* (a very pretty variety with fine long flower-spike), *Heldreichi*, *neglectum*, *botryoides pallidum leucophæum*, and *botryoides pallidum grandiflorum*.—W. E. G.

Narcissus nanus.—Can anyone say why *Narcissus nanus* should bloom a fortnight earlier than usual this spring when flowers generally are so backward, and why the Tenby and the old double have come into flower simultaneously, and are but little behind *nanus*, all three being in bloom at the present time (March 15)? The Tenby should flower a week or so earlier than the old double, which I never remember to have seen so full of bloom, the individual flowers being remarkably large and double. By the way, what a pleasing effect *nanus* has in groups of some fifty bulbs together. The colour of the flowers is so rich, that in a mass they produce under the bright influence of a March sun a very cheerful appearance. I do not think that any *Daffodil* blooms so freely year after year as this one; it never seems to miss flowering. A cottager here has two very large clumps of a hundred or more bulbs together, and every year they form a glowing mass of golden yellow. This *Daffodil* should be in every garden.—J. C. B.

Eryngium alpinum.—I send you a dried flower of this *Eryngium*, so that you may see that the figure which you gave in a recent number is incorrect. "D. K." appears to take *E. cœruleum* (Bieb.) of South Europe and the Levant for *E. alpinum*. The latter is a plant of rather upright, tall growth, and bearing one, two, or three large flowers on each branch. It is a distinct and fine plant, which is easy to cultivate. It grows in rather shady places, but in rich and deep soil; it has very long roots, which are difficult to take out of the ground. This plant is best raised from seeds, which, however, lie long before they germinate. I have in our alpine garden raised plants with fair success by that means, and plants thus obtained are healthy and robust. I cultivate them as hardy perennials in the common soil of our garden.—H. CORREYON, *Directeur du Jardin alpin d'Acclimatation de Genève*.

* * * The specimen sent by M. Correyon agrees with the plant known in English gardens as the true *E. alpinum*, and we can now see that the plant which we figured as *E. alpinum* is *E. cœruleum*, as he states. *E. alpinum* can always be distinguished from the rest by the involucre being cut out very finely into feathered lilac divisions and by its heart-shaped leaves, while in *E. cœruleum* the involucre segments are almost entire.—ED.

SHORT NOTES.—FLOWER.

Money in both Pockets is the somewhat quaint name given by cottagers to *Lunaria biennis*, or *Honesty*, in allusion to the way in which the seeds are borne on each side of the middle division of the pods. The red or purple variety is that most commonly grown, but the pods of the white variety are generally the best and purest of the two. We get the best plants by sowing in May or June where the plants are to remain to flower the following spring, afterwards thinning them out as needful.—A. M., *Cranmore*.

frames as rapidly as possible consistent with sturdy growth. I have two plants about 3 feet high standing out in the borders which have been there all the winter; they do not appear to have suffered at all; the leaves droop and look very miserable after a sharp frost, but they soon get all right again when thaw comes.—R. LLOYD, *Brookwood*.

Tuberous-rooted Begonias are always showy and useful; a packet of seed will afford great variety, but to raise the plants requires some care. The way to be successful is to well drain a pot or pan, and then fill it with finely sifted soil, which should be pressed down firmly and made perfectly smooth on the surface, when, after being watered and allowed to stand a short time, the seed may be sown; but as it is so exceedingly small, it must not be covered, except by a pane of glass, which is necessary to prevent evaporation and keep the soil constantly moist, as on that its germination very greatly depends, and it does not do to water, except through a very fine rose, or the seed gets washed away and lost altogether. As soon as the plants are up the glass should be tilted, and the soil kept damp by gentle syringing, which must be continued frequently, and if that is done, they will soon reach a size large enough for pricking off, after which it is necessary to keep them damped or syringed as before and standing in a house or manure-bed frame, where they can get a growing heat to push them along, or they will be late before they come into bloom. A good way to bring them on quickly is to plant them out in soil laid on gently fermenting material, with a frame over them, a plan which has other advantages, as they soon show flower, and the best can then be selected for potting, and the others discarded or planted out in the borders or beds, where, if the season is favourable, they will be found to do well. Not only are tuberous Begonias good in pots, but they make grand basket plants, for which their habit just suits them, that is, those of the drooping or pendulous class, as some grow erect, and send up their flowers erect too. The soil most suitable for the plants is loam and leaf mould, but they do not require large pots, as they may be fed by giving a free supply of water and weak liquid manure after they have made plenty of roots.—S. D.

Basket culture for Nepenthes.—In a note on *Calanthes* (p. 204) Mr. T. Baines states that “*Nepenthes* are fairly well grown in baskets, but none much more than half equal to those that have been seen in pots.” Mr. Baines’ experience extends a long way further back than mine, and he may therefore have solid reasons for recommending pot-cultivation for *Nepenthes*. I agree with him respecting what is best for *Calanthes*, and for the same reason, namely, that the *Calanthes* of which he writes are not epiphytal. But this will not stand as an argument against the use of baskets for *Nepenthes*, because with very few exceptions these plants are all distinctly epiphytal in habit, and in like manner I might be able to endorse what he has said on the best method for cultivating *Nepenthes* if I had seen the specimens to which he refers in the passage just quoted, but the finest *Nepenthes* I have had the pleasure of seeing were basket-grown plants, *i.e.*, Messrs. Veitch’s collection, Sir Trevor Lawrence’s plants, and the fine specimens in the possession of Baron Schroeder. I have never seen such specimens as these in pots, a statement, however, which has little weight by the side of what Mr. Baines says he has seen. It is often a question of convenience which decides whether pots or baskets are to be used for *Nepenthes*. We are compelled to use pots owing to the difficulty we found in keeping the soil thoroughly moist when baskets were used, a difficulty which arose from the nature of the house in which the *Nepenthes* were grown, it being an airy and rather large stove. So far as my experience with *Nepenthes* goes, if it teaches anything it is this, that in a moist, close house, or in one devoted exclusively to *Nepenthes*, baskets are better for them than pots; but in large, airy, or somewhat untoward houses, pots must be preferred, for reasons which are obvious when we remember what is necessary for all *Nepenthes*, *viz.*, an

abundance of moisture. If Mr. Baines had not spoken to the contrary, I should have said that for large perfect specimens the former method must be followed. I suppose it is merely a question of experience in so far as Mr. Baines and I are concerned.—B.

MARKET GARDEN NOTES.

Chrysanthemums.—The unusually low price obtainable for these last autumn is said to have created something like a scare amongst those who grow them largely for profit. No doubt the fact of their culture having been taken up extensively during the last few years has had the usual effect of glutting the market. A brisk demand for any one thing in the London markets is almost invariably followed by over-production, which again causes a reaction, and matters return to a level which renders their culture fairly profitable. No surprise, however, need be felt that *Chrysanthemums* sold so badly, seeing that the autumn was one of the most favourable for the development of blooms in the open air experienced for many years. Quite up to mid-November there were no frosts to injure them, and not only was this the case in regard to *Chrysanthemums*, but more tender flowers were spared; even *Dahlias* were abundant all through October, in the southern counties at least. In a general way such flowers are cut off or washed to death by heavy rains long before that time, and by November *Chrysanthemum* growers commence their innings, but last year they did not get them till December was well in, so that the early or, rather, mid-season crop had almost to be given away. When flowers good enough for exhibition come without protection there is not much chance of indoor blooms realising much. Next year will probably tell a different tale. Large growers probably find it to their interest to take the season through, but those having a limited area of glass would undoubtedly do better to confine themselves to the latest flowering varieties, such as come in from the beginning of December up to Christmas. From the middle of December up to the end of February any flower fetches a fair price in Covent Garden. Up to the present the number of kinds which bloom naturally at the tail end of the year is rather restricted, but as the Japanese kinds are being added to largely, we shall probably in time get some more really good late flowers.

Crassula jasminæa.—There can be no doubt as to the position this will take as a market plant. It is perfection as regards habit, is remarkably free flowering, the flowers are of the purest white, deliciously fragrant, and of just the size and shape that render them suitable for mounting up for bouquets. It is a chaste flower of very easy culture. Last year good plants in 5-inch pots were selling at 8s. per dozen wholesale—not a high price certainly, but one which should pay tolerably well, seeing that the propagation and general treatment are of an elementary description. Old plants pulled to pieces early in the year make good plants by autumn by ordinary greenhouse treatment, and the young growing tips strike freely in warmth. Plenty of sunlight and air through the summer are the main points to be kept in view with no more water than is sufficient to keep the roots from perishing in winter, as, like all plants of a succulent nature, it is impatient of stagnant moisture at the roots. I would remark, by the way, that small plants with but a couple or so of flower-stems but imperfectly show the beauty of this *Crassula*. It requires a specimen in a 5-inch pot with a dozen good trusses of large blooms to do so.

Crown Daisies.—The taste for single flowers has had the effect of bringing these into notice as market plants. I saw some last spring which were bought in Covent Garden at 1s. 6d. each, moderate-sized plants with three or four expanded blooms, which shows what fashion can do, for that is about the price of a good *Cyclamen* or *Pelargonium*, which take some time and considerable skill to grow; whereas the plants in question could not have been more than four months old, and are

about as easy to grow as any plant in cultivation. The kinds most favoured seem to be *Burridgeanum*, *Lord Beaconsfield*, and *tricolor*. I should not wonder if these tricolor *Marguerites* become very popular as window plants in summer, as they continue to bloom without intermission all through the summer and autumn.

Garden plough.—Cultivators as a rule have but little faith in the plough, but I think that a new invention by Messrs. Ransomes & Sim, which consists in a modification of the plough as generally used for the especial convenience of market gardeners, will be likely to meet with universal approval. The principal difference between this “garden plough” and the ordinary one is that in the former the share, instead of terminating in a point, widens out into a broad, sharp, flat blade, which, cutting its way evenly through the ground, thoroughly breaks up the subsoil. To an inexperienced observer there would appear to be but little difference in the work effected by the two ploughs, and it is only when one makes a close examination of the way in which the old-fashioned implement is managed that the superiority of the new invention becomes apparent. Five inches is the depth to which farmers in a general way allow their land to be stirred, and if you measure the work done, putting your rule down by the side of the furrow, you find this depth, but pass the rule to the opposite side of it and it will indicate not more than 3 inches of stirred soil, and often not so much. The shape of the ploughshare is partly the cause of this unequal work, but it is also caused by the way in which the ploughman holds his implement, his object being not to move the ground well, but to make “good work”—that is to say, laying the furrows even and completely burying the rubbish. This he does by holding the plough a little on one side, which enables him to better hide the surface soil. A straight course and an even surface is really all the ploughman, and, if the truth must be told, mainly what a very great number of farmers think are the essential points to good workmanship. Now, with the “garden plough” nothing of this can take place; there is no shirking the depth at which it may be resolved to go. As a fact, the ploughman is nowhere in connection with this modern implement; he is not wanted at all; a boy to guide the horses and turn the plough is all that is required. It does not want “holding,” but once “set in” will go down the field as straight as a line, and this it will do even if the handles are not grasped at all. To those who are familiar with the way in which the ordinary ploughman holds his plough in order to maintain a correct course, and who are aware that some skill is needed to do so, the sight of this plough being drawn through the soil with the man walking by the side of it is curious. I was told as a fact and as comically illustrating the ease with which this garden plough may be used, that a cultivator having procured two and set them to work in the same field was struck with indignant surprise on unexpectedly entering the field to see the plough travelling unattended up and down it, the men sitting the while one at each end placidly smoking their pipes and simply turning each other’s ploughs as they arrived at either end of the “bouts.” As even with the best will he could find no fault with the work done, he could scarcely blame the men for not doing that which was evidently not necessary. Ground turned up with this plough as nearly resembles digging as will probably ever be effected by anything in the form of this implement. The level surface is made by means of a sharp curved blade which is fixed to the end of the turnfurrow. This resembles the section of a reaping hook and can be “set” or not at will. In turning up roughly to lie for the winter it is not required, but in ploughing clean ground where a level seed bed is needed, it just skims along through the “crumb,” breaking it down and leaving but the vestige of a furrow, so that a slight turn with the harrow brings it into good condition for sowing. The garden plough is entirely of iron; it is much smaller than the lightest iron plough hitherto made, the handles being well down, so that any ordinary-sized lad can manage it well. For mar-

ket growers I think this plough will prove useful; it certainly does break up the ground better than any other plough in use, and is the only one that can pretend to rival the spade, which, by the title given, is evidently what the inventors intend it shall do.

Digging by steam—A steam digger has been working in our neighbourhood for several years, and it certainly stirs the ground in a very effectual manner. It is simply a traction engine, with broad wheels to keep it from sinking in the ground, and as it travels backwards it works three large forks having tines 17 inches long, so that it can easily move the soil a foot deep. The action of these forks exactly resembles that of the human arm, and the soil is turned over just as is the case with manual labour. I am told that it does about four acres per diem, but what the cost is per acre I have had no means of ascertaining.

J. C. B.

TAR PAVING.

PERHAPS I was not explicit enough in my remarks on tar paving (p. 225). "T. B." assumes that I did not intend the tar should be boiled, but that is a mistake, as I should always recommend it to be boiled. Against the method adopted by the Manchester firm spoken of by "T. B." I could place that of three London firms, who always burn the stone preliminary to the mixing process, and which they consider the right thing to do. I prepared an estimate some time ago for a public body, amounting to some 3000 pounds, which was adopted and carried out; the stone was burnt and the work has been perfectly efficient and satisfactory. The advantages of burning the stones are, I maintain, important. First, you get rid of all the dirt adhering to them; secondly, the larger stones fly into angular pieces, such as would not result from breaking in the ordinary manner, and which hold together better—an important consideration; thirdly, the stone is dry and therefore more absorbent; fourthly, the mixture, I might almost say combination, is more perfect. Anyone who has seen tar placed upon wet surfaces must know that a kind of decomposition, "not chemical, perhaps," takes place, and then the adherence is imperfect, a result which must follow if the stone is not sufficiently dried by artificial means. The heated stones invite, so to speak, the tar to enter the fissures and pores, so that the maximum of saturation so necessary to success is infallibly secured. The examples of defective work mentioned by "T. B." are mainly attributable to the proper method not having been followed. I would never recommend tar paving for roads that have to carry heavy or even medium traffic; it is suitable for walks, playgrounds, and similar purposes only. As to slipperiness, my experience has always been the reverse of that of "T. B.," i.e., if properly laid down and the right kind of materials have been used. Water is the most destructive agent; therefore paths made of asphalt should be made to carry it off quickly. From 3 inches to 4 inches of pavement are ample for all purposes upon a solid foundation. If for public thoroughfares, the paving should be well lipped over the kerbing, with plenty of fall to the channel. In the proximity of gasworks, and where it is difficult to obtain good gravel, asphalt walks are eminently satisfactory.

C. D.

SOOT AND ITS USES.

SOOT is not used in gardens half so much as it should be. In some respects it is better than any kind of artificial manure, inasmuch as it not only enriches the soil, but destroys many sorts of insects, a very important matter and a great gain. It may be dug into kitchen garden ground with much advantage, and it may also be mixed with soil for potting the majority of plants. I do not know any crop in the kitchen garden that is not benefited by soot, and in soil for Onions, Carrots, and all kinds of roots it is excellent. It is not, however, lasting in its effects; any dug into the soil now would be quite gone by next year, but it is cheap and easily obtained, and may be put on in quantity annually. We never use it by measure

or weight, but spread a good sprinkling over the surface of the ground, and dig it in sometimes with farmyard manure and sometimes by itself. A quantity of it sown in drills with Potato sets prevents the tubers from becoming worm-eaten. The other day in sowing a large quarter of Onions we mixed up a good quantity of soot with the sandy soil, which was put on the top of the seed, and, judging from past experience of this treatment, we feel sure that no Onion grub will trouble our plants this year. It can be sown on the surface after the crops appear, and if put on when rain is falling it will soon be washed down to the roots. This is a good way of applying it; soot feeding imparts a healthy deep green colour to vegetation, and then satisfactory returns are sure to be the result. Potting soil sprinkled with soot always remains free from worms, and plants so treated always assume a bright healthy appearance. It may be sprinkled on the surface of the pots and watered in, or, better still, given in the form of soot-water. Newly-potted plants and those with few roots do not require it, but when the soil is full of roots soot-water proves highly beneficial. We water our Pines, Vines, Strawberries, Kidney Beans, Orchids, Pelargoniums, and everything with it, and value it highly. In some cases a difficulty is experienced in getting soot to mix with water. The best way is to put one or two bushels of soot in a sack and also a piece of iron or brick along with it to sink it, tying up the mouth of the bag; then put it into a tub, cask, or tank, and the water will soon penetrate through the soot, making it into a pulp, thus forming pure soot-water. There is no time or season in particular when soot-water may be specially used, as it may be given to fruiting and flowering plants all the year round. Just now early Strawberry plants in pots will be greatly benefited by soakings of it at least twice a week, and when it is desired to make the foliage assume a deep green, healthy colour or the flowers a brighter hue, judicious applications of soot-water will accomplish it better than anything else with which I am acquainted.

CANBRIAN.

How I got my rookery.—I had long wished to establish a rookery here, but could not tell how to set about it, and on enquiry of persons from whom I expected to get information, I found the matter beset with difficulties and the result uncertain. Flocks of rooks often visited the grounds, particularly in the Acorn season, where for many weeks they found abundance of food. I used to watch them, but soon saw that they did not like it, particularly at close quarters. I then refrained from noticing them at all, and instructed others about here to follow the same course, the effect of which was soon visible. They became bolder and bolder, and I was particular not to permit a gun to be discharged when they were here. At last they seemed to quite understand that we were friends, and would allow me to pass beneath the trees on which they were perched without taking wing. Three years ago they gave me an agreeable proof of their confidence by nesting on a group of lofty Pines close to the house, indeed, nearly overhanging it, and each year since the number of nests has increased. During winter they often bring hundreds of their fellows to the trees as a resting-place when going to or returning from their foraging excursions, and set up a clamour right welcome to my ears. I am induced to think from this procedure that more success may be secured by gaining their confidence than by any of the modes or contrivances usually recommended. Gamekeepers told me I must shoot some every year, or the whole colony would forsake me. This I considered unreasonable, and the sequel shows it to be wrong. The rookery would by now have been of considerable size, but every attempt by outsiders to form a settlement is met by the most determined hostility of the original freeholders, who allow them no peace until they beat a retreat. This seems strange. I always thought the rook a most sociable bird, and his principle of life "the more the merrier."—J. M., *Charmouth, Dorset.*

GARDEN FLORA.

PLATE 486.

THE HARDY SQUILLS.

(WITH COLOURED FIGURES OF VARIETIES OF *SCILLA BIFOLIA*.)

AMONGST early spring-flowering bulbs the various species of *Scilla* are among the most important. Year by year they are becoming more popular—so much so, that we hear of large quantities being planted with a view to naturalising them in woods and parks. The kinds employed for this purpose are the different varieties of *S. bifolia* and *S. sibirica*, and there is no reason why others, such as *amœna* and *hispanica*, may not be used in the same way. *S. maritima* and *peruviana* are not here included, for, though hardy enough in some districts, it is always safest to have specially prepared places for their reception. Most of the kinds just mentioned are easily increased by means of offsets from the parent bulbs, but as in most cases this is a slow process, seed where procurable should be resorted to.

S. AMÆNA (the Nodding Squill).—This is a handsome robust-growing Squill, which as regards outward appearance is simply an exaggerated *sibirica*. When full grown the leaves are about a foot long and pale yellowish green, forming effective tufts, which associate well in the mixed border or on rockeries with those of other plants. The flowers are dark porcelain-blue or violet, rather flat or torban-shaped, and borne on scapes about a foot high. For edging shrubberies this species is well adapted, and as the leaves keep their singular colour for a length of time, it helps to vary the dull green of the shrubs. It flowers in April, and is a native of the Levant.

S. BIFOLIA (the Early Squill).—This, though, perhaps, not so commonly met with as the Siberian Squill, is nevertheless quite as worthy of a place in our gardens. It seldom fails to produce its flowers a full fortnight before those of that species make their appearance, and, indeed, during mild winters and under favourable circumstances its welcome blooms may often be seen breaking the ground soon after midwinter if mild. As to position, that is immaterial, as it seems to succeed equally well in the open and under the shade of trees. One condition, however, is essential to its well-being, and that is, it must be left undisturbed to seed and increase as it likes. Of all the *Scillas*, *bifolia* has been perhaps the most prolific as regards varieties. The late Mr. Nelson raised several desirable kinds, but, unfortunately, they are not in general cultivation. Most of the older forms known in gardens are, without exception, advances on the type. *S. præcox* is a stronger grower than the common one, and has slightly broader leaves; the flowers, too, are larger and more abundant, and generally produced earlier. In *purpureo-cœrulea* the ovary and base of the segments are rosy purple, gradually merging into blue, which becomes intense towards the tips, harmonising well with the black and gold-banded anthers. It is a free flowerer, and the blooms individually are nearly as large as a shilling. In the Taurian variety, *S. b. taurica*, the flowers are much larger than in *S. bifolia*, and, with the exception of the white base, greatly resemble those of some of the forms of *Chionodoxa Lucilæ*. The flowers vary from ten to twenty on each scape, and the leaves of this fine variety are larger and broader than those of *S. bifolia*, and do not confine themselves to the bifoliate character. The white form of *S. b. taurica* if now in the trade is very scarce. *S. b. alba*, a pretty ivory-white form, has flowers not larger than those of the type, but they are freely produced. It is said to be plentiful in shady groves in Germany. Others, many of which are in cultivation, are *candida*, *carnea*, *rosea*, *compacta*, *maxima*, *metallica*, and *pallida*, &c.

S. NUTANS (the Wood Hyacinth), also known

* Drawn in Captain Nelson's garden, Holms Lodge, Godalming, in April, 1884.



VARIETIES OF SCILLA BIFOLIA

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in gardens as *Hyacinthus non-scriptus*, is too well known to need detailed description, few gardens being without their patch of Bluebells. It is, perhaps, the only Squill in which the flowers are distinctly arranged on one side of the stem, thus giving it that gracefully drooping character which is so much admired. The common blue form is plentiful in many districts, but neither the rosy coloured nor yet the white variety are found in any quantity, although both grow with the same freedom as the type. It flowers in May and June.

S. HISPANICA (the Spanish Squill).—This, known in gardens under the name of *S. campanulata*, is a native of Portugal and Spain. It is one of the very finest early summer-flowering bulbs we have, and although for market work its white variety is preferred, the old form is still plentiful and likely to hold its own where well established. It is easily distinguished from all others by its distinct, bell-shaped flowers and rather robust habit.



Spanish Bluebell (*Scilla campanulata*) in the wild garden.

The leaves are about a foot long, an inch broad, and sharp pointed; the flower-stalk, which is about a foot in height, bears a profusion of pale blue flowers, but in others they are azure-blue, violet, pink, and pure white, all having more or less recurved edges. It flowers in May and June.

S. ITALICA (the Italian Squill).—This is remarkable for its pretty little rosettes of dark green lanceolate leaves, its pale blue flowers with darker coloured stamens, and the delicious fragrance which they emit early in the day. It rarely exceeds 8 inches or 10 inches in height, and though it will do well in a variety of soils, it seems to thrive best and increases most in a light, sandy loam sheltered from east winds.



Green-veined *Scilla* (*S. amœna*).

S. SIBIRICA (the Siberian Squill).—This well merits the place which it has attained and which it has so long held—that of being foremost amongst dwarf spring-flowering bulbs. The peculiar porcelain-blue of its modest drooping flowers is quite unique at that early season, and

mixed with Snowdrops they have a charming effect, while alone in large patches they are very striking. Wherever the soil is light and sandy this bulb may be had in perfection, either in the rock garden, in the flower border, or peeping from amongst the Grass by woodland walks, where it is most effective. It is not so sportive as its near neighbour, *S. bifolia*; although a few varieties have been obtained, few are distinct enough to merit attention. *S. amœnula*, which comes a fortnight earlier than the type, seems to be the most distinct, and one named Captain Nelson, if anything, darker coloured than the last, has slightly larger flowers. The white variety seems to have entirely disappeared from cultivation in this country, but a single bulb was shown in Holland the other day. The Siberian Squill is used extensively for forcing, which it seems to stand well, and is very ornamental in greenhouses early in the year. It is also becoming a good market plant, six bulbs placed in a 3-inch pot, or a fewer number mixed with Snowdrops, at once meeting with a ready sale. After forcing, instead of throwing away the bulbs, as is usually done, they should be planted out, where in the course of a year or two their usual vigour will be restored, when they may again be lifted and forced as before. By having three sets of bulbs, a continual succession for forcing may be kept up without expense.

Amongst Squills not generally found in gardens, but which are hardy enough in dry situations, may be named *S. peruviana*, a large species, with beautiful broad leaves, Yucca-like and very distinct; it stands well in sheltered nooks, or even in the open border in southern districts. The variety *Clusii* also stands well. *S. maritima* is properly a greenhouse species, but in the places indicated for *S. peruviana* it may be grown outside without hurt, though it rarely flowers. *S. lilio-hyacintha* is quite hardy, and well worthy a place in the mixed border. *S. Bambareii*, for which we are indebted to Mr. Archer-Hind, though small, is very pretty and much superior to *S. verna*. *S. hyacinthoides*, *S. pratensis* (amethystina), *S. obtusifolia* (an Algerian species of interest lately reintroduced by Mr. Maw), autumnalis, *Aristidis*, *patula* and its various forms, including *cernua* and others, differ little from one another in general characters.

For the following on early-flowering Squills we are indebted to Captain Nelson, Holme Lodge, Godalming, whose collection of these charming spring flowers is one of the richest in varieties of any we have seen: "These spring-flowering bulbs give us about the most lovely of our early flowers. As soon as the frost and snow of winter are disappearing they commence pushing up their spikes of delicate and many-coloured charming flowers, delighting all who see them. They come, with the Snowdrop and Aconite, at a time when flowers are truly welcome. They commence flowering early in February, and continue through that month and the next well into April, producing their flowers abundantly. First to appear is *Scilla nivalis*, followed by *S. præcox*, *S. bifolia*, *S. b. alba*, *S. b. rosea*, *S. b. carnea* (a hybrid between *rosea* and *alba*), *S. taurica* (a large form of *bifolia*), *S. taurica alba*, *S. taurica pallida*, *S. sibirica*, *S. verna*, *S. amœna*, *S. italica*, and *S. italica alba*. This may be said to comprise the list of early-flowering *Scillas*. They are of easy cultivation and succeed

well in pots. They delight in a well-drained, sandy loam and an open, somewhat sheltered situation; if planted in damp or strong soil, they do not remain healthy. They require to be taken up every two or three years, separated, and replanted. The bulbs do not like to be kept long out of the ground; if so, they get dry, and when planted do not thrive and produce good flowers or good spikes of flower."

FRUIT GARDEN.

AN APPLE ELECTION.

THERE seems good reason to admit that the Apple election published in the report of the Apple con-



Spreading Bluebell (*Scilla patula*).

gress of 1883 is not satisfactory; of course it is not possible to ignore the fact that a large number of growers selected King of the Pippins as the best dessert kind, and Lord Suffield as the best kitchen variety. Still, we must be careful to remember that these sorts have this popularity simply because they are much better known than are sorts that some may be disposed to place in the front rank. Further, there can be little doubt that some kinds, and those not always the best flavoured, or even the best cropping sorts, thrive best in certain places. Such kinds will always find friends. After all the results of the election in the Apple congress report are not so disappointing when after kinds of milk-and-water quality are placed Cox's Orange, Ribston, Kerry, and Blenheim Pippins. Indeed, it would seem as if the electors, having given way to their respect for the "King" because of its free and constant bearing qualities, had quieted their consciences by next adopting kinds that are of the highest excellence as far as flavour is concerned. Without doubt the most reliable of these best kinds is Blenheim Pippin, because it so often fruits when others fail, and it does well almost universally and is hardy.

On the other hand, it seldom fruits freely until the trees are of mature years, differing in that respect from King of the Pippins, which will fruit freely on young trees. The election found



Medicinal Squill (*Scilla maritima*).

to the Apple congress report could hardly be termed the outcome of full publicity. It was, I believe, the result of applications made to those only who sent Apples to the congress, and these relatively speaking were not a very great number. An election, however, conducted on a wider basis and having the fullest publicity, would perhaps produce diverse results; still, much would depend upon the nature of the queries to which answers were invited. Thus, for instance, replies might be widely invited to such questions as the following: Which is the best flavoured dessert Apple? which is the handsomest, and which is the best and therefore most reliable cropper? which is best for dwarf trees on the Paradise stock? which is best for standard or orchard purposes on the Crab stock? and, finally, which is the most meritorious of late-keeping dessert kinds? I am not sure whether it may not also be worth while to ask for the kind which is held to have the most good points, and therefore the best all-round sort of dessert Apple. Such an election responded to from all parts of the kingdom could not fail to prove most interesting, and doubtless reliable results would be obtained. Just now Apples and Apple crops can be discussed in a more philosophical spirit than is the case when heavy crops on one kind and poor crops on another are apt when just gathered to give a bias to the judgment that would perhaps not be evident in cooler moments. Neither the earliest, nor the latest, nor the best keeping, nor the best flavoured, nor the handsomest, nor even best cropping kinds, may after all give us the best variety at all points, and such an one is exceedingly difficult to select, and no grower of experience and without bias could mention the names of the absolutely best without ample consideration.

With respect to kitchen Apples, a certain fancy for size and earliness seems to have favoured the selection of Lord Suffield as the best variety, and yet it is one of the worst keepers we have, and one of the shortest lived. Thinking so good a kind as Stirling Castle one of the best autumn kitchen kinds, I mentioned to an excellent gardener the other day my intention to graft some of it on to worthless sorts, but he declared very warmly for Lane's Prince Albert, as the best kind to grow, even better than another favourite of his, Frogmore Prolific, a grand variety. For one person to whom Prince Albert is known, perhaps one hundred know and grow Lord Suffield. It is worthy of note that King of the Pippins, Lord Suffield, and Dumelow's Seedling, alias Wellington, although selected so largely in this congress election, proved to be so tender in this market garden district a few winters ago, that many trees were quite killed. A request for the best summer, autumn, midwinter, and late winter kitchen kinds would, no doubt, be productive of much useful information.

A. D.

BLACKBERRIES AND THEIR CULTURE.

THERE is abundant evidence that the long-neglected Blackberry of our hedgerows will ere long become one of our most important fruits. It may be argued that a fruit that comes to such perfection as the Blackberry does without any attention, does not require culture, but there can be no doubt that it will repay good culture quite as well as other cultivated fruits. I question if there is any part of the kingdom where Blackberries grow spontaneously in such abundance as in Hampshire and they never fail to produce grand crops. Last year the quantity sold in south coast towns was incredible, yet, singularly enough, the price at no time fell so low as it frequently does for Strawberries. The latter are expensive to cultivate, and yet, after rent and all incidental expenses are paid, the returns for them are not equal to those for our hedgerow Blackberries, and I feel sure that if the latter were cultivated with the same care as Strawberries, they would repay the grower for market far better. That they can be produced far finer than they are ordinarily met with, I have proved over and over again by noting the large fruits that chance seedlings have produced when they sprang up in positions where good soil was within reach of their roots. As regards sorts, I think we should give our native kinds a fair trial before we condemn them or get others. The Americans have long been ahead of us in recognising the merits of the Blackberry. Its freedom from all kinds of disease and safety from spring frosts make it one of the few fruits that never fail. The last season's wood is as prolific as that of a Raspberry, and bears its fruit in a similar manner. As regards cultivation, I think we might safely take that adopted for Raspberries as a guide. Either plant in lines and train to wires stretched from post to post, or they might be planted in clumps, and fastened to stakes. In low-lying grounds, too, mounds might be raised for them, as they appear to prefer rather elevated positions. In large towns, that have not the abundant supply that we have from those growing wild, there would doubtless be a ready sale for them, as they come in after ordinary bush fruits are over, and for culinary purposes, either by themselves or mixed with Apples, they are really excellent. It is, however, for the manufacture of jam, and more especially jelly, that I should most strongly advocate their culture; their flavour is excellent, and, as to keeping, we are now using some that I have no hesitation in saying would keep for years. Blackberry jelly is superior to jam, because by straining it through a sieve the hard centres or cores of the fruit are re-



Cu'an Lily (*Scilla peruviana*).

moved. Therefore, with cheap sugar and the great increase in the use of jams and preserves of all kinds, it behoves us to make the most we can of the Blackberry. It will grow freely anywhere, and is propagated with the greatest facility. If the points of the shoots are allowed to touch the soil, they soon take root, and send out strong growths that may be severed from the parent plant like a Strawberry runner.

Gosport, Hants.

JAMES GROOM.

STORING LATE APPLES.

THERE appears to be a considerable diversity of opinion as to the best mode of storing late keeping Apples. We have been taught to believe that Apples to keep for any length of time should be gathered when quite dry, stored in a dry loft or other airy place, and, if possible, in single layers. It is, therefore, not surprising that Apples thus treated become fairly dried up and shrivelled, and that our supply of home-grown fruit is practically over long before it ought to be. It has, on the other hand, been demonstrated over and over again that Apples can not only be kept in good plump condition until Apples come in again, which is enough for all practical purposes, but that they may, by carefully excluding air, be kept far into the second year. What are called Apple rooms are as a rule far too dry; although fruit keeps fairly well in them during the darkest and dampest period of the year, the lengthening days of spring and drying winds finish off the remnant left long before it ought to come to an end, leaving a blank in the fruit supply not easily filled. During the last few years the importation of American Apples, that keep in good condition long after our home-grown supply is over, has set many thinking as to the difference in the produce of countries similar in climate in most respects. There can, I think, be little doubt that the superior keeping powers of the American fruit are entirely due to the mode of storing adopted, for while ours



Siberian Squill (*Scilla sibirica*).

are spread out on shelves as thinly as possible, the Americans are packed away in barrels, and are thereby safe from the withering effects of exposure. In Kent, in place of dry airy shelves and single layers of fruit, Apples are stored in large heaps on the floors of hop-kilns. In these, under a good covering of straw, they keep fresher and come out more juicy in spring than ever I saw them come from Apple rooms of the ordinary type. In this locality the fruit supply, as far as Apples and Pears are concerned, is by no means equal to the demand. Consequently, foreign barrels of fruit are in great request. Even those who grow really late keeping Apples, having no means of storing them, send them to the nearest market, or sell them to wholesale dealers in the autumn for what they can get for them, usually not half their real value. Matters in this respect, however, seem to be improving. Only a few days ago a gardener in this locality told me that one of his labourers, having a fine crop of late-keeping Apples, was induced to buy several large empty casks and store them in an outhouse, setting the casks one on the other, with the result that the fruit not only kept beautifully, but the price realised for it was more than double what he would have received in autumn. The prices varied from 5s. to 8s. per bushel, and I am certain that no cultivated fruit yields so good a return, year after year, as the Apple. Its cultivation is of the simplest description, and a selection of a dozen kinds for dessert and the same for kitchen use is enough for practical purposes. Divide them into early, mid-season, and late sorts, and have as many trees of one good kind as the space available will accommodate. Send the early sorts to market direct from the trees; the mid-season ones

will keep in any covered building, and store the late sorts in barrels or in a cellar rather than in an elevated building, and if Apple culture does not pay, your experience will be different from mine.

JAMES GROOM.

Gosport.

WORK DONE IN WEEK ENDING MARCH 31.

MARCH 25.

UP to the present time the year 1885 will have to be referred to as having been remarkable for the small amount of sunshine; but matters are mending, for to-day we have had a fair share of sunshine, and never was it more welcome to gardeners generally, and to those of us who have to force fruits almost against time it is particularly welcome. All our vineries, except those in flower, were closed up by two o'clock, the thermometer running as high as 95°, a temperature of sunbeats that, with plenty of moisture, suits them to perfection. When the conditions are favourable to its being done, this mode of sunshine forcing may begin as soon as the bunches are discernible and be continued till they begin to flower, for it not only suits the Vines better than any other treatment, but the bunches run out to a greater length than if brought up on the cold treatment. Of course, the very few people who prefer small bunches had better continue their lower temperatures. Tied down shoots in early Peach house. They are now stoning, and an equable temperature of about 60° will be maintained for the next three weeks, syringing to keep off spider and early closing with sunbeats being continued as before. Smooth Cayenne Pine plants are now regularly shaded from 10 to 12 o'clock; all other varieties will do quite well without it, though in the height of summer a little shade is acceptable. Put in more cuttings of bedding plants, and made up another frame for Alternanthera cuttings. Outdoor work has been planting edgings of variegated Thyme and groundworks of Sedum glaucum and Sedum acre elegans variegatum. Sowed soot and wood-ashes on parterre turf; there is so much trampling here that the turf gets bare, and a little help of that sort is every year requisite to start the Grasses into good growth, and another advantage of the dressing is that it destroys worms, and consequently there are fewer worm casts. Cleared rockery of weeds, Lichen, and dead plants, and filled up vacancies by planting a few hybrid varieties of Primroses, Gentians, Iberis, and Musk. Began to mow with scythes, and rolled all the lawn preparatory to machine mowing. Put new stakes to standard Roses, and pegged down, after pruning, strong growths of Rose Souvenir de la Malmaison, which is still one of the finest varieties, and though classed as a Bourbon is more deserving to be classed as a Perpetual than many that are so classed. Ours flower as early as any of the latter class, and continue doing so up to Christmas if the weather be not too severe.

MARCH 26.

Fine, though sunless and bitterly cold, and therefore Apricots and Peaches being in full blossom the coverings were kept down, as I think that a biting "nor-easter" cuts up the blossoms quite as much as does frost. Staked second lot of Peas and earthed up others that were just peeping through the soil, planted out Lettuce that had wintered under the shelter of fruit walls, and remainder of autumn-sown Cauliflowers. Hoed deeply between throws of winter Onions and early Cabbages, the heavy rain having made the ground hard—sealed, in fact, against the admission of air and heat. Drew drills for Potato planting and sowed in them a mixture of soot, wood ashes, and light soil, and as rain seems threatening we shall not yet plant, but leave the drills open for a few days that the manure may get washed into the soil. Planting out the same kinds of plants as yesterday, and clearing up the prunings of shrubs, and making a final end of them at the fire and ash heap. Finished cleaning and planting our rockery, and clipped, not close, with sheep-shears the small shrubs on it to keep them in compact growth. Cotoneaster microphylla, the small-leaved variegated bronze and green Ivies, and Periwinkles (Vincas) are amongst the best for trailing plants

for the rockery garden. Indoor work has been much the same as for some time past; the great bulk of the work now consists in regularly tying and stopping the shoots of Vines, Peaches, and Figs, and in keeping filled up as the fruit is gathered the Strawberry shelves in pineries and Strawberry house. A great number was to-day thinned out, from six to eight fruit being left on each, and all the flowers still on the plants at the time of thinning were picked off. They now require to be looked over twice a day regularly in regard to watering, and at one of the times manure water is given to all that have set their fruit till it begins to colour. Early Muscats are just opening flower, and provided we do not get abundance of sunshine they will be artificially fertilised, either by using a large camel's-hair pencil or when the atmosphere is extra dry, giving a tap on the bunch or a general shake of the trellis to cause the pollen to disperse; 70° will now be our minimum on the coldest night, and 75° when the weather is milder, and atmospheric moisture will be reduced, but at the same time aridity will be carefully avoided. Propagation of bedding plants completed the round of to-day's duties.

MARCH 27.

A grand day; hoed amongst late Broccoli and between the rows of recently planted Rhubarb, Artichokes, and Seakale, more for the purpose of breaking up the soil than for the destruction of weeds; indeed, of the latter none were visible, and this operation will further prolong the appearance of any; prevention of growth is ever the best rule in regard to weed crops of every kind. Sowed Grass seeds on outlying parts of lawn, from which turf had been taken to put down in more conspicuous parts that needed renovation. Our mode of preparing the soil is simply to lightly "point" it up and sow the seeds whilst the ground is still rough; then roll it once over, and afterwards sprinkle a little fine soil over the whole, and again roll till firm to the tread. Netting is the best way of keeping the birds from pilfering the Clovers, but if this cannot be had, a string or two stretched over the ground, on which are tied pieces of paper, make a moderately good scare. Planting, as yesterday, edgings and groundworks of flower beds with hardy plants, and cleared all open-air flower-vases of the old soil, and began to get the new soil ready. Moderately stiff loam, a small proportion of horse droppings, and a similar quantity of vegetable or leaf soil is the mixture we use for all kinds of vase plants. Repotted part of our stock of Eucharis amazonica and divided a few, putting the various sized bulbs separately so that each pot of bulbs may flower at the same time. Peat and loam in equal proportions is our mixture, and the soil is pressed as hard as we do when potting Strawberries. Repotting and division we do once in two years, and they are never dried off under the mistaken notion that by this means they will be rested, and thereby be made to flower; nor are they ever changed as to temperature, or, indeed, as to house, and yet they flower profusely, always thrice and often four times a year. The nearest approach to resting they ever get is the partial withholding of water for two or three weeks after flowering; but even then they are never allowed to get anything approaching dust-dry. Old plants of Bouvardia that were cut back some time ago, and which now have new growth some 3 in. or 4 in. long, have to-day had the old balls of soil reduced and been repotted in the same sized pots. Peaty loam and leaf-soil, with a little bit of well-decayed manure, make an excellent compost for them. The plants are put in a moist heat, and will be shaded till re-established in the new soil. Potted from seed pan into 2½-inch pots *Amarantus salicifolius*, an excellent plant for the outer circle of a bed of *Ricinus*, tall growing Cannas, and *Solanums*. Potted seedling *Celosia plumosa* (the bright purple variety seed of our own sowing), remarkable for its compact, pyramidal-shaped growth, that renders it invaluable for conservatory and house decoration. For the present the plants will be grown on in a heated pit, but when stronger and the weather gets warmer greenhouse treatment suits them best. Pinched the points out of all bedding Violas to

induce a branching habit; Mrs. Grey (white) and True Blue are two real gems for summer and autumn flowering.

MARCH 28.

Another magnificent day. A great part of our doings to-day consisted in sweeping up and rolling both walks, roads, and lawn, which operations having been so frequently adverted to, it is unnecessary to further particularise them. Continued the same description of planting as for several days past, and cleared off old Broccoli stems, and began to trench the ground ready for successional sowings of Peas. The houses, too, had their usual weekly cleansing; also re-arranged plant stove, and replenished forcing pit with shrubs, &c., Azaleas, bulbs, Roses, and other plants in full flower being moved into the coldest house to retard them, as they are required for use as cut flowers. Potted on a few more *Chrysanthemums*, and gave all of them more space in the pit. Stopped and tied down the shoots in a mid-season vinery, which contains several varieties, some of which are so exceptionally strong that it is almost dangerous to touch them lest they break off, hence we had to be content to simply steer the points from touching the glass by a tie with *Raffia* Grass. Gros Colmar, Barbarossa, White Tokay, and Alicante are the kinds that most readily snap off. The border, inside, has also been given a good watering, the temperature of the water being nearly 100°, and there will be a repetition of the watering as soon as the Vines are out of flower. Figs have also had another watering and about a third of the shoots stopped back.

MARCH 30.

Being still dry, hoeing has been continued, and is now completed in kitchen garden, and other work in this department has been the replanting of Rhubarb roots that were lifted for forcing. We cut the roots up into pieces having a couple or three crowns, and plant on well-enriched soil a yard apart. A plot of ground is being prepared for planting out a first batch of Brussels Sprouts; Potatoes were the last crop taken off it, and during winter it was trenched three spits deep and given a good dressing of manure; it is now being surface-forked over, after which deep drills will be drawn a yard apart and the plants put out at 30 inches apart in the row. They are now in a cold frame, and when planted will be lifted with balls of earth and be put in with trowels. This way is an improvement on that which we originally practised—viz., sowing in drills where they were to grow, a way that answered very well, but slugs and grubs made such raids on the seedlings as to cause so much trouble that we discontinued the plan in favour of the way just mentioned. Syringed Plum and Cherry trees on walls with Gishurst and soap-suds; there is a little Moss and Lichen on the stems and principal branches, which it will destroy, besides any other parasites or insects there may be about the trees, walls, and shreds. The mixture is also so distasteful to bullfinches, that, partial as they are to Plum-buds, they will not touch them when flavoured with Gishurst. Besides the usual routine of work in the houses, which is now great, all the hardest varieties of bedding *Pelargoniums* have been planted out in cold pits, and in leaf-soil principally, this being the best mixture to ensure the plants lifting in good form at planting-out time. The frames will be well protected at night, and for a few days little or no ventilation will be given. Put in cuttings of *Kleinia repens*, a glaucous, blue-bedding succulent, quite unique for edging a succulent bed arrangement, or for forming the outlines of a design of a foliage arrangement of dwarf plants, such as *Alternanthera*, variegated *Mesembryanthemum*, Gold Feather *Pyrethrum*, and the like. The cuttings are inserted in shallow boxes of sandy soil and stood on bricks over hot-water pipes where they strike root in from ten days to a fortnight. Moving bedding plants from one house to another and potting up others has taken up the remainder of to-day.

MARCH 31.

The exceptionally heavy snow with which this part of the country was visited on the 22nd has

caused us much of the labour of to-day. Several fine Junipers and upright-growing Lawson Cyresses had here and there a branch broken, and many more bent right down with the weight of snow, and have to-day been tied in to the central stem with tar cord. These and the Lebanon Cedars are really the only trees that got injured. The branches of the Cedars being broken quite away and the "snags" looking so untidy, we have sawn them off close up to the trunks of the trees. Pruned out dead wood and thoroughly cleansed Magnolias of dirt and tied close in to trellis. Clematises have also been trimmed up and the main stems securely fastened. Pruned climbing Roses, renewed ties, and gave all the climbers a top-dressing of rich soil. Made another sowing of Sweet Peas and a new Lavender bed with plants from cuttings propagated two years ago, the shoots of which have been several times pinched to induce a bushy growth. Gave Asparagus plots another rough rake over and a sprinkling of salt. The latter ingredient is supposed to be the most suitable manure for this plant, and though I am not in a position to dispute the matter, I know, because I have done it, that good produce can be obtained without it. However, if it is not a good manure for the plant, it does it no harm, and an application or two in the season is by far the best way of keeping down weeds on Asparagus plots. Thinning early Grapes. All surplus bunches were cut out several days ago, so that there is no risk of the men's labour being spent on bunches that by-and-by might have to be cut away. The carelessness displayed by a few amongst us in regard to leaving on double, and even treble, the number of bunches for a long time after they ought to have been cut off cannot be too severely reprobated, and if such persons would but consider that when this unnecessary strain is being put on the Vines, they have but few (often none) new roots to relieve the strain, they would certainly make an effort to cut them away at once, which, if they did, in all probability they would not have cause to complain of shanking, for this disease is oftener caused by impoverishment than anything else. Partially disbudded Peaches in latest house. They are barely out of flower yet, but the buds are so thick, that we made this early beginning, and with the buds have also rubbed off a lot of fruit, for every blossom seems to have set. Pricked out Pyrethrum Gold Feather in frames and prepared a frame in which to sow Asters, Stocks, Zinnias, Everlastings, and ornamental Grasses. Wallflowers, Sweet Williams, Snapdragons, and Canterbury Bells have been sown on a south border in the open air.

HANTS.

FRUITS UNDER GLASS.

LATE VINERIES.—Where the Grapes were not cut before the beginning of January, and the Vines have been allowed to rest and break under cool treatment, the temperature must be raised as soon as the buds begin to burst into growth, as Lady Downes, Gros Colmar, and Mrs. Pince require quite as much heat in the aggregate as Muscats, and if it is not given to them early in the season, when one ton of fuel is worth two in the autumn, the result will not be satisfactory, as autumn-fired Grapes do not often keep or colour well. If the rods are tied along the front of the house they will derive more benefit from the syringe, an important instrument at this season, than they can receive after they are tied up to the wires; but when all the buds are well on the move, tying up must not be delayed, otherwise the young growths will take an inconvenient direction, which will give trouble when they are ready for tying out, independently of their liability to accidents during the performance of this operation. If the inside borders were well watered when the wounds from pruning had healed, another good soaking with water at a temperature of 90° will now do good service, as it will quicken the young rootlets and add to the size of the bunches. After this watering has settled down the borders will be in a fit state for mulching with good manure, which may be rich and fat for old Vines, or light and

less rich when they are young, and only require a covering for the protection of the surface roots. In bright sunny weather an effort should be made to run up the houses to 85° after closing, with plenty of atmospheric moisture, for the twofold purpose of economising fire-heat by night and securing a short-jointed vigorous growth from solar heat alone.

LATE HAMBURGH HOUSES.—These as a rule get too forward in the spring, and the fruit, as a natural consequence, ripens too early in the autumn. To counteract this disposition to burst into growth all the ventilators and doors should be kept open throughout the day and night when the weather is mild and night ventilation can be indulged in with safety, but when the young growths begin to push their first leaves, ordinary Hamburg treatment must be pursued to secure and draw out good shows, and to prevent the bunches from running out into tendrils. When the fruit is set and thinned and fair summer weather prevails, liberal ventilation by day and a rather low temperature through the night may be secured and continued until the Grapes are ripe. As the latest Hamburg house is generally filled with plants of some kind which interfere with or render regular syringing inconvenient, atmospheric moisture should be secured by frequent recourse to damping down and keeping the borders well supplied with water. These late Vines should be well disbudded to prevent the leaves from becoming crowded after the turn of the season, when confined moisture and impeded circulation are unfavourable to the Grapes if they do not predispose the Vines to mildew. In the selection of bunches for the crop, it should be borne in mind that the largest are not always the best for keeping through November; therefore, where a plentiful supply admits, preference to those of medium size should always be given, as a greater number can be retained, they can be effectually thinned, and there will be less danger of their damping in the autumn.

EARLY VINERIES.—The fruit in these will now be in various stages, from setting to stoning, and in some few instances the latter may have been got over. When this, by the rapid swelling of the berries, becomes evident, another good watering with diluted liquid will help the Vines to pull up that which has been taken out of them during this trying process, and, in the event of the crop being heavy, an addition to the mulching will do no harm. From this time forward the temperature for Hamburgs may range about 68° at night and 10° higher by day, always with a circulation of air when the maximum is reached; a chink of air by night is also advisable when it can be admitted without having to overheat the pipes. In cold weather these figures cannot always be judiciously maintained, and it is questionable if rest on mild nights, but not to an extent that will check the Vines, is not a gain in the end, as time can always be redeemed by closing early on fine afternoons. If the foliage is not crowded, a liberal play of lateral growth should be encouraged, but not to an extent that will rob the fruit or interfere with a free circulation of air between the leaves and the glass. The bunches should also be looked over for the last time to ascertain that none of the berries are likely to bind or press each other out of shape when they are ripe, but great care must be devoted to this operation, as the slightest disturbance of the tender bloom will grow into a defect at the finish.

MUSCATS.—If forced early, compact, well-glazed, and efficiently heated houses should be devoted to this section. The ventilation should also be on the most approved principle, and, if practicable, the roots should have the run of warm internal borders, for after all that has been said against them, one of the great secrets of setting the fruit is bound up in the maintenance of an underground temperature that will insure vigorous root action. It is generally admitted that Muscats require a higher temperature than would be good for Hamburgs, but a high leaf temperature combined with sluggish root action aggravates rather than facilitates the process of setting the fruit, and as this is the crucial test of good culture, the

condition of the roots should receive the most careful attention.

Later houses of the same kind that are allowed to break naturally have the benefit of more light and solar heat, and although the earth temperature may not be much higher now than it was in January, the flowering stage does not come on until the vital energy of the Vines is in full force. But, with these conditions in one's favour, it is always well to err on the safe side by protecting external borders with heat-retaining, if not with heat-producing materials of some kind, be they nothing better than dry leaves.

Setting the fruit.—Many growers give their Muscats a temperature ranging from 75° at night to 90° by day when they are in flower, but the roots being right, 70° to 85° will answer equally well, if not better, as the lower temperature does not produce so great a strain on the Vines. Then again, some suddenly withhold moisture when the first opening flower throws off its delicate perfume. This in dull, dark weather may be good practice, but on bright days when a great number of delicate young leaves are giving out moisture under a modern roof of 21-ounce glass, it is only reasonable to suppose the sensitive organs of the flowers must suffer under such treatment. If we examine a large bunch it rarely happens that the flowers at the point are found open until after the shoulders are fit for fertilisation, and as it is our wish to have all the flowers open together, the organs of the first should be kept fresh as long as possible by means of atmospheric moisture if we would secure a good and even set of fruit; therefore the better to preserve the earliest flowers the floors and other surfaces should be frequently damped with tepid water whenever bright sunshine necessitates liberal ventilation. The best time to fertilise the flowers is when the temperature has reached the maximum and pollen flies off in showers; but this is not the best pollen for use in the Muscat house—at least, this is the general opinion, and for this reason foreign pollen, notably that of the Hamburg, is preferred. It does not, however, always happen that a house of Hamburgs is in flower with the Muscats, but this difficulty can be met by collecting in advance and preserving the Hamburg pollen in a dry box in a dry place until it is wanted for use; then with a soft camel's-hair brush well charged it should be lightly applied from day to day until the Grapes are safe. Another evil, the offspring of strained anxiety, is the leaving of all the bunches on the Vines over the flowering stage to select from when the fruit is set. It is well to leave a good percentage, but all duplicates and ill-formed bunches may be removed from every shoot as soon as the best can be decided upon.

POT VINES.—The fruit on early started canes will now be well advanced, at least if they are to answer the purpose which gives them value, for if they cannot be got in early enough to save a permanently planted house, the immense trouble which they entail for two years or more will prove a loss instead of a benefit. In newly planted houses offering facilities for fruiting sets of Hamburgs, Madresfield Court, or the old Muscat, the matter stands in a different light, as they can be made to produce a useful supply of Grapes from pot Vines where otherwise there would be none. But be the object what it may, a course of high feeding and liberal treatment must be followed up from the beginning to the finish; therefore all the pots should be kept well mulched and watered, and the house, at all suitable periods of the day, well charged with atmospheric moisture of a stimulating nature. In my last paper on this subject it was stated that the best result follows tying the canes up to the wires; if this has been followed out and a reasonable number of bunches has been left to grow to maturity, the fruit will soon be changing colour. When this stage is reached more air will hasten and help to perfect the process; but the house or pit must be closed with plenty of sunheat every afternoon to swell the berries, and slightly opened again at night-fall to give them a circulation of fresh air.

W. COLEMAN.

TREES AND SHRUBS.

THE SPANISH CHESTNUT.

(CASTANEA VESCA)

THE Sweet Chestnut is generally said to have been brought to Europe by the Greeks, from Sardis, in Asia Minor, about 504 B.C. It was first called the Sardis Nut. The name of Castanea was given to it from Kastanea, the name of a city in Pontus, in Asia; and also of one in the Vale of Tempe, near the river Peneus; in both which places the Chestnut grew in great abundance, being a native of the former locality, and having been first planted in Greece in the latter, whence it was sent, in the reign of Tiberius Cæsar, to Rome. It is evident that the Romans received the Chestnut from the Greeks, as they called it both Castanea and Glans Sardiniana. Theophrastus mentions that in his time Mount Olympus was nearly covered with Chestnut trees; and Pliny enumerates eight kinds that were known to the Romans in his day. One of the largest and oldest Chestnut trees in the world is that on Mount Etna, and is called Castagno di Cento Cavilli. The Sweet Chestnut was, in all probability, introduced into Britain in the time of the Romans for the sake of its fruit; and, being a tree of great duration and as it ripened its fruit, it could hardly fail to become a permanent inhabitant. The old Chestnut tree at Tortworth may, indeed, possibly have been one of those planted by the Romans. The oldest Chestnut tree in the neighbourhood of London is that at Cobham, in Kent, and Cowdray Park, in Sussex, is famous for its Chestnut trees.

AS A PLANTATION TREE the Chestnut is chiefly valuable as underwood and for its fruit. As an underwood growth in coppices it is much grown in England for Hop poles, fence-wood, and hoops. The poles last as long as those of the Ash and longer, but they do not grow so fast, and they are apt to send out stout side shoots, which if not checked, either by pruning or by the closeness of the plantation, cause, Cobbett observes, "the upper part of the pole to diminish in size too rapidly. To get a Chestnut pole anywhere between 12 feet and 20 feet in length there will also be a disproportionate butt, a disadvantage that none but skilful Hop planters can know. The vines of the Hop (and it is the same with all other climbing plants) do not like to have a big thing to go round at starting." Hence intelligent Hop planters, in

order to obviate the injury arising from large-butt poles, stick in little rods as leaders to conduct the vine to the pole at 2 feet or 3 feet from the ground. For this reason the plants in a plantation of Chestnuts for undergrowth ought not to be further apart than 5 feet apart every way, in which case they will require very little pruning, but will become drawn up of a proper size. When the tree is planted for timber, its properties suggest the propriety of cutting it down when the trunk is under 1 foot in diameter, and for using it chiefly in rustic structures, gate-posts, and fencing. As a fruit tree the Chestnut in Britain is chiefly planted on the margins of orchards for the purpose of sheltering them. It is also occasionally planted in hedgerows, but from the density of the head, the early appearance of the foliage, and its long continuance before it drops, the tree is injurious both to the hedge and to the Grass below.

The Chestnut, like the Beech, prefers a deep sandy loam. It will not thrive in stiff tenacious soil; and in a rich loam its timber, and even its poles and hoops, are brittle and good for nothing. In loamy soils at the bottom of mountains, in loam incumbent on clay, and in similar soils and situations it attains a large size, and in so short a time, that wherever the Chestnut is planted in its proper soil and situation, it will outgrow any other tree in the same length of time, except, perhaps, the Larch, the Willow, and some of the Poplars. Some say that it will not thrive in calcareous soil; but clayey and sandy soils, and those lying over granite, gneiss, and schistus, and which are composed of the debris of these rocks, appear particularly suitable for it. It thrives well among rocks where there is apparently very little soil, insinuating itself among their fissures and chinks,

run along the surface, it will attain a very considerable diameter of trunk and be of great longevity, though its head may never be larger than that of a pollard. Of this, the Chestnut trees in Greenwich Park and Kensington Gardens may be cited as proofs.

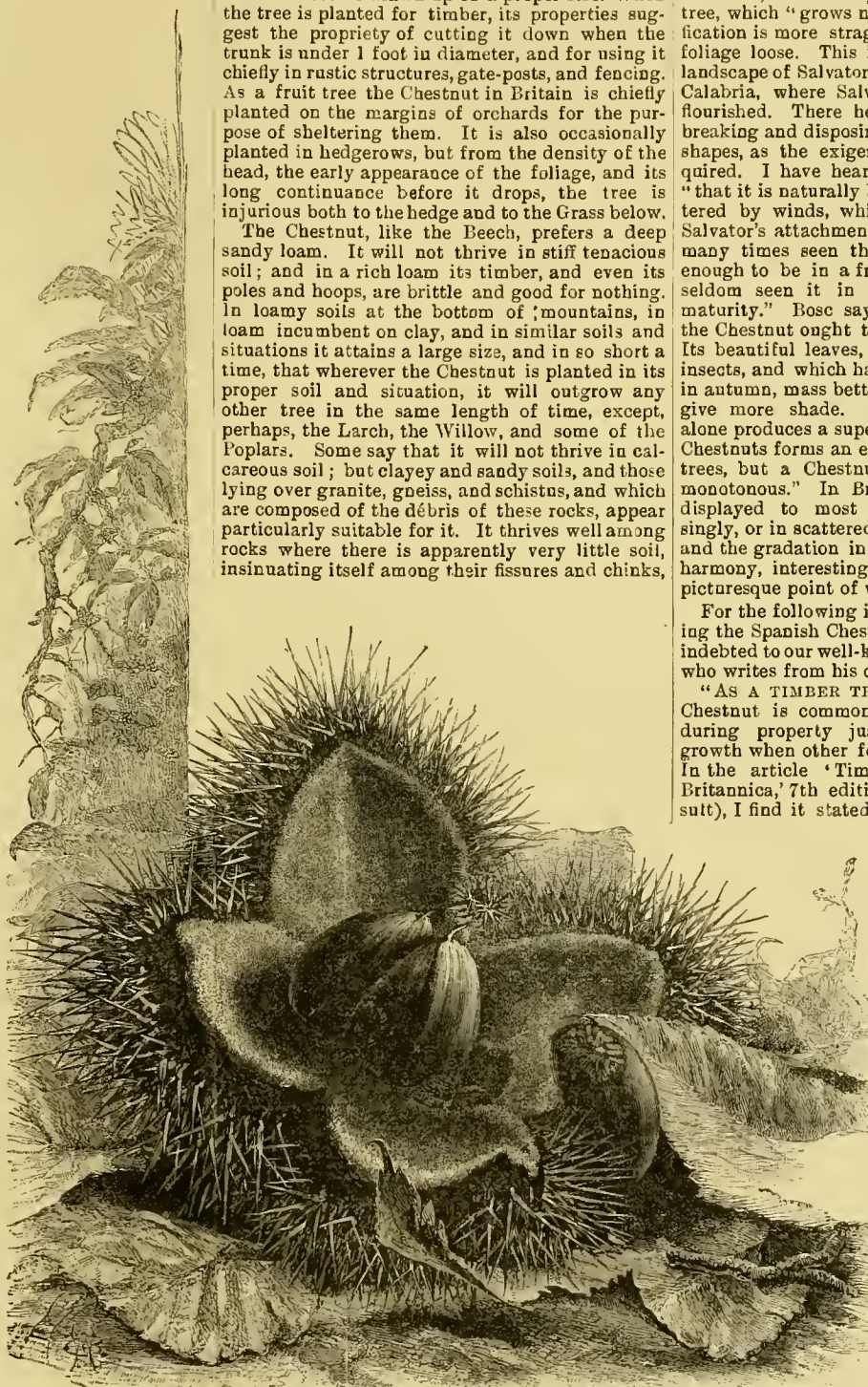
AS AN ORNAMENTAL TREE Gilpin considers the Chestnut, in maturity and perfection, as a noble tree, which "grows not unlike the Oak. Its ramification is more straggling, but it is easy and its foliage loose. This is the tree which graces the landscape of Salvator Rosa. In the mountains of Calabria, where Salvator painted, the Chestnut flourished. There he studied it in all its forms, breaking and disposing it in a thousand beautiful shapes, as the exigencies of his composition required. I have heard, indeed," continues Gilpin, "that it is naturally brittle, and liable to be shattered by winds, which might be one reason of Salvator's attachment to it; but although I have many times seen the Chestnut in England old enough to be in a fruit-bearing state, yet I have seldom seen it in a state of full picturesque maturity." Bosc says: "As an ornamental tree, the Chestnut ought to be placed before the Oak. Its beautiful leaves, which are never attacked by insects, and which hang on the trees till very late in autumn, mass better than those of the Oak, and give more shade. An old Chestnut standing alone produces a superb effect. A group of young Chestnuts forms an excellent background to other trees, but a Chestnut coppice is insupportably monotonous." In British parks, the Chestnut is displayed to most advantage when standing singly, or in scattered groups along with the Oak; and the gradation in the foliage forms a pleasing harmony, interesting both in a botanical and a picturesque point of view.

For the following interesting remarks concerning the Spanish Chestnut as a timber tree we are indebted to our well-known correspondent, "B. S.," who writes from his own experience of the tree:—

"AS A TIMBER TREE," he says, "the Spanish Chestnut is commonly believed to lose its enduring property just at that period of its growth when other forest trees are at their best. In the article 'Timber' in the 'Encyclopædia Britannica,' 7th edition (I have no later to consult), I find it stated that 'the Spanish Chestnut is even a more durable timber than Oak, and was much used formerly, but the cultivation of it has been so neglected that few trees remain in this country; and in the same work the writer on 'Planting' takes a rather different view of the merits of this tree. He says: 'The Sweet Chestnut (*Castanea vesca*) is generally ranked next to the Beech as a timber tree, but in that character it has little or no merit. The tree is magnificent in appearance, rivalling when full grown the British Oak, but it differs essentially from that tree in its timber not increasing in value as it increases in age. In Britain, as also in France, it was formerly believed that the roofs of the oldest cathedrals and of Westminster Hall and other buildings were of Chestnut, and it was thought in

and attaining a large size. On mountains in France, Switzerland, and Italy the Chestnut begins where the corn leaves off, and in climates suitable for corn the tree is only found on rocky and flinty soils. In Britain the tree will not attain a great height, unless in sheltered situations, and where the soil is free and of some depth; but in poor gravelly soil, where its roots will only

consequence that the tree had formerly been more abundant both in Britain and on the Continent than it is at present. Subsequent inquiry, however, proves all this to be a mistake, and Daubenton and various others have shown that the timber called Chestnut in old buildings is referable to the Chestnut Oak (*Quercus Robur sessiliflora*). It is worthy of remark that some of the ancient



UNDER A CHESTNUT TREE.

writers describe a grove of Chestnuts as extending northwards from London and abounding in wild beasts, and that the remains of the indigenous woods at Hampstead, in the Earl of Mansfield's grounds, are of the Chestnut Oak. The timber of the Sweet Chestnut, when not more than forty or fifty years' growth, forms very durable posts for fences and gates, being, according to some, more durable in this capacity than Oak itself; but whenever the trunk of the tree becomes of larger dimensions than 6 inches or 8 inches in diameter, it has already begun to decay at the heart. Such is the account which this old edition of the 'Encyclopædia Britannica' gives of the Spanish Chestnut, and experience will, I doubt not, prove that if we would employ this wood to the greatest advantage, we must use it in the earlier stages of its growth. But can it be proved that the Spanish Chestnut has always borne this character? Is it probable that such a tree could have come into existence with a fatal and incurable disease? Is it a well authenticated fact that no part of the world is now able to provide sound timber from a full grown tree of this kind? In the larger specimens that find their way into the timber yard in these days, the centres are pervaded more or less with shakes, occasioned, as I am told, by the tendency of the tree to twist in its growth, and in consequence to split when assailed by tempestuous winds, and it is evident that moisture from without getting into the cracks would in time occasion decay. But can this always have been so? And with regard to the notion that in the old roofs of our cathedrals and other buildings of the period said to have been formed of Chestnut wood, sessile flower Oak, and not Chestnut, was used, is there anything in the ancient records that would support that view?

"The *Quercus Robur sessiliflora* is sometimes called the Chestnut Oak, from the supposed resemblance of its timber to Chestnut, but that it should ever have been called by the mediæval builders *Castanea* is extremely improbable. There is a great difference in the foliage, blossoms, and seed between the Chestnut and Chestnut Oak, but very little that is perceptible to an ordinary observer between the two varieties of Oak, the

guishes the two woods from each other; they will never believe it when told, for they do not know Chestnut, and suppose it to have flower like Oak.' So that there appear to be two theories connected with this question, one based upon the assumed presence of the flower in Chestnut; the other on its assumed non-existence in the wood of the sessile-flowered Oak. As to the durability of Oak as compared with Chestnut, the evidence seems rather conflicting, though here, again, we can arrive at some conclusion when we examine its conduct in different positions and under different conditions. My correspondent instances a case where it is evident that on the question of durability Oak would have proved the better wood of the two. He says, 'About thirty years ago a large wooden bridge was built of Chestnut over the Wye, near Hereford, and in nineteen years it had to be taken down, having gone into a crippled condition, owing to decay at the joints between the timbers. The wood was quite sound elsewhere.' It is not, therefore, in such positions that we can look for superiority in Chestnut; its chief excellence lies in its so soon yielding profit to the planter. When a young Oak measures at 3 feet above the ground about 5 inches in diameter, if you saw it off at that height you will find it all, or nearly all, sap-wood, and therefore worthless; whereas a Spanish Chestnut of those dimensions would be nearly all heart, and would be useful for a variety of purposes, and it would have attained this size in two-thirds the time. The saying that 'he who plants Pears, plants for his heirs,' some people might think applicable to the Chestnut. It has proved to be equally fallacious in both cases, but if for Pear we substitute Oak, the saying would undeniably be true.

"The Spanish Chestnut is not a very fast growing tree in ordinary soils, like the black Italian Poplar, the Cedar of Lebanon, or even the Larch, but it begins to be of use when the latter is absolutely worthless. A small ladder made out of a Larch of my own planting was broken up and burned six or seven years ago worm-eaten and rotten, but I have still by me the remains of a very young Chestnut tree that was cut down in the year 1840. The three outer rings of sap wood

seen in our parks and woods. The remarkable beauty of the full grown tree will be gainsaid by no one, and its so speedily coming into use even for more purposes than those I have specified prove it to be one of the most profitable of trees."

DESCRIPTION.—The Chestnut under favourable circumstances is a magnificent tree. The trunk in deep, free soils and in situations sheltered rather than exposed rises erect and forms a massive column of wood, but in unsuitable soils and in elevated, exposed situations and in cold climates it ramifies at the height of 10 feet or 12 feet, and



The Spanish Chestnut.
Male flowers. Matured fruit.

the tree assumes the character of a large pollard. In all cases the diameter of the trunk is very large in proportion to the diameter of the head or the height of the tree. The branches form nearly the same angle with the trunk as those of the Oak, though in thriving trees the angle is somewhat more acute. They spread widely, and are round and smooth when young, and the bark is remarkable for its deep, wide clefts. The leaves on old trees are from 4 inches to 6 inches long, but on young and vigorous shoots they are often nearly 1 foot in length and from 3 inches to 4 inches in breadth. The leaves are elliptic-lanceolate, acute, smooth, with many transverse veins, terminating in sharp serratures, often, but not always, terminating in mucros. They are of a rich shining green above, and paler, and sometimes rather glaucous, beneath. The barren catkins are numerous, axillary, solitary, yellow, and pendulous, almost as long as the leaves, and deciduous. The flowers are produced on the wood of the current year, and are ranged along the common stalk in lateral, sessile tufts. The stamens are numerous and spreading. The fertile flowers are much fewer than the barren ones; they are placed on terminal stalks, which are lengthened out as the fruit advances. The styles are about six, with long, smooth, upright stigmas. Gærtner detected about twelve scarlet rudiments of stamens among the wool at the base of the styles. Nuts large, broadly ovate, generally two, flat on the inner side, and each attached by a broad scar to the bottom of the greatly enlarged outer calyx, the outside of which is copiously armed with complicated clusters of sharp prickles. The root descends perpendicularly, like that of the Oak, but not, as is alleged, to quite so great a depth. The rate of growth of young trees in the neighbourhood of London averages from 2 feet to 3 feet a year for the first ten or twelve years. The tree will attain the height of from 60 feet to 80 feet in from fifty to sixty years, before which period its timber is generally in the highest degree of perfection; but the tree will live for several centuries afterwards and produce abundance of fruit, its timber, in the meanwhile, beginning to decay at the heart or become brittle and fit only for fuel. No tree stoies more freely than the Sweet Chestnut at whatever age it may be cut over.

The Sweet Chestnut is found naturally in the east and west of Asia, in the north of Africa, and in North America. In the Old World its countries are more particularly Asia Minor, Armenia, and Caucasus, but it is also found in the Canaries and in Teneriffe. It does not grow spontaneously to the north of Tereck, in the Russian empire, and it does not ripen its fruit anywhere except in a climate that will ripen the Grape also in the open air. There are several species found in Java,



Flowering twig of Spanish Chestnut, bearing male and female flowers.

pedunculata and the sessiliflora. It seems doubtful, however, whether this variety of the Oak is so completely devoid of medullary marks as to make its resemblance to Chestnut so complete. From a gentleman of more than ordinary knowledge and experience in such matters, to whom I lately applied for information, I have ascertained the following facts: That all the well-known varieties of Oak timber, including the sessile-flowered, show medullary ornament when cut in the right direction; that the roof of Westminster Hall has long been known to be of Oak. He writes: 'There never was any doubt, so far as I now, that the Oak of the Westminster Hall roof has "the flower" (the medullary distinguishing mark). I have seen specimens taken perhaps fifty years ago, a tobacco box or jar, a table top, &c. I suspect the advocates of the Chestnut theory never knew that the flower distin-

have long been reduced to powder by the worms, but not one of these insects has penetrated the heart wood, which is as sound as ever. The wood of this tree is harder than that of Baltic Oak and finer in the grain, and on that account is more useful to the turner than Oak is. Its appearance when planed is that of a wood intermediate between Ash and Oak when the latter is cut 'off the flower.' The veins of its concentric rings are strongly marked, and when a little diversified by a change in the direction of the grain make it very ornamental, but the medullary development is less perceptible in Chestnut than it is even in Beech or Sycamore. Whenever 'nurses' are wanted in plantations it might be well to make the Spanish Chestnut perform that office. It might indeed be worth while to give this tree the preference over many, perhaps most, of those which are commonly

Japan, Cochin-China, and the Himalayas, and one of these is supposed to be identical with *C. vesca*. In Britain the Sweet Chestnut is by some considered to be indigenous, but, notwithstanding the great age of some specimens, it appears to us more than probable that they have all been planted. It has been planted in Scotland, and sometimes ripens a few fruit in the warmest districts of East Lothian. It grows vigorously in Ireland, but never ripens fruit there. In Scandinavia it is unknown. It is apparently wild in some parts of France, and still more so in Spain and Italy, though it is most probable that it was originally planted in these countries by the Romans. It abounds in the neighbourhood of Nice and in the kingdom of Naples.

VARIETIES.—There are but a few varieties of the Spanish Chestnut beyond the numerous sorts that are cultivated for their fruits, and which differ more or less widely in the size and quality of the Nuts. Among the cultivated forms are the following:—

—*americana*.—This is a variety found in the more southern of the United States. Its leaves are more pointed at the base and the Nuts are smaller and sweeter. Asa Gray states that it is a large tree with light, coarse-grained wood, and grows in the rocky and hilly woods from Maine to Michigan and Kentucky southwards, and is especially abundant along the Alleghenies.

—*cochleata* has the leaves crimped and curled in a curious manner, and as the edges turn inwards the leaves have a hooded appearance. It is of no beauty as a tree, but those who care for curious monstrosities may like to plant it. It is also called *crispa* in some nurseries.

—*variegata*.—This name may be applied to a series of forms more or less distinct, all of which exhibit some sort of variegation. In *foliis aureis* the variegation is pale yellow and creamy white. In *albo-marginata* there is a distinct margin of yellowish white, and in *viridis maculata* there is a lightish green blotch in the middle of the dark green leaf.

—*asplenifolia*, also known in gardens and nurseries as *laciniata*, *salicifolia*, and *heterophylla*, has its leaves cut into numerous long and narrow, regular and irregular divisions, rendering them quite unlike those of the ordinary Spanish Chestnut. As these long narrow divisions hang gracefully on the twigs, a tree of this variety has an elegant appearance, and for certain positions on a lawn or jutting out from the margin of a shrubbery is admirably suitable. There may be a slight difference in the forms found in nurseries under either of the names mentioned, but practically all the names apply to one variety only. Another form called *heterophylla dissecta* or *filipendula* is similar, if not identical, with that just described. The variety named *quercifolia* has leaves somewhat resembling those of the common Oak, and in *pendulifolia* the leaves are decidedly more drooping than in either of the forms mentioned.

—*glabra*, or *foliis lucidis*, has thinner leaves than the type, and more shining, and the form known as *glauca* has the leaves somewhat glaucous.

In this country there is but little attention paid to the varieties of the Spanish Chestnut grown specially for their fruits, as the tree does not ripen its nuts well, except in the more southerly counties. There it is seldom planted as a fruit tree. Two of the best known sorts are the *Downton*, or *Knight's Prolific*, and *Devonshire*, or *New Prolific*, the latter being considered the best, it being an abundant bearer, and ripens its fruit better than other sorts.

A good deciduous shrub.—For ornamental planting and as a subject which grows fast, producing a more than usually dense mass of fine foliage, I know of no shrub superior to the somewhat sparsely grown *Spiræa Lindleyana*. It is very hardy, grows about 8 feet or 9 feet high, and produces heavy sprays of flower in July. Its abundant Bracken-like foliage at a distance is, however, its best recommendation, and it is, besides, a luxuriant grower. I have not noticed any

injury done to it by rabbits at any time, and probably the plant would make a good deciduous covert plant. For filling up thin shrubberies and vacant places quickly it may be planted with all confidence in any ordinary well-drained soil. A number of quite small plants put out of pots here some two years ago have made extraordinary growth, and have had to have some of their luxuriant shoots removed to prevent their smothering other plants near them; some very old plants, too, show a corresponding degree of vitality.

The Laurustinus as a wall plant.—I doubt if anything finer than the *Laurustinus* could be found for draping a sunny wall. The appearance of this plant when in bloom is extremely pleasing, and it rejoices in the shelter which a wall affords, in a general way escaping the effects of hard frosts, opening its blooms earlier and finer than in the open. It is rather difficult to keep many wall shrubs in bounds, but by pruning the *Laurustinus* hard back directly after flowering it has time to make good flowering wood, and the wall remains thickly clothed with the dark shining foliage.—J. C. B.

***Biota pendula*.**—This seems to be the most fastidious in its requirements of all the forms of the Chinese *Arbor-vitæ*, as it is very liable to lose the lower branches to such an extent that the plant has a somewhat bare and naked appearance; but when seen in the shape of a thriving specimen it is so distinct from all others, and so pleasing withal, as to merit a word or two in its favour. A certain amount of contention has arisen as to whether it is a distinct species or only a variety of the Chinese *Arbor-vitæ*, this latter theory being the more generally accepted. Anyhow, as far as appearance goes it is very different from any of the others, as instead of the flat, much-divided branches common to the rest, they are here replaced by long pendulous cord-like branchlets with but few bifurcations. These well-marked characters are very constant, and tend to impart a grace and elegance to the specimen, even if devoid of foliage for some space at the bottom.—T.

***Spiræa opulifolia aurea*.**—One of the most conspicuous shrubs just now is this golden-leaved *Spiræa*, its expanding foliage resembling small yellow rosettes; at a little distance a bush of this kind appears to be clothed with golden blossoms. It is, indeed, seen at its best during the first half of the season, for as the summer wears on the leaves become much greener than at first, and for deepness of tint at that time are not to be compared with the yellow-leaved *Philadelphus* and *Weigela*, which are two of the best golden tinted shrubs we possess. *Ribes alpinum aureum*, on the other hand, resembles the *Spiræa* in its habit of becoming green towards the end of summer. The golden variety of *Spiræa opulifolia* is not so vigorous as the type, which in habit it much resembles, except being less in stature. Where associated with dark-leaved Evergreens, the golden-tinted clusters of leaves are rendered still more conspicuous.—W. T.

Varieties of *Osmanthus ilicifolius*.—There are two quite distinct forms of *Osmanthus ilicifolius*, though which may be regarded as the type I cannot say, as to both the same name is applied. The first, which I look upon as by far the most ornamental, is free in growth, forming a well-proportioned bush, with very dark almost olive-green foliage, deeply cleft, with the bark of the young shoots nearly black. The second is slower in growth, the leaves of a paler tint, and the young bark wanting the dark hue of the preceding. Altogether, this kind shows a leaning towards the allied, but more tender, *Olea Aquifolium*. *Osmanthus* is by some included in the genus *Olea*, but the name *Osmanthus* is too firmly established in gardens to be easily suppressed. Besides these two kinds there is a smaller dense-growing variety with leaves resembling those of the Myrtle, and therefore wanting the spines of the preceding forms. It is known as *O. myrtifolius*, though but a fixed sport of the older kind. Of variegated forms there is one in which the leaves are edged more or less irregularly with white, and another

in which the markings are yellowish. Besides these, one sometimes met with in nurseries as *latifolius marginatus* is of stiffer growth, with larger leaves than the others, and it forms a very ornamental bush. These different varieties of *Osmanthus* are all pretty evergreen shrubs, and succeed well almost anywhere. Though the prickly-leaved kinds bear a good deal of resemblance to the Holly, they differ therefrom in one important particular, inasmuch as the Holly seeds freely, from which young plants can be raised in quantity, but cuttings are difficult to strike; whereas in the case of the *Osmanthus* I have never found any fruit in this country, but as a set-off cuttings strike root without difficulty. The *Osmanthus* is a native of Japan, and the different varieties are all hardy in this country.—T.

CONIFERS AT KEIR.

THE late Sir William Stirling Maxwell is still remembered and quoted in Scotland as a type of the cultured laird. "Gang Forward" was his motto in every aspect of his life. He will be remembered by the intellectual as an authority on Spanish art and history, by the landed interest as a practical and energetic farmer, and by the countryside of the Carse of Lerocroft as a beneficent chief. The family domain within sight of the grey towers of Stirling owes its present attractive face to his good taste. The whole district between Stirling and Dunblane, together with the country for some distance to right and left, is very rich in tree growth. The woody banks of Allan Water and the historical Sycamore of Kippendavie, of which the girth at the base in 1841 was 42 feet 7 inches, need no bush in your columns. The Allan flows into the tortuous stream of the Forth; a short distance further inland the Trith joins. Between the two tributaries lies Keir. Sir Walter speaks somewhere of its "lofty brow," from which, in addition to the views of river scenery, can be seen the Abbey Craig, a lofty mass of trap rock overlooking six battle-fields, and in the far distance Ben Lomond and Ben Ledi. Sir William seems to have been very anxious to experiment with the new Conifers, which were being introduced from California and elsewhere at the time he was devoting his attention and wealth to embellishing his home. The house itself, as may be imagined, occupies a splendid position, and especial care was taken that the eye should turn from the far-stretching prospect to its immediate neighbourhood with no sudden cessation of interest or suggestion of forced artificiality, *ergo* the planting of Conifers and other trees may literally be described as having been done by the thousand. The architecture of the house is by no means noteworthy, but it is redeemed from insignificance by the fine plants of *Cupressus fastigiata* which are kept close to the walls. These trees are planted about every 5 feet; at the base they are a little under 2 feet in diameter, and get narrower proportionately as they ascend the walls, which they do to a height of 35 feet or so. The appearance then of the walls is as if striped with foliage, and is not only uncommon, but exceedingly pretty. The trees, one and all, were in splendid health, and are carefully cut and tended to. On the lawn around are some magnificent specimens of *Cupressus macrocarpa* and *Lawsoniana*, a good number of which are clipped and reach heights varying from 50 feet to 65 feet. But most striking of all, perhaps, is a fine old Spanish Chestnut girthing 22 feet at 5 feet from the ground, and with an enormous spread of the branches. All around is a fringe of evergreen foliage. Avenues of *Deodars* and *Pinus Cembra* are planted by the side of the walks conducting in the direction of the Bridge of Allan. The foliage of the former has to be cut to prevent encroachments on the path, which operation it undergoes without much apparent damage. Near the monument erected in honour of Sir William's grandfather are some tall and massive Scotch Firs, one girthing 10 feet at 3 feet from the ground. The granite monument was erected on this spot, because it was the scene of his ancestor's death. Shortly before the occurrence the doomed man

had said, "The young may die, the old must." This is elegantly turned into Latin by *posse etiam adolescenti adesse mortem, seni abesse non posse*, and engraven in gilt letters on the stone. Hereabouts the banks of Laurels and the shrub-covered rocks, steep, and slopes are very well arranged, and evidence conspicuous taste.

land, the favoured district of Elgin and the Moray Frith being excluded. The Keir Araucaria, which was put out in 1838, is 50 feet high. It is claimed to be the highest in Scotland. Unfortunately, it has had a history that could well be dispensed with. Three times has it been hurled to the ground by the force of the wind, and as many

Spruces, which have been injured by the fall and reinstatement of their neighbour. The largest girths 6½ feet at 3 feet from the base, and is furnished with long protruding arms. It is rather a pity that these two trees have had to be sacrificed more or less to make room for the Araucaria. Facing the centre of the vinery is



THE SWEET CHESTNUT IN AN ITALIAN VILLAGE.

Many of the finest specimens are planted before the range of vineries and Peach houses, which faces a part of the grounds and is 300 feet in length. At either termination is a tall clipped *Cupressus Lambertiana*. Further north this tree is not so successful, and, taken in conjunction with two or three nice specimens of *Pinus insignis*, goes to mark the highest latitude that these two trees may be planted on the eastern half of Scot-

times, with great difficulty, raised upright. On the last occasion, in the same terrific gale that forced the Tay Bridge into the sea, it was so severely injured, that the foliage had to be cut off till the last 10 feet. Now, strong hawsers support the trunk, and if the root action has not been irretrievably injured, there is good grounds for the expectation that this tall specimen will still continue to flourish. Close by are two old Hemlock

a semicircle of fine specimens, of which a patriarchal Larch, said to be one of the parent trees in Scotland, forms the apex. The trees nearest the path are two exceedingly fine *Cupressus Lambertiana*, similar to those at the terminations of the glass range. Their bright, fresh, green foliage contrasts well with the brown hue of the *Arbor-vitæ*, numbers of which are scattered about, both in order and disorder. The

other specimens in this semicircle are a Golden Queen Holly, *Thujaopsis dolabrata*, *Thuja Lobbi*, *Abies Morinda*, *Wellingtonias*, one on either side of the Larch, *Araucaria*, *Juniperus recurva*, and another *Araucaria*. The Holly was the finest Golden Queen I have ever seen. The *dolabrata* is interesting from the fact that it was the first plant brought into this country, Captain Fortescue having given it as a present to Sir William. *Abies Albertiana* and the white Cedar are represented by good examples. Thick walls and clumps of *Rhododendrons* and *Laurels* form an excellent background to the Conifers.

The most instructive part of the grounds to the arborist is an avenue formed of different kinds of Conifers, planted in pairs opposite one another. In some instances both the trees of a variety are looking well; in others, one has succeeded and the other failed, which shows how impossible it is to draw any hard and fast opinion as to hardihood. The soil is shallow, and as very little has been added, the roots must be more or less inured to the sub-soil. *Pinus austriaca*, *Laricio*, and *Mugho* are the feeblest. *Monticola*, *Cembra*, *excelsa* are vigorous and healthy, particularly the first two. *Excelsa* has the better site and the greater depth of soil, but it is a curious circumstance that it should be so much more prosperous than the hardier *Laricio*. One of the *monticolas* is 64 feet high and girths 6 feet 4 inches at 3 feet up. One specimen of insignis is noticeable so far north and inland, the height is 56 feet and the girth 8 feet 2 inches at the same distance from the base as before. Turning to the Firs, *Webbiana* is very thin and straggly looking, and so is *Pindrow*, the spring shoots being generally nipped by the frost. *Douglasi* and *Menziesi* are well represented, but the seedling trees have turned out as well again almost as the grafted ones. The pick of the avenue is, however, a *Cryptomeria japonica* with an immense lateral spread of the branches. The two *Araucarias* are likewise fine specimens. There is also at Keir one of the best specimens of *Juniperus recurva* that can be met with on our shores. Merely giving the height would afford no idea of its great beauty.

The extent of the pleasure grounds is as much as 60 acres, and the planting in every part has been thick. *Deodars* and *Cembras* are to be met with at every turn, but very seldom do the *Deodars* grow strongly after reaching an altitude of 30 feet or so. The hedges of *Yew* and *Holly* are worth mentioning from the fact that they are cut so as to present a line of pillars, which are 4 feet apart. In another part is what is called the *Yew Temple*, the branches of the trees being made to take the required shape. *Homo quasi flos egreditur et coneritur* is cut in Box around this dismal shrine of *Yew*. A dense wall of *Laurel*, 25 feet through in the thickest part, conducts up to it.

A small burn which formerly trickled unpretentiously through the policies has been taken in hand by the landscape gardener and made extremely pretty. Rocks and boulders have been placed by its side; now the channel is narrowed, now it is allowed to spread out into a tiny pond. Finally before dashing headlong down a narrow glen, it is made to fall over some mimic rockwork, issuing from a Fern-spangled grotto by three outlets. There is a very satisfying pleasure in strolling through well-kept and well-planted grounds like these. The inequalities of the ground are used advantageously to introduce Ivy trailing down the banks, and as much variety by means of terraces, Fern-garnished borders, and bowery wildernesses is added as the nature of the place permits. Finally, the successful cultivation of *Cupressus torulosa* is noteworthy. There are two very fine specimens of it, probably as good as any in Scotland. These two trees are especial favourites with the head gardener, Mr. Russell, who has now held this charge for twenty-two years. Since writing about *Cupressus Lambertiana* I have heard that one of them is 84 feet high.

M. C.

Kew Gardens.—On Monday last in the House of Commons Mr. Stuart-Wortley complained of the small number of seats in Kew Gardens, and advocated further provision in this respect in order to make the gardens not only a place of scientific recreation, but of popular resort.

KITCHEN GARDEN.

GLOBE ARTICHOKE CULTURE.

MANY are inclined to term *Globe Artichokes* an aristocratic vegetable, but why this should be the case I fail to understand. Why they should be found almost exclusively in the gardens of the wealthier classes is to me an enigma. True, the taste for them has to be acquired, but when once this has been brought about, *Globe Artichokes* are found to be very agreeable. The heads, however, to be good must be large, succulent, and well cooked, and it may be many are prejudiced against them, owing to one or more of these conditions being wanting at the first attempt. If the plants are allowed to remain in one position for many years, the results are sure to be unsatisfactory. They are perhaps the rankest growing vegetable we have, and naturally quickly exhaust the ground, in reality requiring to be replanted at least every three years. In our case about one-third of the plantation is renewed each year, that is, we plant a breadth and destroy a breadth each season. At one time we planted twice a year, or early in April and about the middle of September, but now the whole is planted in April, and on our heavy soil we experience no difficulty in maintaining a continuous supply till frosts intervene.

THE BEST VARIETY both for the table and exhibition purposes is the *Green Globe*, the heads of this being much finer and more succulent than are those of the *Purple Globe*. They cannot well be grown or shown too large, provided they are not opening from age, and it is the rows of vigorous, uncrowded plants that are best calculated to produce heads in fine condition. We prepare for them much as we do for *Rhubarb*, the ground being either heavily manured and trenched, or large holes are dug and a moderately-sized barrow-load of half rotten manure well forked in and mixed with the soil. A number of old stools are then lifted and split up into pieces of about three strong crowns, with roots attached. These are then planted firmly, and about 4 feet apart each way. This distance may appear excessive, but under our treatment it is not too much, as during the second summer but little of the ground is to be seen. Three feet apart each way is enough where the soil is light and manure perhaps not over abundant. They are mulched with strawy manure, and if we wanted them extra fine, occasional soakings of liquid manure would be given during the growing season. These young plants furnish us with a good autumn supply, the earliest and most abundant crops being yielded by the

OLD PLANTS, or those that have been planted for one or more years. In order to protect these from severe frosts they are banked up either with strawy manure or ashes, but not so as to injure the principal crowns. In the spring this mulching is levelled over the ground, and in addition a fairly liberal dressing of short manure is lightly forked into the surface, while early in the summer another mulching of strawy manure is given. If we could afford it, the old plants should also be treated to liberal supplies of liquid manure, and they would well repay for it. Old plants are not allowed to develop as many suckers as they will; on the contrary, these are thinned out severely, and to the evident advantage of those reserved. Old flower-stems are removed directly they have ceased bearing. It will thus be seen that the starvation system finds no favour here, and it is still more to be avoided where the soil is light and poor. They should be grown well, or not at all.

SEEDLING PLANTS.—In spite of protective measures, we are liable to lose many plants during an extra severe winter, and it was an occurrence of this description that induced me to raise a stock of plants from seed. The seed was sown in March in a pan of fine soil and placed on a hot-bed. It soon germinated, and when the seedlings had developed rough leaves they were potted off singly into 4-inch pots, kept in heat till established, when they were gradually hardened off and planted out before they received a severe check from being root-bound. The ground being

well prepared for them, they grew to an immense size and yielded fine crops the same season. Unfortunately, each time I tried the experiment we were favoured with nearly as many distinct varieties as there were plants, and not one-quarter of them were of any use. Some were very large and had sharp spines, others of a medium size, and very prolific, and others resembled *Cardoons*, the stems being very branching, and producing immense quantities of small, useless heads. The *Purple Globe* varieties were of the least service.

W. I. M.

MANURE FROM SAWDUST.

FROM time to time this subject has been discussed in THE GARDEN, but generally with the result that the use of sawdust has been condemned. That this product in its crude state is worse than useless as a fertiliser is patent to everyone who has given it a moment's thought; but that it cannot be usefully employed when it has undergone a proper course of treatment is quite another thing. To make it useful some radical change in its composition must be brought about. How is this to be effected? The reply is, by the action of heat, air, and moisture. Sawdust when properly treated can be made a suitable compound for rendering a stiff soil fertile. Vegetable mould, &c., contains more carbon than wood. To obtain this from sawdust a slow burning or decay must take place. The heat necessary to produce this chemical action will be at least from 80° to 90° with a small supply of air—a kind of smouldering process. The first element of the sawdust to unite with oxygen is hydrogen, and quickly carbon shows itself by the dark or charcoal colour, as is the case when decay of wood takes place in the soil. Too much heat must be avoided, or the carbon will also take oxygen, and all will pass to the air as carbonic acid and water and nothing but mineral matter will be left. In all manure heaps this heat must be controlled, or the whole mass will be deprived of its most valuable properties. Vegetable matters in a green state possess a self-destructive power within themselves, having gluten and chlorophyll in a moist state. These compounds are very sensitive, and may be compared to the flesh and fat in the animal kingdom. With this explanation, let us suggest a plan for utilising sawdust, or any carbonaceous matter, and reducing it to humus. First, prepare a bed of the sawdust; upon this place a thin layer of green matter—weeds of any kind will answer the purpose; then sprinkle a small quantity of fine clay or road dust; follow this by another bed of sawdust, and so on alternately until the heap reaches some feet in height. Soon the liberated nitrogen will unite with the hydrogen, and seek its old home in the air in the form of ammonia, which when freed will be trapped by the clay. The re-solution of this vegetable matter sets free the locked-up sunshine it contained, and the heat induces the hydrogen of the wood to seize the oxygen, and pass to its old condition (water), and the desired combination of humus or vegetable mould is produced. This is the great restorer of life to worn-out sand and clay. When applied from a heap of sawdust, or the turning under of a growth of vegetable matter, the result is the same. Life and motion commence, the roots soon find and transform water, carbonic acid, and ammonia into living organic matter, and life again comes out of the inorganic kingdom. D.

The Orange-milk Toadstool (*Lactarius deliciosus*).—I fear it would be difficult to cultivate this *Agaric* artificially, as suggested by your correspondent, "C. R. S. D." With us, near Harrogate, it is not very uncommon to find it growing under Scotch Firs; but as it feeds in a bed of fallen needle leaves, and the rhizome has but slender foothold therein, there would possibly be some difficulty in exactly apportioning the nutriment to its requirements, not to mention other conditions perhaps no less necessary to its healthy development. I have often gathered it and often eaten it. The orange-red milk—it

bleeds freely—is a sufficient guarantee of its identity, as in other species, when cut, the milk is white. It must be eaten young, as it very soon becomes a prey to the larvæ of insect life; but if the flesh is young and tender it answers well to its name *deliciosus*. When old, the beautiful saffron-red changes to a lurid green. Such specimens must, of course, be rejected for the table. I met with it some years ago on the outskirts of the Fir forests of Tyrol, where it is very abundant. It is sold regularly in the markets of Vienna and Prague under the name of *Champignon des Polonais*, because the Polish refugees were the first who introduced it to notice.—PETER INCHBALD, F.L.S., *Fulwith Grange, near Harrogate*.

NOTES ON CURRENT TOPICS.

Should we dig?—One of the most heterodoxical ideas that have found expression lately is that relating to the overdigging of our gardens. The subject was first mooted in *THE GARDEN*, and has ramified into other papers since. For my own part I am much averse to doing unnecessary work in a garden, and am of opinion that much unnecessary work is done that serves no other object than incurring expense. I have at times condemned the practice of too much trenching and the burying of manure, but I wish to guard against the impression that anything I have said condemned digging altogether. I still believe in ploughing and sowing, although I do not think it is necessary in all cases to dig for every crop any more than I believe it to be necessary to wash a flower-pot every time it is used, although the proposition to use pots that were only wiped some time ago much exercised what one might call the "orthodox" section of gardeners. Some few years ago when going over the kitchen garden at Chatsworth with Mr. Speed, he showed me a fairly good border of Savoys that he assured me had been planted in hard undug ground by a crowbar, but he would not, however, promise to go on with the crowbar system on the same place another season. I allude to this because the subject has been exercising your contemporaries of late, and I see our friend Mr. Gilbert lending the weight of his testimony to the crowbar, and stating that "trenching for spring Broccoli is a most dangerous system that he has not practised for twenty years, always preferring late planting in firm land on the crowbar system." Now, this crowbar system hardly deserves the title, for I rather suspect it has not been reduced to a "system" yet, and that the merits of the plan need proving. One thing is certain, planting crops on undug land so hard that it has to be perforated by an iron crowbar is opposed both to the scientific and practical teachings of all sound authorities on the subject of either gardening or farming, and I fancy if the crowbar practitioners were put to it they would have a task to hold their own. Unless all the teachings, practice, and experiments are false, we know that digging and trenching, or ploughing and subsoiling are attended with the most beneficial results to almost all crops; hence it follows that the opposite practice must be wrong, and it will require Mr. Gilbert and others to go on for another twenty years with ramrod system before they convince gardeners to the contrary—good crops, notwithstanding which I have no doubt grow in spite of the system practised, and not because of it. According to the best authorities and experiments carefully carried out, as recorded in "Agricultural Chemistry" and elsewhere, trenching or subsoiling, *i.e.*, deepening and loosening the tilth, made a difference of tons to the acre in the case of Turnips, grain, and Potatoes, &c. "The benefits of diggings, ploughings, hoeings, and working the land are that its parts are more minutely divided, the air gets access to every particle, it is rendered lighter, more open, and more permeable to the roots. The vegetable matter it contains decomposes more rapidly by a constant turning of the soil, so that wherever the fibres of the roots penetrate they find organic food provided for them. The production of ammonia and of nitric acid, and the absorption of these

and of watery vapour from the air take place to a greater extent the finer the soil is pulverised, and the more it has been exposed to the action of the atmosphere. All soils contain likewise an admixture of fragments of those minerals, which by their decay yield new supplies of inorganic food to the growing plant." Such are some of the advantages of turning the soil over frequently, and it remains for the advocates of planting firm land with the crowbar to state the advantages of their practice as clearly and convincingly.

Staking plants.—One of the most pleasing features of some gardens of late years has been what may be called the abolition of stakes in the culture of greenhouse and stove plants. I can recall visions of conservatories not so many years back in which all the Azaleas were in the shape of sugar-loaves, the winter Mignonette in the shape of umbrellas, the Heaths in the shape of cannon-balls, climbers the same, and everything else cut out on similarly stiff lines, but now you may see masses of *Dentzas*, *Azaleas*, *Fuchsias*, and many other subjects mixed with bulbs and other plants in greenhouses where not a stake is used except as a necessary means of support here and there. The labour and anxiety this saves the gardener is great, and nothing is lost in the matter of taste and arrangement. One evil effect of exhibiting specimen plants was undoubtedly the idea created that every plant must be trained in some artificial shape or other to please the eye. Training may be a necessity of exhibiting, but it is certainly not necessary in private gardens; in some form we have been accustomed to see it, but the sooner the rising generation of gardeners get quit of the idea the better it will be for them and for gardening.

How often should we pot?—It is a very common practice with gardeners to pot the greater portion of their stove and greenhouse plants every season, the reason given being that in one year the plants get pot-bound, filling the pots with roots that need more room. Some subjects that do not root vigorously are potted perhaps once in two years, but the greater number are potted every season of such things as *Crotons*, *Palms*, *Dracenas*, *Ferns*, and many other species of table and flowering plants, involving a very large amount of work at the busiest season of the year. In going through a garden not long since where many of the plants had not been potted for several years I was particularly struck with the proportions of the plants compared with those of the pots, and particularly by the healthy appearance of the *Crotons*, *Dracenas*, and *Ferns*, which had not been shifted for two or three and in some cases for four years, the pots being thoroughly crammed with roots. The want of time was the reason pleaded, but the plants had not been neglected otherwise, and although the annual growths and leaves were, perhaps, not as luxuriant as those of plants receiving rich soil annually, the foliage was good, and in the case of the *Crotons* and *Dracenas* of unusually good colour. Some older plants of these had not been potted for half a dozen years or longer, and yet retained their older leaves in perfection and looked fit to go on to an exhibition table. The subject is interesting to gardeners who keep large collections of decorative plants in small pots. The desire is usually to preserve those of moderate size as long as possible and keep them in the same sized pots. Hence, when they are potted annually the roots have to be curtailed and a severe check is experienced, which is shown in the poor growth for a time. No sooner is the plant fairly established than it is shifted again, roots mutilated or removed, just when it is about to make a real start. It would appear from all the evidence on this head that it is not a wise plan to move pot plants, any more than trees, more than can be helped where perfect growth is desired. None of us would think of shifting fruit trees or plants growing in the open ground every year or even every two or three years, and why pot plants until they have exhausted their store? Plants cannot be repotted without suffering injury more or less at their roots, which they take time to get over, and hence

it follows that the less they are disturbed the better. This question I know raises the question of size of shift a plant ought to have, but I do not propose giving larger shifts in consequence of potting less frequently. What with the usually good compost used for potting purposes and the ease with which liquid manure can be applied, pot plants may be said to be very favourably placed. I have seen *Figs* do well in pots with annual top-dressings and liquid manure for seven or eight years in succession, and it is not an uncommon thing to see orchard house trees doing well under similar circumstances; while as for *Camellias*, *Azaleas*, and such like, they are frequently found in tubs and pots from which they have not been disturbed for a dozen years.

Peach crops.—One cannot help thinking that if our fruit trees do not set an abundant crop annually it is not the fault of Nature; she provides ample means to insure a crop so far as she is concerned. I have estimated the proportion of fruit set on certain early Peach trees here for seven or eight years back, and find that the quantity exceeds the demand by about twenty to one. For example, after the first thinning freely done, I have estimated to-day that from end to end of our early Peach house there are at least twelve froits to the foot, or about 10,000 fruits on the two trees. It would appear, therefore, that successful cropping consists in setting a mere fraction of the flowers that Nature provides.

J. S. W.

ORCHIDS.

THE ORCHID CONFERENCE.

WE have just received a programme of the proposed Orchid conference and exhibition which is to be held at South Kensington on Tuesday, the 12th, and Wednesday, the 13th May, 1885. The exhibition will be divided into three classes, viz.: Class 1 will consist of Orchids in flower (with a view to economy of space, exhibitors are requested to show duplicates as little as possible). Class 2, of species and varieties of the genera *Cattleya*, *Lælia*, *Odontoglossum*, *Masdevallia*, and *Cypripedium*. Class 3, of species and varieties of the genera *Oncidium*, *Epidendrum*, *Dendrobium*, *Vanda*, *Saccolabium*, *Aerides*, and *Stanhopea*. Class 4, of single plants of any Orchid. Class 5, of hybrid Orchids (it is hoped that the parents will be shown if possible with the hybrid). Class 6, of Orchids in fruit. Class 7, of Orchids indigenous to Great Britain, hardy Orchids from other countries, and cut flowers of Orchids. Class 8, of materials, such as *Sphagnum* and other Mosses, peat and other soils, baskets, rafts, pots, pans, labels, &c., used in the cultivation of Orchids. In order to ensure uniformity and accuracy, it is requested that the plants exhibited bear the labels which have been specially prepared for this conference, and with which the exhibitors will be provided. Exhibitors are requested to apply for these at the society's office on or before May 1, giving the exact name of the plants which they intend to exhibit. The Orchid conference will be held Wednesday, May 13, at 10.30 a.m. It will be opened by the president, Sir Trevor Lawrence, who will make a few introductory remarks, after which a communication will be read from Professor Reichenbach; a discussion on the hybridisation of Orchids, with an opening paper by Mr. Harry Veitch, will follow; then a discussion on the cultivation of Orchids, with an opening paper by Mr. J. O'Brien; and lastly, a discussion on the nomenclature of Orchids. Two Veitch memorial medals will be awarded at the conference on the recommendation of the committee. The Orchid conference committee consists of the following, viz.: Colonel Beddome; Hon. and Rev. J. T. Boscawen; J. C. Bowring; W. E. Brymer, M.P.; the Right Hon. J. Chamberlain, M.P.; John Day; W. T. Thistleton Dyer, F.R.S.; Sir Nathaniel de Rothschild, Bart., M.P.; Professor Michael Foster, F.R.S.; Holbrook Gaskell; Geo. Hardy; E. Harvey; J. S. Hirst; Sir Trevor Lawrence, Bart., M.P.; Wm. Lee (of Downside, Leatherhead); Major F. Mason; Rev. J. B.

Norman; Alex. Paterson, M.D.; Fred. A. Philbrick, Q.C.; Baron Schröder; W. Thomson.

ODONTOGLOSSUM SHUTTLEWORTHÆ.

THIS is the name given to a marvellous variety which has just flowered in Messrs. Shuttleworth & Carder's nursery, at Park Road, Clapham. It is supposed to be a natural hybrid between *O. Pescatorei* and *O. triumphans*, inasmuch as it has made its appearance among an importation of these two species from the same region. It is, indeed, a remarkable variety, far removed from the crowds of so-called natural hybrid *Odontoglossums* which have as yet flowered. There is little doubt about its being a hybrid, as the flowers bear in a remarkable degree the intermediate characters of *Pescatorei* and *triumphans*. They are $3\frac{1}{2}$ inches across and almost as much in depth, and the sepals and petals are broad enough to make a well-filled-out bloom. The colour of the sepals is pale yellow, heavily spotted with chocolate, and the whole surface flushed with a bronzy tint. The lateral petals are white, broadly edged with canary-yellow, and marked with large blotches of crimson-chocolate on the upper parts and smaller dots below, while the edges are beautifully crimped. The lip is in form like *Pescatorei*, being broad at the base, not narrow, as in *triumphans*. It is white with yellow in the centre, and is deeply blotched with cinnamon-red. The column is an inch long, and, like *triumphans*, is white and projects in the same manner. Such a variety does not occur among 100,000 imported plants, and may never turn up again; its value apart from its beauty is therefore increased. Among other remarkable *Odontoglossums* in flower in this nursery is the *O. crispum Shuttleworthi*, which was so much talked about last season when certificated. It is also a very handsome flower, at once distinguished from the other forms of *O. crispum* in having the sepals of the flowers almost entirely covered with cinnamon-red blotches on a white ground. As it has only just opened its flowers, it will be in perfection for some time. Out of the numbers of *O. crispum* varieties now in bloom here, none pleased us so much as a very delicate pink-tinted form, not the ordinary roseum, with purplish hued blooms, but lighter and to us far more pleasing—a plant with three fine spikes we thought most charming.

Dendrobium nobilissimum.—The history of this *Dendrobei* is as follows: It first appeared as a sport from *D. nobile* seven years ago, and one or more of the plants from this sport have flowered each succeeding year always true. Until three years since, it was only seen by local horticulturists, and not by Orchid growers, of whom until quite recently we have had few in our neighbourhood. In 1882-3 and '85 it was shown to a number of London nurserymen, all of whom were much pleased with it. In 1883 I sent a flower to Prof. Reichenbach, and in acknowledging its receipt he remarked that the "petals were marked same as the lip and throat;" at the same time he expressed a doubt as to its permanency. In reference to this, however, I should remark that I did not tell him the history of the variety. To those who know the facts there can be no doubt of the permanency of this fine *Dendrobei*.—NORMAN C. COOKSON, *Oakwood, Wylam-on-Tyne*.

Dendrobium nobile.—I have a plant of this Orchid measuring over 3 feet through and carrying upwards of 600 blossoms on it. It has made growth 30 inches long, and I think it a much finer variety than others which I have in flower at the present time.—W. BALCHIN, *Hassocks, Sussex*.

. The two stems sent are completely wreathed with flowers of a first-rate variety of this popular Orchid. They are large and rich in colour.—ED.

Phalaenopsis Schilleriana.—I have again this year seen the *Phalaenopsis Schilleriana* belonging to Mr. Perkins, of Kirkley Hall, Northumberland. The oldest plant has one crown with eight leaves, each about 16 inches long, and two spikes carrying over 250 flowers which are of good colour, fair size, and more than usually sweet-scented. The other four plants all originated from the old flower-spikes of the original plant, and the strongest of them is now carrying over 140 good flowers.—NORMAN C. COOKSON, *Oakwood, Wylam-on-Tyne*.

Lælia elegans var.—A flower and a photograph of a specimen of a most remarkable variety of *Lælia elegans* have been sent to us by Messrs. Thomson, Clovenfords. The variety most nearly approaches that named *prasiata*, though we believe it to be far finer than that or any other similar variety of this *Lælia* in cultivation. The flower is very large, the sepals are flushed with vinous purple, while the broad lip is of the most intense magenta-crimson imaginable. The photograph shows a wonderfully fine plant of this superb variety. The plant measures over a yard through and carries between fifty and sixty flowers—quite an Orchid show in itself.

Orchids at Rochester, New York.—Allow me to say a few words in regard to the fine collection of Orchids in the greenhouse recently erected here by Mr. W. S. Kimball. First, there is a plant of *Dendrochilum glumaceum* with fifty-four spikes of flowers fully expanded. This plant is between 2 feet and 3 feet across, and makes a unique show. Are there many such plants of this *Dendrochilum* in England? It is in perfect health and very symmetrical in shape. *Dendrobium speciosum* Hilli, 4 feet across, with nine spikes of flowers, makes a fine show. There are also other good plants in the way of the best varieties of *Cypripediums*. *Dendrobiums*, especially *D. Wardianum*, here in good variety, [and] *Phalaenopsis*, *Angræcums* (*A. eburneum superbum* and *A. citratum*) are nicely in flower. Taken altogether, this is a choice collection of Orchids, and in a short time will be one of the best in America.—GEO. SAVAGE.

Cattleya citrina.—This superb Orchid is now in its greatest beauty, and nowhere that we know about London can it be seen grown to greater perfection than in Mr. Bonny's collection in Downs Park Road, Hackney. Here one may see huge masses of it growing in various positions in baskets and blocks on vertical rafts, as well as horizontal, and in one case a large mass is growing on the bottom of a horizontal raft. The peculiar tendency of this *Cattleya* to grow downwards is well shown when the plant is fixed upon the upper surface of a horizontal raft, as every new growth as well as the flowers endeavour to lean over the edges of the raft. In many cases Mr. Bonny does not put a particle of soil around the roots of these masses, but they seem to thrive perfectly without it, as the roots which firmly clasp the rafts indicate. One of the largest masses has borne no fewer than fourteen flowers, which were nearly all open at one time, and others bore four, five, and six flowers. As this is one of the most beautiful of all cool house Orchids, rich in colour, exquisite in form, and delightfully scented, its culture should be attempted by all who possess a greenhouse, seeing that it may now be bought cheaply.

FASHIONABLE FLOWERS.

"VERONICA" in one breath protests (p. 185) against any one class of flowers "becoming fashionable, just as if all flowers were not always beautiful in their own way," and in the next breath proceeds to pour out the vials of her wrath upon those who like Orchids, forgetting her own dictum that all flowers are always beautiful. The admirers of Orchids are attacked and derided as "daughters of millionaires," and as caring for them only because "they cost much and are rare," and it is implied that people who like them cannot be "of refined taste," or "the highest and best cultured people." And the unfortunate flower itself is blamed because "no Chaucer, no Herrick, has sung of the Orchid as they have sung of Daisies." Now, I should wish all beautiful flowers, whether rare or common, to be loved, and I venture to suggest that to put any class under a ban is a proof of want of true love of flowers. Why can one not love Daisies and Daffodils as well as Orchids? And is it charitable to speak of the latter as the "flaunting decorations of those who have no higher appreciation of them than that they are costly, and to some extent the ensign of wealth rather than of beauty?" If all flowers are always beautiful, as "Veronica" says,

why are the admirers of one sort to be called such bad names? Now, I cannot recollect the time, since childhood, when I did not love all flowers, and my love is wide enough to cover both common and rare sorts. I love wild flowers in the wood, on the mountain, and in the meadow, and hardy cultivated flowers in the garden, but I am glad that this love does not disqualify me from loving also tender flowers in the stove and greenhouse, even though they be of the despised order of Orchids. In the winter, when our gardens outside are asleep, waiting for the breath of spring to wake them into life and beauty, we may yet rejoice in the numerous beautiful flowers, then in their full glory, under glass, and I have never yet been conscious of any diminution of the "refinement" claimed as the peculiar property of the exclusive lovers of hardy flowers. Some people love dogs and hate cats, and some love cats and hate dogs. Are either of these truer lovers of animals than those who like both? Would not those who may think with "Veronica" show themselves truer lovers of flowers if their sympathies were a little less narrow, wide enough in fact to include even Orchids? Rob the Griender, in "Dombey and Son," laments having fallen into dissipated habits through a love for pigeons and other birds. "I am sure a cove might think," he says, "that singin' birds was innocent company, but nobody knows what harm is in them little creatures and what they bring you down to." Would it not be sad if a love for hardy flowers should lead to a similar moral deterioration, and "bring one down to" want of charity for lovers of other flowers, and inability to conceive of their being loved from any but unworthy feelings?

Aigburth.

AMATOR VERUS.

CRYSTAL PALACE SPRING SHOW.

MARCH 27 AND 28.

THIS was the third of the large exhibitions of spring flowers held in London last week; it therefore presented much the same features as those at South Kensington and Regent's Park, the same kinds of flowers being shown at each of the places. The schedule of the Crystal Palace show, however, embraced a wider range of plants, and there were no fewer than twenty-seven classes, and as three prizes were offered in each an inducement was held out to exhibitors. But as it was, a good many of the classes were quite unrepresented, and these happened to be those which, if filled, would have made the show different from either of the others held during the week. For instance, there were classes for forced hardy flowering shrubs, for herbaceous and hardy bulbous plants, for *Pelargoniums*, for Ghent Azaleas, as well as for *A. pontica* and *A. mollis*. The fact that there were none of these classes represented indicates that habitual exhibitors have got into one beaten track, and nothing will induce them to show anything but the common-place classes of plants which one may see in a flower shop. The Crystal Palace Company certainly endeavour to make their shows attractive, popular, and out of the ordinary run by offering really good prizes. The show as a whole, though not large, was more effective than London spring shows usually are, and some parts of it were really highly commendable as regards their arrangement. It was held under canvas in an enclosed portion of the central nave, a far better place than in the full glare of the sun; besides, the flowers show to much better advantage under the subdued light of a canvas awning. The prettiest feature we thought was a group of forced *Rhododendron* bushes from the Berkhamstead Nurseries. There were various kinds, chiefly first-rate sorts, laden with fine trusses and healthy foliage. These were arranged in an informal and really picturesque manner on the ground, not in a monotonous group, the highest at the back and smallest in front, but so placed that each plant showed itself to advantage and so put as to set off its neighbour. A fringe of elegant Ferns gave a finish to this beautiful group, which was the admiration of visitors. As the sorts which Messrs. Lane showed were all excellent for forcing, we give the names of

a few of the most prominent—viz, Lord Eversley, The Queen, Marchioness of Lansdowne, Mrs. J. Penn, Snowflake, Lady Cathcart, and Bianchi. The Roses from the Cheshunt Nurseries occupied a prominent place, a sloping bench arranged so that all the plants could be seen to advantage. In this position they had a far finer effect than when shown a day or two previous on the flat benches at the Botanic Society's garden. The sorts were much the same as those shown earlier in the week, a list of which we gave in our last with the addition of a few new and distinct sorts, such as *Pride of Peigate*, the singular sport from Comtesse d'Oxford, and which has the crimson petals blotched and streaked with white. The new Heinrich Schultheis was well shown, as was also the lovely new *Tea Etoile de Lyon*, which will be one of the favourites, no doubt, of the coming season. Uncommon names among these pot Roses were likewise *Francisca Krager*, *Alphonse Soupert*, and *Comtesse de Camando*, all good forcing sorts.

The Azaleas from the Slough Nurseries have won a reputation at these London spring shows, and on this occasion they were first-rate, particularly having regard to the early date. The two dozen plants shown by Mr. Turner were the perfection of what small forced Indian Azaleas should be, the plants being fairly smothered with blooms as fine in size, form, and colour as it is possible to get them. The sorts that were most admired were *A. Borsig*, one of the finest of all the whites; *Mrs. Turner*, *Apollo*, *Jules Verne*, *Ceres*, and *Madame Van Houtte*.

The competitive classes, though not numerous represented, were excellent throughout as regards quality; indeed, it is doubtful if such a gathering of *Cyclamens*, *Hyacinths*, *Narcissi*, *Tulips*, *Lily of the Valley*, &c., has been surpassed even at a London show. The *Cyclamens* were the most remarkable, all the best growers of this valuable flower being represented. Among the market growers were Mr. H. B. Smith, of Ealing, and Mr. R. Clarke, of Twickenham, in competition side by side. The former won the first prize, but Mr. Clarke had the best of it as regards diversity and brilliancy of colour in his group. Among the amateur *Cyclamen* growers, Mr. Clay and Mr. Little were in competition, the former being first on this occasion, though in some respects there was but little difference between the two collections; both contained first-rate plants, better probably than could possibly be seen anywhere except at Twickenham and Hillingdon.

There were classes for three dozen *Hyacinths*, the same number of *Tulips*, and two dozen plants of *Polyanthus-Narcissi*, and being represented by three or four exhibitors, these alone made a great show. But they need no comment, as we saw nothing among them beyond what has been seen for years past. Messrs. Williams, of Finchley, seem to be showing the best groups of these plants in London this year, as usual, and certainly they deserve credit for the excellence of their plants throughout. The *Lilies of the Valley*, shown by some four or five exhibitors, were all marvellously fine, particularly those from Mr. Wright, of Lee, a well-known grower for Covent Garden Market, who excels particularly in *Lily of the Valley* culture. The exhibitor from Newcastle-on-Tyne, who was first at Regent's Park, was second here, but probably this arose from his plants being two or three days in London.

Amaryllises were shown well by Messrs. Paul, of Cheshunt, who are making strides in the improvement of their strain, which is particularly remarkable for floriferousness. Some of the plants shown in the first prize group of twelve bore four and a few even five flowers, which, though not large, were brilliant in colour and of good form. Those named *Albion*, *Venus*, *Bendigo*, *Pallas*, and *President Grey* we singled out as the finest. The other *Amaryllids* shown were poor compared with these.

There were a few *Auriculas* from Mr. Turner, but as it is full early for these flowers, a good show of them was not expected, but the few shown were interesting and gave variety to the exhibition. Highly attractive were the perpetual

Carnations which Mr. Turner sent with the *Auriculas*, and the sorts, such as *Mrs. Keen*, *Lancer*, *Lady Ashburton*, and *Egyptian*, were the admiration of everyone, so fine were they in size, form, and colour. The big new *Viola Wellsiana*, also from Slough, won many admirers.

Cinerarias were very poor, but *Mignonette*, on the other hand, was uncommonly fine, particularly that from a local exhibitor, Mr. Bird, who is well known as a *Mignonette* grower. Mr. Smith, of Ealing, also showed *Mignonette* in the style usually sent to Covent Garden Market. A great display of *Daffodils* was made by Messrs. Barr, and many new forms were included which had not been previously shown this season.

There were a few groups of plants arranged for effect, the most noteworthy being that shown by Messrs. Laing, of Forest Hill. This was composed of a miscellaneous collection of spring flowers and fine-foliaged plants. It had a good effect, but it would have looked even finer had the arranger of it not tried to emulate the pyramids. The sides were painfully smooth, whereas there was enough material to have made a group at least twice the size highly effective. The same crowding was noticeable in another arrangement by Mr. James, of Lower Norwood, who had a really fine lot of elegant foliage plants, *Orchids*, and other flowers.

Alpine plants by post.—Could you kindly give me any instructions for packing and forwarding to England live specimens of alpine plants? The transmission of such plants often turns out a failure. I believe they can be sent in small boxes by parcels post from most places on the Continent, but much depends upon the condition of the roots, the degree of moisture, and the mode of packing.—H.

* * Wash the roots out clean, and wrap round them a little thoroughly damp, but not wringing-wet Moss—soaked in water and wrung out in the hand will be right. Fold a bit of water-proof paper round the root end only, and put some dry Moss round and among the heads of the plants; if needed to make the package even, put a little dry Moss round the root end also over the water-proof paper. Wrap firmly in a piece of strong paper 15 inches square, beginning at one corner and rolling diagonally, folding in the ends as you go. Tie round the middle of the parcel only with a strong string twice round and properly knotted, and have the address on a tie-on label, so that the parcel itself is not stamped upon. I have sent home scores of such packages from France, Switzerland, and Italy, some having been eight days on the road from stress of weather, and have never lost a plant, and have even sent flowers and leaves of brittle and succulent texture (*Senecio mikanooides*) so packed to THE GARDEN from Southern Italy, and heard afterwards that they arrived in good order. After many trials, I do not think any way of packing in boxes for plants better than this simple way of Moss and paper. The finished parcels are about 6 inches to 7 inches long and 2 inches thick; if larger, they might exceed the limit of size and weight. The cost is the local equivalent of a halfpenny for every 2 ounces. The packages go by pattern post, which out of England is of a more elastic nature. It is a great saving of trouble to have everything ready—wrapping paper in 15-inch squares, water-proof paper in 8-inch squares, and printed address labels marked "patterns." There is a useful black water-proof paper with a dull surface sold in Italy; at home the best thing we have is what is sold as grocers' butter paper.—G. J.

5313.—**Valuing cottage gardens.**—If a cottage is given up in winter after the crops have been harvested, and no work has been done for the coming season, no payment will be expected; but in the case you mention, where the garden is cropped or partially so, the fairest way is to pay the out-going tenant for what he has actually expended in the way of labour in digging, manuring (if any has been done), planting, cost of seeds, and any other little incidental expense. It would be impossible to make a hard and fast rule in valuations of this kind, as the conditions vary in

almost every case, but where both parties are disposed to act fairly there need not be any difficulty. If any difference should arise, there is generally some local authority who will act as arbitrator free of charge.—D. J. Y.

Stoking stove boilers.—"R. R. S." appears to have been very unfortunate either in the selection of his stove boiler or in its management, and he has not been much more successful in making known what sort of boiler it is that he has got to contend with. But if it be a star boiler, one of the few made without a damper, it will, if properly regulated, burn and keep up a good heat for eight or nine hours provided it has not too much piping to heat. Some time ago we had one of this class of boiler fixed to heat some sheds, and at first we could not keep the fire burning for more than three or four hours, although we burned nothing but the best gas coke. However, after trying various ways of regulating the draught, we found that by keeping the fire box and ash grate doors shut, and leaving a chink of air on at the cover, we could keep up a suitable heat without any attention for eight or nine hours.—H. PARKER, *East Bank, Sheffield.*

OBITUARY.

WE regret to announce the death on the 12th ult., aged 51 years, of Mr. ANDREW SINCLAIR, of the firm of Messrs. W. P. Laird & Sinclair, nurserymen and seedsmen, Dundee. Mr. Sinclair commenced his business-career with Messrs. Dicksons & Co., Waterloo Place, Edinburgh, and afterwards held an important position in Messrs. Lawson's establishment. He subsequently joined Mr. W. P. Laird in the Dundee business, with which he has been connected for upwards of a quarter of a century.

WE have also to announce the death on the 12th ult., aged 53 years, of Mr. WILLIAM GIBSON, head of the firm of Messrs. Gibson & Reid, seedsmen, Lower Ormond Quay, Dublin. Mr. Gibson's connection with the Dublin seed trade goes back over a quarter of a century. He went to Dublin to fill a responsible position in the well-known firm of Messrs. Drummond & Sons, Dawson Street, which he relinquished to take a partnership in the business just named.

LATE NOTES.

Gentiana alpina (p. 264).—This does well in the Edinburgh Botanic Garden, and as it seems to be northern plant, it may be had, I should think, of some of the Edinburgh nurserymen.—D. K.

Cattleya speciosissima (J. R. R.).—A superb variety of this *Cattleya*, which is generally admitted to be surpassed in beauty by no other. No doubt that when the flower opened three weeks ago it was much brighter in colour than at present.

Gardeners' Benevolent Institution.—A few weeks since there appeared a letter in THE GARDEN in reference to this institution, signed "H. W. W.," and as I have only on one other occasion seen the above initials at the bottom of an article not written by me, I shall therefore feel obliged by your allowing me to say that I did not write the article in question, though credited by my friends with its authorship.—H. W. WARD, *Longford Castle.*

Names of plants and trees.—W. Ellis—*Petræa volubilis*.—W. Spencer.—4, *Polygala Dalmatiana*. We do not attempt to name Azaleas or other florists' flowers.—A. H. S.—*Shrub* is *Spiræa confusa*; Fern is *Asplenium Trichomanes*; other is *Farfugium grande*.—E. Sharp.—1, send in flower; 2, *Sedum Lydium*; 3, *Lamium maculatum*.—M. F.—*Narcissus Pseudo-Narcissus minor*.—J. B.—*Tecoma jasminoides*.—Mrs. M. A.—Next week.—W. H.—1, *Begonia nitida*; 2, *Anthurium Scherzerianum*; 3, *Alonsoa incisa*; 4, *Tradescantia zebrina*.—T. C. B.—100, *Gloriosa*; 101, *Laura*; 102, *Grootvorst*; 103, cannot name. These varieties of *Narcissus Tazetta* are difficult to name, inasmuch as several names are often applied to one sort.—Subscriber.—*Franciscea calycina*; *Narcissus Pseudo-Narcissus princeps*.

Mushrooms from salt and guano.—The farmers in this locality (North Lincoln) are in the habit of sowing (about this time) a mixture of salt and guano on their Wheat. Every season at harvest time they have a tremendous crop of Mushrooms from land so treated. It is impossible to move about without crushing them. Will some reader of THE GARDEN kindly explain this, and also suggest how salt could be applied to forced Mushrooms.—Y. F.

WOODS & FORESTS.

VALUING STANDING TIMBER.

MUCH that has been written about this is absurd, for it is unreasonable to suppose a practical valuer will carry about such apparatus for ascertaining heights, &c., as some inventive minds have suggested. Some simple rule to find the extreme height of a tree occasionally as a matter of curiosity may be useful; but to the man who has to resolve his statements into money value, there is nothing but the eye that is really reliable. Some, again, have tried to teach this art of estimating through articles in a paper. It may be very entertaining reading, but for any practical value it is on a par with trying to teach a novice to build an engine by reading a book on engine building. Long practice and close observation are the only methods by which the eye can be brought to give reliable results, and it is necessary that this practice should be sustained, for although the knowledge once gained is never entirely lost, if the eye is not kept in training the results will be more or less inaccurate.

It is not, therefore, our purpose to attempt to lay down a set of rules and ask the would-be timber valuer to follow them, as it would only be wasting his time and ours as well. What we would say is—go into the woods and fields, or wherever timber is being thrown; form your estimate of trees when standing erect, never mind how erroneous; when these trees are thrown go with rod and string and ascertain the true measurement.

If the tree is a large one, the probability is your estimate will be under the true contents; if a small one, it will most likely be over. When any great difference appears, try and discover what has misled you. Perhaps you have been standing on a different level to that on which the tree is growing; if this is so, and if your standing point is the higher one, you will have undervalued the tree. If, on the other hand, you are on the lower ground, you will over-estimate it. Perhaps you have viewed the tree from one side only. This is a very easy way to miscalculate. Although we speak of trees as being round, we know in reality there is not one in ten that is so. Give a fair look round on all sides and take the mean. Perhaps your tree is standing amongst a number of larger ones. If so, you have not given its full measure. There are many little things of this kind that may pass unnoticed that will vitiate a true result, but these can only be overcome by practice. Fail, and discover the reason of your failure. This is the true way to success.

Do not listen to talk about angles, whether acute, right-angled, or obtuse, but go into the woods and use your eyes. You will learn more there in one day than in reading treatises on the subject for a month.

NEW FOREST.

THE GROWTH OF TREES.

I QUITE expected that "Yorkshireman" would either endeavour to strengthen his own position in this question or weaken mine, and [though I did not expect he would confess his inability to do either, I decline to accompany him in his mode of discussing the matter. Regarding the facts of growth stated in my former letter, I may be allowed to state a case in proof, not only of the stability of these facts, but also of their practical value in the management of woods. The value of timber generally depends upon its cleanness and straightness, and also, to a large extent, upon its being nearly cylindrical for a given length. The value of this latter character is due to the fact that in squaring round timber, the size of the smallest end of a tree determines the size of the log that can be sawn from it. If, as "Yorkshireman" seems to allege, diametrical increment were generally uniform throughout the length of the tree, cylindricality would be impossible, as the diameter of the oldest part of the stem would be to the diameter of a younger part as their respective ages. The fact is not generally so; it is always otherwise in well-grown timber. If the

branches to a height of 25 feet or 40 feet are killed by shade, and removed from the stem within a dozen years or thereby after the time of their first appearance, the tree is then in the way to become nearly cylindrical in stem to the height stated. I have just spoken of shade, and in order to get shade, the near presence of other trees is required; hence good timber is not a character of an isolated tree. It is to be hoped that the day is not far distant when the principles upon which our mode of thinning is founded and the manner of it will cease to be based on fruitless considerations of distance apart, light and air, root accommodation, &c., but based more than hitherto on a thorough knowledge of the influences of light and shade.

Edinburgh.

THOS. WILSON.

THE WEYMOUTH PINE (PINUS STROBUS) AS A TIMBER TREE.

Few coniferous trees were introduced into this country under nobler auspices or with a promise to greater commercial value as a British timber tree than the Weymouth Pine. The latter expectation has, however, unless in a few cases, hardly been realised, for the timber grown in this country is usually branded with a somewhat worthless reputation, although the tree has in various parts of the country attained large proportions, even when planted under what might be considered adverse circumstances as regards soil and situation. This Pine was introduced into Britain in 1705 and extensively planted at Longleat by Lord Weymouth, whence the name. It is a tree of noble proportions, indeed may be classed amongst the giants of its tribe, rising in a straight columnar fashion to the height of 160 feet in the Northern States of America, but more particularly in the cool and damp woods of Vermont and along the banks of the upper St. Lawrence.

Under the name of white Pine vast quantities of the timber of *P. Strobus* are annually imported into Great Britain from Canada and the States, it being perhaps more extensively used in this country than any other timber. In America also the wood is in greater request than any other, being, as with us, largely employed in the construction of houses, for furniture, picture frames, and even in the construction of bridges. It is soft, clean, free from knots, and easily worked, which will at once account for its being preferred to any other wood by our home joiners and builders, even on estates where large quantities of native-grown timber are going to waste for want of a suitable market.

Foremost as is this Pine for taking possession of barren districts, it is the most hardy in resisting the impetuous gales from the ocean, and also the loftiest and most valuable of the American productions. In the mountains and cold districts of Pennsylvania, near the sources of the Delaware and Susquehanna are large forests of this Pine, quantities of this tree being cut and floated down the rivers for internal consumption. In this country the Weymouth Pine is of rapid growth, that is, when suitably placed, many trees having attained a height of fully 80 feet in as many years. At Longleat, as would be expected, there are some fine trees over 90 feet in height, and with girths ranging from 6 feet to 8 feet at 5 feet from the ground. In the pleasure grounds at Cranbury House, in Hampshire, growing on gravelly clay, a specimen of this tree measured in 1879 was 70 feet in height with a circumference of stem of 10 feet 2 inches. Other remarkable trees are those at Gwydyr Castle, in North Wales, the largest of which is upwards of 80 feet in height with a clean straight stem girthing 9 feet 5 inches at a yard up. On this estate the Weymouth Pine has been freely planted in several of the woodlands, the largest of which stands near the entrance gate at Port Penrhyn. It is fully 70 feet in height.

This Pine nearly approaches in general appearance the Bhotan Pine (*P. excelsa*); indeed, at a casual glance even those who are perfectly familiar with both species not unfrequently fall into mistake regarding their identity. The main dif-

ferences lie in the shorter, less abundant foliage, and smaller cones of *P. Strobus*, and which, although a tree of great beauty, is not so ornamental as *P. excelsa*.

The bark of *P. Strobus* is strikingly smooth and delicate, and of a bluish grey or ash colour. Leaves soft and slender, from 3 inches to 5 inches long, sea-green, marked with silvery lines, and arranged five in a sheath. The cones are from 5 inches to 6 inches in length, cylindrical or slightly tapering, and usually curved or bent.

The False Strobus Pine (*P. pseudo-Strobus*) resembles very nearly in general appearance the Weymouth, but the cones and foliage are longer and the tree less hardy. It is a native of Mexico, found very commonly at Anganguco about 8000 feet above sea level. There is a diminutive variety of the Weymouth Pine known as *umbraculifera*, *tabuleformis*, or *nana*, which forms a dense mass of cushion-shaped foliage, the rate of growth being almost imperceptible. As a rock or border plant this curiosity of vegetable life is perhaps worthy of a place, and associates well with other pigmy forms of our coniferous forest trees. Another variety grown in some nurseries under the name of *nivea* has shorter leaves than the typical species, and is altogether a more ornamental plant.

A. D. WEBSTER.

Penrhyn Castle, North Wales.

RATIONAL CULTURE OF TIMBER TREES

YOUR correspondent who ventured to give in your pages recently an article on this subject has met with a good deal of adverse criticism, but there is another point in his paper which I think has not been dealt with in the discussion, and that the mode of pruning advocated by the writer. The writer's plan is on the whole to prune early, and in this he is to be commended. He tells us that the best time for this operation is in the spring, before the flow of the sap commences. I fear, however, that he will get few experienced pruners to follow his instructions as regards the time he mentions, as all practical pruners have found the best results by summer pruning, say June and July, and some species, such as the Sycamore, Walnut, Maple, Birch, Spanish Chestnut, &c., should never be pruned sooner than August, otherwise they are sure to bleed, but when branches are removed from the stem in early autumn, the wound soon cicatrises and heals up without any injurious effect whatever; and as these are all points of importance in pruning the best sorts of deciduous trees, I think it a pity that the writer has not referred to them in his instructions.

He next tells us that "at the expiration of four years from the time of planting, if the plantations have prospered and the plants are beginning to meet, it will be necessary to commence thinning. It is here taken for granted that the plants were put out not wider than 4 feet, nor less than 3 feet asunder; that the nurses consist principally of Larch, Spruce, Fir, Birch, and the Scotch Pine where the soil is light and the situation exposed." Now, would the writer tell us when and where he gathered such experience? I have planted a good deal of thin light soil on exposed situations with perfect success, and, as a general rule, I have found the young trees only requiring their first thinning after a period of from seven years' to ten years' growth, and the trees were neither drawn up nor "shamefully neglected," as your correspondent puts it. As this is a point of the utmost importance in the culture and management of plantations, I would be glad were any other readers to favour us with their experience on this head. The writer then tells us that "no specific rule, however, can be given for this operation, as it will depend on the relative growth of the plants." This is more rational and common-sense advice, and had he told us so at once without laying down rules, his instructions would have been clear and safe, and less apt to create confusion.

We are next told that in the treatment of coniferous trees, various opinions have also been given on the required management in regard to pruning. The great defect in the timber of this class of trees is the knot, which can only be obviated by pruning.

But this requires to be done with much discretion. Even when planted thick by Nature's hand it is many years before the under branches decay and fall off, and in some of the species, after the branch has ceased to live, it will remain for many years as a peg before it drops clean off, so that the wound may be healed over. If planted at 4 feet apart and on suitable soil, in five or six years they will require the pruning-knife; care must be taken not to overprune, never leaving less than three tiers of branches untouched, and in exposed sites four tiers may be left. Now, I maintain that such a system of pruning and cutting off live branches from coniferous trees would not only retard the growth and healthy development of the trees to a serious extent, but would also be a wanton waste of capital and unnecessary labour. Fancy a plantation of Scotch Fir, say fifteen years old, with clean, bare stems for a distance of 12 feet from the ground, and a tuft of three tiers of branches surmounting the top. Such a spectacle is not to be seen in every-day life; and if your correspondent would tell us where such is to be found, I am sure many would go and satisfy themselves as to the merits or demerits of the rational treatment of timber trees grown for profit as practised by the writer. J. B. WEBSTER.

LIGHT AND AIR IN WOODS.

I ALSO was struck by the passage of Mr. Coupar's to the effect that "in the centre of a wood it will be found that the bark is very much thinner" than it is at the outskirts of the plantation, which may or may not be the case, but when the same authority goes on to assert that the thinner bark is due to "the want of air and light, which are so important to the free exercise of the functions of the bark," he simply indulges in one of those high-sounding phrases that have no substantial meaning or foundation, but which are very apt to mislead people who are in the habit of taking things for granted. Valuers of standing timber, Oak particularly, have of course to take account of the bark and know that it varies in quality and thickness according to circumstances, some trees having a much thicker coat than others and some plantations yielding more per cubic foot on the average, but the admission of air to the trunks of the trees has little or nothing to do with it, as Mr. Coupar supposes. The trees which have the thickest and best bark are those which are in the best health and growing fastest, or, in other words, that have the best tops, and in thinning plantations it is these tops that we have to consider most. So long as the tops have room it has yet to be proved that an extra free circulation of air under the branches among the trunks is of any advantage. My opinion is that the more shaded the trunks are the better. There is never any want of fresh air in the densest plantations, and I have noticed that in over-thinned woods the increase in the bark and wood grew less, if anything. Where underwood covert exists there is some sense in the free-circulation-of-air notion, but not otherwise. The skin or bark of a tree cannot be compared to the skin of an animal. The latter performs functions analogous to those performed by the leaves of the tree, but the trunk and bark are little more than channels of communication between the leaves and the roots, and the only fact we are sure about is that it is not advantageous to expose the trunks or main limbs to extremes of heat or cold, and the admission of air freely means the admission of these also.

YORKSHIREMAN.

Birch-wood for doors.—It is stated that Birch is a good material for doors. A gentleman recently had black Birch used for the folding-doors of his new house against the architect's protest. The result has so far been satisfactory. The Birch in texture resembles Satin-wood, and is a dark cherry in colour. The doors are admired by everyone who sees them. Although this is so, the question of durability still remains to be tested. Black Birch is not generally considered a lasting wood.

WHAT TO DO WITH OUR TIMBER.

SOME good will have resulted from discussing this question if only to bring out remarks such as "Wood Agent" gives last week. His views tend to explain the difference of prices, but I am certain there are other reasons beside those given. Let us hear what other wood agents have to say. What we want is the simple truth, and all the truth. Whether it is pleasant or the reverse, nothing will be gained by giving matters a false colouring. If the prices of our home-grown timber are unsatisfactory, trying to give the opposite impression will not improve them. We are all working to the common end of trying to improve the condition of things as far as lies in our power. We do not want chimerical notions about abolishing timber merchants, &c., but to deal with it in a practical way. One step in the right direction would be to use more home-grown timber on the estate. I am impressed with the fact that selling our own woods and buying foreign for almost every purpose is a grave mistake. It cuts two ways, as not only does it throw more of our timber on the market than would be the case if more were used on the spot, but it debars the timber merchant from obtaining a fair price for his goods, and consequently he can only give a low price to the producer. This cannot be denied, but I do not altogether blame the wood agent. No doubt in some cases he is the same individual who has to carry out buildings on the estate where he is employed, but oftener it is not the case. Suppose a farmhouse, cottage, farm buildings, &c., has to be erected. A town architect who knows nothing of the wood that is growing on the place specifies for the use of Baltic Fir for roofs, beams, &c., red deal for weather boarding, foreign stuff for joists and sleepers. Why should it be? I do not advocate the indiscriminate use of English timber, but what I say is let us look around us and see how far we are dealing wrongly with our productions. One point will occur to one writer, something else to another, and by this means we shall get at the bottom of the evil, if one exists. An opportunity of ventilating our grievances, such as this paper now offers, has never before occurred. Let us therefore awaken to the fact and make full use of it. D. J.

PLANTING RAILWAY EMBANKMENTS.

IT is odd that so much advice should be constantly offered to railway directors with respect to the utilisation of their waste lands, viz., the sides of railway cuttings and embankments—perhaps the most difficult of all land, and probably the very worst of any to utilise, whilst thousands of acres of really fair land that could be planted or otherwise utilised and made profitable is lying waste. If we were so hard pinched for soil that it was of first importance, railway embankments or cuttings would be utilised for the growth of something profitable; there might be some virtue in the constant iteration of advice to directors, the which it is more needful landowners of another sort should take to heart. But of all the propositions put forth with regard to these barren slopes, the suggestion that they be planted with Larch or other quick growing Pines seems most objectionable, irrespective of the inevitable danger that the fierce winds which now and then career through railway cuttings may sweep dozens of tall trees and even half grown saplings on to the line, and thus become dangerous. There is the not less objectionable feature that for many and many a weary mile the unfortunate traveller would be shut closely in on either side as by a wall of greenery, so that nothing of the scenery or other features of interest in the country through which the train was passing could be seen. Railway travelling at any time has few enough charms, but any planting of trees for the purpose of forming belts or walls of greenery impenetrable to the sight would make travelling intolerable; but there is the fact to be considered that railway cuttings are chiefly made through sand, gravel, chalk, ironstone, or some other substance of an uncultivable kind, and in which it would be useless to plant and

hopeless to expect tangible results. In the making of cuttings the good soil is invariably buried first in making embankments, and whilst it is impossible to face the sides of the cuttings, some of which are almost perpendicular, with fair soil, it would be equally impossible to find the material to face the slopes of embankments. No doubt in time and as a result of exposure to the air, even what may seem to be the most uncultivable of soil or strata will become more or less capable of sustaining plant life, but the action is slow, and much time must pass ere chalk, sand, or gravel will form profitable soil. Then it is of the first importance that whatsoever is planted on the sloping sides of railways should be specially adapted to bind the soil and check slippings. Creeping plants, such as Ivy, Strawberries, Periwinkle, St John's Wort, or masses of the common Bracken Fern, seem to be specially suitable for this purpose, or if low-growing shrubs be desirable, then *Rhododendron ponticum*, *Mahonia Aquifolia*, *Savin*, and *carpet Juniper*, and similar subjects seem most fitting, always supposing that the soils of which these cuttings and embankments are composed would enable hardy shrubs or plants of the kinds named to thrive. But railway directors may have grave objection to the planting of the sides of their lines with anything, the which would certainly become capital cover for game or vermin, not only because such cover would attract poachers and legitimate sportsmen on to the lines to their great danger, but foxes and hares may lead hounds and hunters to these covers, and produce dangers in railway travelling the which would be intolerable. Besides, in planting cover, which would harbour rabbits and similar vermin, there is danger that these would burrow in and undermine the soil, and so promote slips. After all there seems to be no safer or more profitable use to which to put railway slopes than in inducing them to grow Grass for hay. Green grassy slopes are never dangerous, nor do they shut out from the gaze of travellers the pretty views to be seen as the trains pass rapidly by. In the spring and summer many of these slopes display charming wild flowers that are well worthy of notice, and when in the later summer these banks are clean mown and the hay is removed, the neatness seen amply compensates for the temporary monotony. This hay certainly is not profitless, and can be removed by the company's experienced servants, who do not risk their lives in their labours, as would others engaged in planting or other cultivation of slopes beside railway lines. A. D.

The Larch for wind-breaks.—Experienced persons contend that, all things considered, there is nothing superior to the Larch for this purpose. The tree, although not evergreen, has innumerable small branches, which effectually check the full current of the wind. In the matter of hardness it has an immense advantage over Evergreens, and the growth is very rapid, much more so than the Scotch or Austrian Pine. It can also be planted thickly, and as the trees increase in size and require thinning, this surplus wood can be turned to good account for fencing, &c. The appearance of the Larch in the spring when budding, and also the bright pink cones in the autumn, is very pleasing to the eye.—NEW FOREST.

Seasoning timber for estate work.—Seasoning is the first natural and necessary process through which fresh timber must pass, as the moisture incident to healthy growth must be removed before it is fit for use. Care is requisite to prevent the too rapid or too slow evaporation of the water contained in trees. The gradual removal of water permits the fibres to unite more closely, giving the wood more perfect texture. There are various ways of seasoning timber. Some place it in a running stream when convenient. Some let it stand in bulk before cutting into planks, but then the moisture often creeps in through the bark and decay begins. The best authorities agree that it is better to cut it into planks soon after felling and place it under cover. The floor of the building should be dry and the roof high. The planks would be best placed end-

wise, butt upwards, and separated from each other by laths to admit of the circulation of the air which will carry off the evaporation. After four or five months they may be reversed. To season hardwoods properly a year should be allowed for each inch in thickness. Cut in the winter when there is little sap.

FORESTRY WORK FOR APRIL.

PLANTING should now be brought to a close as quickly as possible, as every week increases the risk of removal, and the more especially so if a long dry season sets in. The smaller deciduous trees and seedlings of various kinds may still remain to be planted out, and a showery April is especially favourable to the work. This is also a good time to remove Evergreens of various kinds, as Yews, Holly, Laurels, Hemlock, Spruce, and Box. These may all be safely removed as strong plants 3 feet high, but they should have been previously transplanted in the nursery so as to have secured for them plenty of bushy, fibrous roots. In removing at this season of the year large plants which stand singly in a dry soil a good watering round the roots, followed by a thorough ramming or beating of the soil, will enable the transplant to remove them with a solid ball. All recently transplanted trees and shrubs should be examined and large plants properly staked. For ordinary sized young trees stakes about 2 feet above the surface and one tie will be sufficient; stakes 5 feet or 6 feet long are apt to be blown aside, whereas trees tied to a 2-foot stake yield to the blast and keep their position much better. Trees of a large size may be kept in their proper position by means of three wires and a collar, the latter fastened round the stem, and the wires stretched out at equal distances from each other and fastened to strong pegs driven into the ground. In exposed situations newly planted evergreen trees and shrubs will be greatly benefited by being mulched and by having a few Spruce branches stuck into the ground around them to protect them from cold cutting winds, and also to screen them from the warm noon-day sun. Young plantations of Larch and Scotch Fir should be examined and such trees as have been cropped over by hares and are producing several leaders should be connected by cutting them off, leaving the most central for the future leader. Recently planted moor ground, where the work has been executed by the notch system of planting, will require attention, more especially in places where the surface is of a mossy character, as the notches are apt to open and the sod curl back through drought, thus exposing the roots, that in such cases a tread with the foot will prevent a number of deaths.

THINNING PLANTATIONS where necessary should be pushed on; better sacrifice the approaching growth on the nurses than allow the hardwood to be choked up another season. More injury is done throughout the country by under-thinning plantations under twenty years old than by over-thinning them; old woods are easily irreparably injured by over-thinning, but in the case of young healthy growing plantations the case is very different. Mark as soon as possible all Oaks intended to be felled this season, and make preparations for the bark stripping. Bark stripping will soon commence if the weather keeps mild; therefore, it will be necessary to forward all work in progress as much as possible before the busy season of Oak stripping begins; all coppices or woods intended to be thinned should now be gone over and marked, taking care to mark only the most unhealthy and badly shaped trees that are injuring better ones; thin rather freely round the outside, particularly where hedges are too much overhung by trees. Dry and frosty weather in April is a good time for removing the dead branches of the Larch, Spruce, and Silver Fir. The operation is best performed by dealing them a smart blow with a heavy stick or mallet, which loosens and withdraws the bolt-like insertions so injurious to the converted timber. Everything should now be cleared from the falls with the exception of Oak; brush should as soon as possible be taken up from

the rides, and all gaps in the hedges stopped before cattle are turned out. As advised above, take every opportunity to mark the Oaks for felling and stripping. This is an operation which requires considerable judgment and experience. Where the crop consists of underwood with standards, the latter should, as far as possible, be left at regular distances, and if the undergrowth is to flourish and come to maturity, the standards should not occupy more than one-third of the entire wooded area. The benefit of the remaining timber should be considered before the market value of the thinnings.

NURSERY.—Grafting all kinds of deciduous trees should be carried on now. Prepare the ground and sow *Wlin* or *Furze* seeds either for hedges or for game covert. Hedges of this plant should not be trimmed until towards the end of June. Also plant cuttings of *Osiers* for the use of the basket-maker. Choose land near a stream, so that water may be admitted into the open intermediate ditches, or shut out at pleasure by means of sluices. Cuttings of 12 inches or 14 inches long from branches of two years' growth may be planted in rows from 18 inches to 3 feet apart, and from 18 inches to 2 feet between the cuttings, according to the growths of the various kinds and the ages at which they are intended to be cut. These cuttings should be inserted about two-thirds of their length. The ground intended for *Osiers* should be well trenched, liberally manured, and thoroughly cleaned. *Scotch Pines* (two years' seedlings) may be planted in rows 12 inches apart and 3 inches between the plants; the land should be in good condition, in which case, at the end of another year, they will be fit for planting out permanently. Strong *Spruce* of two years old or weaker ones of three years may also be moved. If planted in a rich, humid soil, they will make great progress. If intended to remain two years in the lines give them spaces 12 inches by 6 inches; also transplant two-year *Silver Firs*; these will require more space than the *Spruce*. The *Finaster* and *Stone Pines* should be planted out in lines as one-year seedlings, otherwise they become too tall and slender; sandy loam suits them well. Considerable care is required in lifting the *Stone Pine* on account of the length of its roots. Two-year seedling *Hollies* may be planted, 5 inches or 6 inches apart, in situations shaded from the mid-day sun; these, as well as the *Yew*, flourish in a rich sandy soil. The cones of *Firs* and *Pines*, where still unopened, should now be placed upon a hair sieve on a kiln and subjected to a heat of not more than 112° Fahr.; if necessary, they may afterwards be threshed and then sifted. The *Silver Fir*, *Balm of Gilead Fir*, and *Weymouth Pine* yield their seeds with very little trouble, but the *Larch*, *Scotch Pine*, and *Spruce* generally require more attention. Finish sowing all seeds of the coniferous kinds, and protect from frosts beds of young plants, particularly in situations where the morning sun may strike them while in a frozen state. Throughout April the nursery will be in great activity in the transplanting of seedlings, hoeing among the rows of older plants, sowing from the rot-heaps, and preparing beds for coniferous seeds; the latter should be sown upon beds of thoroughly pulverised soil, and afterwards covered up by riddling some fine mould over them. During the prevalence of frosts young seed beds should be protected. Small spray put in at intervals is often found to afford the necessary shelter.

GENERAL WORK.—Any hedges still untrimmed or "unpleached" should now receive that attention, and gaps should be planted up with a double row of *Quick* and *Hornbeam*. Woodrides may now be sown down with suitable Grasses, a mixture of about 32 lbs. of the following kinds being generally sufficient for an acre: *Rough Cock's-foot* and *smooth-stalked Meadow*, *Wood Meadow Grass* and *rough-stalked Meadow*, *Sweet-scented Vernal*, *Timothy*, tall *Fescue*, hard *Fescue*, and *Meadow Foxtail*. Level and otherwise repair woodrides on which timber has been hauled during the winter. Woodrides should be kept 3 inches or 4 inches higher in the middle than at the sides, so as to render them dry, and unless the sub-soil is gravelly

and porous a ditch should be made on each side not less than from 2½ feet to 3 feet wide at top and from 2 feet to 2½ feet deep. Clear Ivy off forest trees, and even on underwood stools of large size it should not be allowed to establish itself. All gates and stiles should be put in order. Wherever timber or underwood was cut last year, the ditches should be cleaned out and new ones made wherever water is stagnant. The destruction of weeds if done now will save double expense further on in the season; when weeds are thoroughly kept down in the spring months, they seldom get the upper hand in summer and autumn. If the annual stock of peat, leaves, or turf has not yet been collected, this ought to be done as early as possible; were road-drift and parings can be had it is invaluable for planting trees and shrubs in.

HINTS FOR SMALL PLANTERS.

THE first point to be considered is the selection of such trees as are observed to flourish most in the particular locality, and as are known to thrive in the soil you are about to operate upon. The next matter to be determined is the ultimate object in view, viz., whether you wish to create a permanent wood or to plant merely as a means of converting land, in its actual state neither profitable under tillage nor as pasture, into good pasture eventually; for this has been accomplished over and over again, especially by the agency of the *Larch*. In order to explain my views intelligibly, I will suppose that the land to be planted has been previously cropped with the view of getting it perfectly clean (a very essential preliminary), and that it is intended for permanent wood; that the soil is suitable for *Oak*, *Larch*, and *Ash*; and that the situation is sheltered, or at any rate not much exposed to winds.

PREPARING THE GROUND.—It is necessary, in the first place, to set out roads at suitable distances, with reference to the shape of the ground, in order to get out the trees as they are cut without injuring those which are to remain. These should be 20 feet wide, and so laid out that every part of the wood would be equally accessible. The land, if retentive of moisture, should be drained by throwing out alleys 2 feet wide at every 22 feet. The holes for the trees should be dug over the entire piece immediately after harvest, about 2 feet in diameter and spade deep; well loosen the bottom of each, in order that the soil may be thoroughly exposed to the sun and air for two or three months till the beginning of November. To perform this operation with regularity, get a line, and tie a shred of scarlet cloth or a bit of yarn on it at intervals of 6 feet. When the line is strained dig round each shred, making that the centre of every hole. When the holes are dug the length of the line, measure off 6 feet from the centre of the first and of the last hole in the first row at right angles with them; then insert the stick exactly opposite the centre of the interval between the two first holes and strain the line, dig round the shreds as before, which will bring every hole in the second row opposite the intervals in the first row. This is material, inasmuch as it breaks the force of the winds. When the beds are dug over, then the roads are to be holed upon the same plan, leaving the holes in this case 5 feet apart, which will take four rows, allowing 2 feet space from the edge on each side.

PLANTING.—I recommend trees that have been two years transplanted, and not exceeding 3 feet high. These will be found to answer infinitely better than larger trees. It is a very common practice in planting to hold the tree in the bottom of the hole, throwing the soil over it and then drawing it up and shaking it, as it is said, to get the mould between the roots. This should be avoided, for the obvious effect, or rather defect, of this is to close the roots into a ball, whereas they should be spread out widely. Plant the tree as shallow as possible consistently with its being firm in the ground. If the land be of a loose texture and properly prepared, one hoeing during fine sunny weather in the month of May for the first three years will be sufficient. In the second winter

after planting, cut off all the Oak and Ash within 3 inches of the ground. In the following summer select the best shoot from each stool and rub off all the rest; this will produce much better Ash poles and much straighter and more free-growing Oak trees than would otherwise grow. I have been led much more into detail than I contemplated, and part of what I have said may appear to many very unimportant; but I have felt decided practical advantages and much subsequent convenience result from a little attention to these minutiae, and I therefore insist on them.

THINNING.—I now come to the main point, that of thinning, so essential to a crop. This need not be deferred for want of opportunity to the proprietor to mark the trees or form an indisposition to leave the operation to mere labourers for fear of damage if the land be planted on a regular system. At the distance of 6 feet apart no thinning will be required until the Ash attains a sufficient size for hurdles, hoops, &c., which will be from twelve to fifteen years' growth, according to the quality of the land; or even eighteen if very poor. At this period cut out the Ash in all the rows with a downright blow, rather under the ground, which will prevent its shooting again. Unless there be a great demand, this will produce as much wood as could be disposed of at one time to advantage. In the following year cut off every other Ash in the rows composed exclusively of Ash with a blow in an upward direction, from 2 inches to 3 inches above the ground, in order that the stools should shoot again. In the third year cut off the Ash between the Larch and Oak in the same manner. In the fourth year cut out the remainder of the Ash with a downright blow under the ground, to prevent their shooting again. The Ash left for stools will produce in the summer after cutting several shoots; these should be thinned out, leaving not more than three or four of those best placed for a crop. When these have attained sufficient growth to be crowded by the Larch, the latter will be from twenty years in twenty-five years' growth and should be cut out as soon as the sap is sufficiently in action to admit of their being barked; for, though their bark does not bear a price in proportion to that of Oak with reference to the tan it yields, it will pay for stripping. At this age Larch, in almost any soil but clay, is extremely useful for roofs of barns, cottages, sheds, and a variety of agricultural uses; its value and usefulness for these purposes is as yet very little known in many districts. It has not sufficient credit for durability. I have used Larch of this age for protecting young White-thorn fences. By cutting off the butt end 6 feet long and sawing it through the middle, two posts are obtained; the remainder, sawed through, will give two rails of considerable length and strength. With a fence thus made I have reared a Quickset hedge till it was a perfect fence against any cattle; and, on taking up the posts and rails, I found them sufficiently sound as a fence to raise a second Quickset hedge.

SIMPLICITY OF THE PLAN.—Upon the plan that I advocate it is obvious that any labourer could effect the necessary thinning without any superintendence; he could not make a mistake. If a variety of timber be desired, Sweet Chestnut may be substituted for every other Oak; both thrive well generally on the same soil, or any other timber tree may be planted more suitable for the particular soil, keeping them in the same places assigned in the plan to Oak. The underwood may also be varied by the introduction of Oak, Wych Elm, Goat Willow, Hazel, &c., all of which form excellent coppice wood; but they must be introduced in regular order with reference to future thinning. If the ultimate object be a return to pasture, all the Ash must be cut off under the ground; the timber trees will then stand, after the removal of the Larch, 36 feet apart every way. Many will require removal, and this may be accomplished according to the taste of the proprietor, selecting generally the largest as the most useful for gates, posts, fencing, &c.

In very bleak, exposed situations I would recommend planting Scotch Pine or some other

nurse between the trees, so that the whole plantation should stand, at first, only 3 feet apart, and that all these should be cut out at four or five years' growth when the other trees are well established. If the planter be a game-preserved, he may, at intervals of 100 yards, plant a patch of Laurels, Hollies, and Yews, and in every tenth or twelfth row of Ash, substitute Spruce, Silver, or Balm of Gilead Firs for every other Ash; this will spread a gloom over the plantation, and afford a secure roost for the pheasants on a moonlight night.

I cannot conclude without cautioning against what is misnamed cheap planting—merely loosening the earth with a pickaxe, sticking in the trees at so much per 1000, without any previous preparation or subsequent care. This is a wretched economy—a term, by the way, sadly misunderstood, notwithstanding the lucid exposition of it which I recollect to have seen, I think, in the writings of Burke: "Economy is a distributive virtue. It consists not in saving, but in selection. Great expense may be an essential part of true economy." I am sure this is true as applied to planting. FORESTER.

STATE FORESTRY IN THE COLONIES.

WHATEVER apathy with regard to forestry may be shown in the mother country, our colonies at any rate do not neglect their forests. They have clearly outstripped us both in the conservation and replanting of the native forests, and in the encouragement they offer to landowners in planting trees. The instance more vividly before us at the present moment is that of South Australia. So far as we can glean from the materials within our reach, the weather has been very favourable in many respects for the purposes of the forest department since its organisation in 1876. Frosts, however, to some extent interfered with the success of the planting, but 80 per cent. of the trees survived. The sum of £7280 has been placed to the credit of the department on the estimates of expenditure for the present year. The total area of the forest reserves on June 30 last year amounted to 150,366 acres. The area enclosed for planting and the renovation of the indigenous forests by natural regeneration amounted to 5037 acres. Detailed statements of operations upon each reserve are given in full. These include the rainfall, digging of tanks, collection of seeds, sales of timber, the number and kind of trees planted, the progress they have made, and various particulars down to the most minute. Over 1,078,000 young trees were raised in the nurseries; 214,000 plants were distributed gratis to corporate bodies, farmers, and other proprietors of land. Of this number 110,000 are now alive. About 250 acres were planted during last season. Some 40 acres were sown with Wattle seeds. The kinds of trees reared and planted consist mainly, as in former years, of Pines and Eucalypts. Among the deciduous trees are the English Oak, which is thriving well; a very large number of the American Ash and some English Ash, a large number of Catalpas, some Elms, Willows, Poplars, and Sycamores. Several acres were sown with seeds of the Wattle; the seeds are soaked in boiling water and put in with a spade at 3 feet apart. The yards of the various railway stations are being planted, and suitable portions of the vacant lands alongside the railway lines have been planted with Olives. A report is in course of preparation as to the cost of enclosing and planting 100 acres of Olives and 50 acres of white Mulberries on dry mallee lands; also as to the practical value of planting Dates and other seeds in the sandy watercourses of the northern country by means of the telegraph line repairers and pastoral lessees. The white Mulberry is being extensively propagated. A museum of forestry has been started, in which it is proposed to have collections of tree and shrub seeds, sections of woods, and a herbarium of the flora of South Australia. A useful plan is practised of letting the right to take one crop of wheat off certain blocks of land. The revenue derived by the department during

the year amounted to £5155 10s. 6d. The legislative provision for the year amounted to £7586 2s. 2d. and the total sum expended to £7459 5s. 3d. The revenue during the past eight years amounted to £14,716 18s. 4d. and the expenditure to £46,723 10s. 4d., showing the cost to the Government to have been only £2006 12s., while the permanent improvements effected are approximately valued at upwards of £250,000.

D. J. Y.

PESTS AND DISEASES.

LOOKING OUT FOR PINE WEEVILS.

VEGETATION is now making rapid progress; beetles and other insects injurious to trees are also on the move and becoming active, so that the forester will require to be on the look out in order to keep these pests within due bounds, and in doing so it would be advisable at this season to examine plantations generally, and have all sickly and unhealthy trees felled and removed without further delay in order to prevent insects from using them for breeding purposes. All waste timber should be removed, and such as is not worth removing had better be turned to prevent these pests from finding a lodgment. In cases where the Pine weevil is to be dreaded, the roots left in the ground of recently cut Fir trees should be scarified by removing the soil around the collar of the stump and large surface roots with a spade, when the bark should then be stripped off and the soil replaced, by which means the insects will be deprived of their favourite breeding ground, as it is always below the bark that they deposit their eggs. This work may be successfully carried out during the present month after planting operations have been completed, and in doing so it is more than likely that the workmen will occasionally come in contact with some of the weevils preparing to deposit their eggs, which of course should be destroyed. It would be an advisable plan for the young forester to reserve say a couple of pairs, disturbing them as little as possible, in order to afford himself facilities for watching their movements during summer. This became easily done by paying them a visit occasionally in his spare time, and noting down the different metamorphoses which the progeny exhibit from the egg to the imago state. By acquiring such knowledge direct from the fountain-head, the forester will not only have confidence to think and act for himself, but also to combat errors in others. Roots that are dried up and lost their natural sap need not be scarified, as such are never used by the beetle or weevil for breeding purposes. J. B. WEBSTER.

Exterminating Pine beetles.—I am grateful to Mr. Webster for the reply to my query respecting the Pine beetle; and as his plan for their destruction is so simple, it shall be adopted, and the result reported to *Woods and Forests*. Some thousands of Scotch Fir, Austrian and other Pine seedlings have been planted this spring in the nursery, so it is very important that the beetle be got rid of. I should also like to ask Mr. Webster if the Pine beetle ever attacks the Larch, either when in the beetle state or to breed in.—NORTH RIDING FORESTER.

Sawdust gas.—Considerable enthusiasm exists in the United States over the discovery of a process for converting sawdust into gas. The inventor claims that instead of allowing vast accumulations of this material to lie about useless, and often, as it does, costing large sums of money to cart away or otherwise dispose of, he can turn it profitably to account in producing light, heat, and power. The estimates that the bulk of sawdust annually made in that country, if in the shape of logs, would build a solid fence 18 feet high and 16 inches thick right across the Continent. It is impossible for us within the space at command to give a description of the way in which the results are obtained, although it is very interesting. Amongst the residual products of commercial value, charcoal, crude acetic acid, alcohol, tar, and turpentine are mentioned.

No. 699. SATURDAY, April 11, 1885. Vol. XXVII.

"This is an Art
Which does mend Nature: change it rather: but
THE ART ITSELF IS NATURE."—Shakespeare.

EASER NOTES.

THE Pasque-flower (*Anemone Pulsatilla*) is true to its time, though that time is movable, and was in full flower on Easter Sunday. A well established patch full of flower is a cheering sight—the flowers a good, full purple inside, with a handsome bunch of yellow stamens, and clothed outwardly with a warm jacket of fur that extends to the stalks and bracts, and gives the whole a comfortable appearance in the bitter N.E. wind. Its alpine near relation *A. vernalis* is an interesting flower, and beautiful to those who can appreciate tender and delicate colouring. The flowers, white within, are coloured outside with a curious harmony of pale lilac and straw colour, reminding one of the film of faint colour that creeps up the brightened surface of hot steel in the process of tempering. Like *A. Pulsatilla*, the flower has a warm outer coat, but of thicker fur and more soft and silvery.

Anemone blanda, whose bright blue flowers have been with us for the last six weeks, is now giving place to *A. apennina*, a beautiful plant anywhere, and of especial value for covering otherwise bare spaces round and about shrubs, growing by preference on their shady side. *Anemone ranunculoides* is bright and pretty, shooting up through a carpet of one of the Creeping Willows (*Salix serpyllifolia*), now clothed in its brilliantly polished young leaves.

Corbularia citrina proves a thoroughly hardy and free-flowering bulb in this soil and situation (sandy peat, 400 feet elevation, half-way between London and the sea, going south-west).

Primula rosea is this year unusually free and vigorous; it groups very prettily with the white *Triteleia uniflora*. The larger and stronger coloured variety sold by nurserymen as *P. rosea splendens*, though more striking in some ways, is hardly of more real beauty. The original form looks just right both in size and strength of colour, and the increase of either seems rather to vulgarise than to improve this little gem.

Helleborus foetidus is a plant of considerable use for effect in a garden; it will grow in places where nothing else will thrive, and though its flower is of no beauty, its foliage is strikingly handsome and is in good order nearly all the year; it is also of great value for cutting to arrange with Christmas Roses.

Rosemary is a noble wall plant. It shows an almost intelligent docility in clothing any space desired, a strong shoot traained in any direction doing its work faithfully. Planted a foot high seven years ago, we have some now in flower 8 feet high, thickly bushing from top to bottom, the lowest branches layering themselves in the ground. Nothing is more commonly neglected than this good old shrub, of a certain kind of modest beauty, and with a fragrance of the very highest order, delightful, wholesome, and invigorating, and freely yielded at all times of the year. Here it is a standing order that it should be propagated every year—an easy process by slips in spring or autumn. I have seen bushes of it against walls in monasteries gardens in Italy, looking as if

they might be fifty years old, with rugged grey trunks gnarled and twisted, highly picturesque.

Rare as are flowers of a real blue colour, how rich in them the present season is, perhaps richer than any other. We have now *Scilla bifolia*, *Scilla sibirica*, *Chionodoxa sardensis*, *Tecophylaea cyanocrocus* (now finely in flower under a south wall, perhaps the brightest pure blue flower we have), *Gentiana acaulis*, *Gentiana verna*, *Lithospermum prostratum* and *L. rosmarinifolium*, *Omphalodes verna*, and *Myosotis dissitiflora*.

Why does the foliage of *Retinospora plumosa* feel warm to the hand? It does so in some young plants even on the shady side. Whether it is the same with older trees I have no opportunity of observing.

West Surrey.

G. J.

NOTES ON RECENT NUMBERS.

Yuccas (p. 266).—One of the most unexpected, and at the same time most beautiful, sights I came across in gardens abroad was a large *Yucca* with from twenty to thirty branching heads of flower in full bloom. This we cannot expect in England, where it is generally grown, I suppose, for the sake of the foliage more than the flowers. Some sorts not only seem to grow better, but also bloom more freely if planted on a raised situation. A few rough stones piled in a small circle and filled with some sandy soil make an excellent position either for a single specimen, or, if large enough, for a group. If on the level of the ground, they are apt to rot off round the neck. They are very readily raised from seed, which germinates quickly. Do not allow dry leaves from the trees in autumn to collect or remain on a bed where young plants are pricked out, as I did, under the idea of keeping the frost from them, or you may find in the spring that your seedlings have come in half during the winter, and that the little plant and its roots have parted company.

Willow catkins (p. 270) "which we call Palms."—In Chambers' "Book of Days" an account is given of the old custom prevailing on Palm Sunday, when Box and Yew were usually gathered as well as Willow, so that they really had the right to be called Palms as well as the catkins. The latter being more generally distributed have monopolised the honour to themselves. Among the many quaint customs connected with plants and certain days is one sowing Parsley on Good Friday, under the idea that it will vegetate more quickly than at other times.

White Azalea indica (p. 272).—"West Surrey" will be glad to hear that this is perfectly hardy in Sussex. We have a good deal of it, and have also turned out at different times a number of various overgrown Azaleas from the greenhouse. Almost all are dead but the white, though some of the purples will struggle on for a time in favoured spots, a misery to themselves and an eyesore to everyone else. I have never known the white suffer from cold, though some years they are a little capricious in blooming. It is curious how the plants change to their natural character in the open ground; as the boughs grow they always droop and form, layer over layer, bushes not more than 4 feet or 5 feet high and as much 10 feet across. The effect of masses of their white blooms in shady spots is unlike anything else we have in English gardens. As to a position for planting, they will not stand drip, nor till they are established hot sun on the roots; therefore they are better planted with other things and mulched in hot and dry weather. When once established they will take care of themselves if not smothered by coarser-growing shrubs. If someone could raise us a variety of hardy seedlings, they would be a real acquisition for our gardens on account of the evergreen foliage, which the other Azaleas have not.

Planting railway embankments (p. 274).—The time may come some day when the

railway companies will study the artistic feelings of their patrons both in the stations and along the lines, but at present we seem in many cases very far from such a desirable state of things. Great credit is, however, due to many of the station masters for a very good show of flowers, and many others with a little encouragement in the way of plants from people round would soon start a desirable rivalry "along the line." Let me also remark that the maintenance of the plants at a railway station is an excellent means of advertisement for a nursery gardener. One railway cutting near Leatherhead is planted all down the sides with St John's Wort, which looks like a green and gold carpet when one passes through for some weeks during the summer. Larch would, no doubt, as suggested, be extremely useful to the railway companies for fencing, and one would have thought it would have been worth their while to plant underwood, or in damp spots Osiers, and let them at so much a year to local buyers. The revenue derived therefrom might not be very large, but they could scarcely be losers and no danger to their traffic would be incurred.

Hardy Cyclamens (p. 277).—Why is the price of these, with one or two exceptions, so high as practically to prohibit the purchase and planting of them on a large scale? Most sorts seed readily enough, and do not take long to grow to a flowering size, and they are allowed a longer lifetime than is generally permitted to the more tender Persian class. The Cyclamen is a neat and tidy plant at all times of the year, even the flower-stalks, as soon as the beauty of the bloom is over, being carefully curled up out of sight beneath the handsome leaves. They are often recommended for planting under the shade of trees where Grass would not grow. Can one of your readers give us a list of the bulbous plants, &c., such as Aconite and Dog's-tooth Violets, suitable for this purpose, saying at the same time whether they will do under all trees, including Limes and Scotch Fir, as also whether they are likely to supply supper parties for rabbits above and mice below ground?

Colour in flowers (p. 277).—The distinction between dull and delicate colours is apt to be overlooked, but is, nevertheless, an important one. What a very different effect the same colour may have under different circumstances. I have often noticed that a shade which is soft and refined in a well-furnished room looks poor and weak in the gloomy surroundings of a seedsman's warehouse, or as shown off by the bare boards of the South Kensington conservatory. It is not alone the contrast of more brilliant colours which for the moment dazzles the eye, but a soft shade of colour requires another soft (not dull) shade to give it its true value and to make it appreciated. It is this which does not seem to be realised or acted upon at the Royal Horticultural Society's meetings, as well as in the ordinary decorative arrangements of a private conservatory.

Humea elegans (p. 283), when well grown, deserves all the trouble one can take with it. Graceful form, pleasant fragrance, and lasting beauty are properties which all plants cannot claim to have united in themselves. Useful alike for formal and informal gardening, Humeas grow equally well in sun as in shade, provided they are not too much dried up at any time. The so-called white variety was not mentioned by your correspondent; it is pretty as a contrast with the other, but I have never seen it even attempt to become pure white, as described on the outside of the seed packets.

Birchwood (p. 300) is certainly very pretty for the panels of doors, and if sound at first and kept dry will stand a very fair time. It is curious how even old and well-seasoned furniture made of certain woods will develop the worm if allowed to get damp for any length of time. The Birchwood usually used for furniture in this country is imported from America, but the white Birch, when it can be got large enough, is just as good. It is not generally known that the peculiar fragrance of Russian leather is due to its having been tanned with Birch bark. We had a gardener who

used to make for us, when children, flower-pots out of the rough stems, simply by cutting off pieces of the requisite length, boring out the centre with a red hot poker, and nailing a bit of wood over one end. In these we could either stand pots or plant flowers, and some which have been thus used for twenty years are as hard and good as ever they were. C. R. S. D.

SPRING-FLOWERING PLANTS.

MR. BURBIDGE states that *Narcissus incomparabilis* Sir Watkin opened its flowers with him on March 24. As I write (April 4), the first flower of this kind in our garden is just opening—a difference of eleven days between London and Dublin. It is stated, moreover, that the bulbs sent to Ireland have been found to be mixed with some other variety. I have the same complaint to make. We had three bulbs, and one of them has not come correct to name. It is a dwarf plant, with more glaucous foliage than Sir Watkin, and will flower later. If a mixed stock has been generally distributed, some will be puzzled to know which is the true Sir Watkin. We have plenty of the true large-flowered *N. maximus* in bloom in the greenhouse; it is known by the peculiar twist which its leaves have and also by the stout flower-stems, which are 18 inches or 2 feet long. This variety can be purchased in the trade under the name of *N. major maximus* at 35s. per 100. *N. Leedsi Gem* has opened its flowers in the open border with Sir Watkin and the stems are nearly as tall. The whole flower is creamy white, and very charming to cut and mix with the bright yellow kinds. *N. capax plenus* (*eystettensis*), Queen Anne's double Daffodil, is fully in flower, and *N. tortuosus* nearly so on rockwork. None of these surpass the very beautiful *N. princeps*, which has increased very much on our rockwork. We do not grow the variety *N. Barri conspicuus*, but will do so in future. It was very beautiful as exhibited by Mr. Barr at the Crystal Palace, and well deserved the certificate awarded it. Although the nights are very cold, the lovely *Chionodoxa Lucikei* has flowered well in borders and in our rock garden. It grows very freely from seeds. The best way is to sow them as soon as ripe in the open border, and just cover them with fine soil. They lie dormant until the following spring, when they vegetate freely; the seedlings resemble young Onion plants. They vary very much in their shades of blue and in the size of their flowers, but we have not yet obtained a white one. One of our favourite spring flowers is the Canadian Blood-root (*Sanguinaria canadensis*). We obtained a major form of it from York, and being anxious to increase it, all the seeds which ripened on the plants in 1883 were saved. They were ripe in June, and were sown at once. I expected that they would vegetate in the spring of 1884, but not a plant appeared. The seeds laid in the seed-pan all through the season, and are now, after a lapse of twenty-one months, vegetating freely. We sowed last year in February seeds of a new species of *Delphinium*, and the first plants appeared above ground exactly twelve months after they were sown. Seeds of many of the *Primulas* have this habit of vegetating after lying dormant for twelve months in moist loam. I saved and sowed some good seeds of the pretty little snowy treasure, *P. nivalis*, in February, 1881. Two or three plants of it appeared; these were left undisturbed in the pots, and now after twelve months the whole surface of the soil is covered with seedlings. They are yet small, not having formed the first leaf after the seed leaves. It is a good plan to sow all seeds of hardy plants whenever they are ripe. It is least trouble to sow them out of doors in the open borders; some dwarf Alpine plants that scatter their seeds when ripe may have them left where they fall, covering them very thinly with soil. If sown in pots there is a great deal of attention required to keep the soil moist for nearly two years before any seeds appear. At one time we sowed our choice *Auricula* seeds when ripe in July, but it saves labour to delay sowing them until the first week in February, when they will

vegetate in three weeks in a cold frame or in a cool house.

Now is a good time to sow seeds of *Primroses* and *Polyanthuses*. They may be sown in the open ground, but more seeds will vegetate if aided by a gentle hot-bed. The young plants may be pricked out in boxes as soon as large enough to handle, and ultimately planted out where they are to flower when sufficiently strong to bear the operation. Young plants of *Primroses* flower much better than old ones, and in order to keep up a good supply of healthy plants, sow a pinch of seed every year. Seeds of hybridised plants of *Gladiolus gandavensis* should be sown before the middle of April. Sow about fifty seeds in a 7-inch pot in good sandy soil, they also vegetate best on a gentle hot-bed. In the same frame may be sown seeds of choice *Carnations* and *Picotees*. Indeed, now is a good time to sow perennials of all kinds; the young plants become strong during the ensuing summer and autumn and flower well next year.

J. DOUGLAS.

ORCHIDS.

Orchids in America.—In Mr. W. S. Kemball's greenhouses here, *Vanda teres* is showing flower and will be open shortly. It is grown in a great many gardens, but it is rarely seen in flower. *Cymbidium pendulum atro-purpureum* is producing a pendulous spike 2 feet in length. It is a very fine Orchid. *C. Lowianum* has one long spike; it has been in flower for about six weeks and quite perfect yet. *Dendrobium Falconeri* will be in flower shortly; when well bloomed it is a truly fine kind.—GEO. SAVAGE, *Rochester, N.Y., U.S.A.*

Odontoglossum nævium majus—There are two quite distinct kinds of Orchids to which this name has been given. One is but a form of *O. gloriosum*, with the ground colour of the sepals very pale—almost white, in fact. This is the spurious *nævium majus*. The genuine plant is, of course, a magnified variety of *nævium* itself, the flowers having pure white sepals, heavily and profusely spotted with deep crimson-brown. The sepals, as well as the tips of the flowers, are attenuated, but are different from those of *gloriosum*. It is one of the prettiest of all Orchids, and, like *nævium* itself and *blandum*, it is comprised in the cream of the *Odontoglossums*. It is now in bloom in Messrs. Shuttleworth & Carder's nursery at Park Row, Clapham, where in the midst of crowds of flower-spikes of *O. gloriosum*, *odoratum*, and others it is most prominent.

Rare Orchids in flower.—The Orchid houses at the Victoria Nurseries, Upper Holloway, are just now quite gay with bloom, and several kinds of exceptional interest may be seen in flower. One of the most noteworthy is *Odontoglossum Phalenopsis*, a charming species belonging to the *O. cucullatum* section. The flowers measure about an inch across; the sepals and lip are pure white, heavily barred with claret. It is quite a gem among *Odontoglossums*, but is unfortunately rather rare. Another little gem is *Ionopsis paniculata*, which is flowering beautifully in the intermediate house in suspended pans. Its flowers are small, but being white and purple spotted, and borne so plentifully in long, branching panicles, they have a telling effect. Among other *Odontoglossums* are the handsome *O. radiatum*, the true *O. nævium majus*, and a host of the finest forms of *O. crispum*. *Lycaste plana*, a species somewhat in the way of *Deppel*, with the flowers larger and more spotted, may be seen; also *L. Skinneri* in many varieties, including the large form of the pure white *alba*. Among *Dendrobiums* none are so noteworthy as *D. nobile nobilissimum*, unquestionably the finest of the numerous forms of this old and well-known species, the flowers being a third larger than usual and of a much richer colour. The *Wallichianum* variety is distinct from the rest both in its flowers and stouter growth. *Dendrobium Lowi*, crassinode *Barberianum*, *litiflorum*, and a giant form of *D. Wardianum* are among those that would be passed unheeded by

an orchidist; and coming to the *Vanda* house he would be delighted at the wealth of bloom of the many noble specimens which are flowering uncommonly well this season. Among the cream of the varieties are the *Dalkeith* and *Paterson's* varieties of *V. tricolor*, both superb in their way, as well as *formosa*, *insignis*, *planilabris*, *Hrubiana*, and others. The interesting, though not showy, *V. cristata* is also in flower. *Lælia harpophylla* makes the houses glow with its orange-scarlet colour, and though the *Cattleyas* of the *Trianae* section are well nigh over, a few late-flowering forms still linger. Among *Cypripediums* may be seen the singular little hybrid named *C. microchilum*, one of whose parents is *C. nævium*, but at present the progeny does not equal it in point of size and form of the flower. *C. Sallieri*, another hybrid from the Continent, we believe, is too much like some of the older hybrids to be of much value.

Oncidium Weltoni and fuscatum.—Not every Orchid grower has a clear idea of the distinctions between these two nearly allied plants. They are, however, very different when seen in flower side by side, and one, *Weltoni*, is so superior to the other, that one is worth as many crowns as the other is worth shillings. We had the opportunity a few days since of seeing the two side by side in flower in Messrs. Shuttleworth & Carder's nursery. Both have the same kind of growth—long, thin bulbs, pale foliage, and spikes of flowers almost identical in size and shape. The differences are these: *Weltoni* has a roundish lip about an inch long, the lower half of which is pure white, the upper half port-wine colour, gradually deepening towards the centre to a deep claret, while the centre itself is yellow. The line of separation between the white and coloured portions of the lip is so sharp as to appear as if cut across. The sepals are a rich vinous purple. In *O. fuscatum* the lip is rounder and has no white upon it, the ground colour being a purple-pink with a heavy central blotch of bronzy yellow. The sepals are dull brown edged with white. Though *fuscatum* is an attractive plant, *Weltoni* is so much more beautiful, that all would prefer it. *Fuscatum* is so often sold for *Weltoni*, that no doubt in many collections the genuine plant does not exist, being altogether rarer both in gardens and wild. Mr. Shuttleworth grows a recent importation of it on suspended blocks in an intermediate house, and under these conditions it thrives admirably.

SEEDING OF ORCHIDS.

WHEN the last Orchid shall have reached us from its native habitat we shall naturally have to depend upon the hybridiser's art for new forms of this interesting family. This day may be far distant, but who can say that it will not come in our time? Exploration goes on rapidly, and at its present rate the unexplored area inhabited by Orchids will every year be materially reduced. I venture, indeed, to predict that in twenty years' time there will remain but little to discover. Happily, the labours of a few have shown that even when we shall have become acquainted with every species we are not likely to lose the charm of novelty, and we may take it for granted that the raising of Orchids from seed will have an importance which it has not yet assumed. Prominent amongst those who have made the seeding of Orchids a special study is the well-known French amateur, M. Bleu, famed for his really remarkable success in the raising of new *Caladnums*. In a paper recently contributed to the French National Horticultural Society, entitled "The fertilisation of Orchids and attendant phenomena," M. Bleu gives the result of many years' practical experience. Thinking it may interest some of your readers, I here give the most important portions of the article in question. "It is well known that Orchids, owing to the peculiar arrangement of their reproductive organs would in the great majority of cases, and even in their native country, remain sterile if it were not, as has been observed by naturalists, amongst

whom may be cited Darwin, Hermann, Müller, &c., for insect agency. To this element of success in the fertilisation of Orchids I would add that of the action of violent winds or of the wings of birds in flight, which lay bare the pollen masses by knocking off the cap which covers them, so that the pollen heads are easily brought into contact with the stigmas, and fertilisation takes place. But it is remarkable that it is only with a very limited number of kinds that fertilisation takes place in this way. I have often had an opportunity of seeing the arrival of imported Orchids, and all who have received plants direct from their native country will be able to corroborate my statement that with rare exceptions but few species, amongst which may be mentioned *Phajus grandiflorus*, *Aerides affine*, and *Vanda Roxburghii*, seed at all freely. In my practice the only species I have ever observed to seed naturally are *Lælia cinnabarina*, *Cypripedium Schlumi*, *Javanicum*, *virens*, and *Bullenianum*. It will thus be easily understood that the hybridiser who is protected against such influences can work with much certainty. It is, indeed, easy for him to ascertain in the case of those epiphytal species of which the pollen is united into solid indivisible lumps if fertilisation has really taken place, not only by reason of the size of the pollen grains, but on account of the effect that the contact of the pollen produces on the stigma. Although during two-thirds of the flowering time fertilisation may be effected, if it is wished to operate on species not nearly related it must be done as soon as the flower opens, and when the generative energy is strongest. Once a flower is fertilised it is not susceptible of the slightest influence from other pollen, but if the operator wishes to make quite sure, it suffices, as I often do myself in the case of certain delicate plants, to immediately enclose the flower in a paper bag closed at the top and tied at the bottom. The day following fertilisation the flower commences to close, its brightness fades, its perfume loses its sweetness, and the sepals, petals, and labellum wither. This is at least what is observable in species hereafter mentioned. The ovary swells and lengthens every day in a surprising manner, attaining, in a general way, its maximum development in a third of the time necessary to bring it to maturity.

Another peculiarity hardly suspected, but of which repeated observations leave no doubt, is that simply cutting off the stamens produces an exactly similar effect, although more slowly manifested, to that effected by artificial fertilisation. Some days after the pollen masses have been removed, the flower operated upon dissociates itself from the rest by closing its sepals and petals, which quickly fade. I have mentioned that in the majority of cases the flower which has been fertilised commences to close the following day, but it is very different with the *Cypripediums*. This family, which is so distinct, forms an exception in nearly every way, but the most important is that which concerns the duration of the flowers, which is indeed but little shortened. I have many times fertilised flowers of *Cypripedium* which had been open a month, and have had the satisfaction of preserving them three weeks or more quite fresh. Among plants exhibited at a meeting held on the 18th December were two *Cypripediums*, of which one, *C. ciliolare*, had been fertilised five weeks and the other, *C. Spicerianum*, a month before that. The flowers on both plants were perfectly fresh. *Cypripediums* possess other exceptional and remarkable peculiarities, one of which is that the ovary enlarges very slowly and attains comparatively small proportions; the number of seeds, too, contained in a capsule of *Cypripedium* is not one-hundredth of that in a pod of *Cattleya*. When a flower of *Lælia*, *Cattleya*, *Oncidium*, *Ansellia*, &c., is fertilised, that one closes while the others borne on the same stem do not show any alteration and contrast more strikingly with it. For instance, a flower of *Cattleya Loddigesi* which was crossed with the pretty *Sophronitis grandiflora* had the ovary much developed, whilst the remaining blooms were in a perfect condition, but if it had been a question of *Phalenopsis*

Schilleriana, the flower operated on would have closed on the morrow, and two days later all the rest, no matter how many, would also have faded. Observations made at various times enable me to judge of the long duration of the generative faculty of this species, and very probably of *P. Stuartiana*, which in all its parts seems to be but a white variety of the former. I have in my collection a plant the flowers of which last well three months. Not wishing to deprive myself of such a long blooming time, and on the other hand being desirous of utilising it for hybridising purposes, on April 18, 1882, I fertilised a flower of it which opened on January 26, that is to say, three months previous, and the operation was quite successful. When fertilisation has been effected the ovary perceptibly develops and enlarges, in some months attaining its full size. It then seems as if the seeds, which are extremely small and very numerous, were every day about to emerge from the capsule, but this is the time when patience is needed, for these seeds require quite twice the time to bring them to maturity that has elapsed from the moment of fertilisation. The following list shows how long each species requires to ripen its seeds:—

	Months.
<i>Cattleya amethystina</i>	from 11 to 12
<i>labiata</i>	13
<i>Loddigesi</i>	10
<i>bicolor</i>	10
<i>gigas</i>	16
<i>labiata Pescatorei</i>	17
<i>Mossia</i>	11
<i>Percivaliana</i>	10
<i>Warneri</i>	10
<i>Lælia purpurata</i>	" 9 "
<i>crispa</i>	11
<i>Perrini</i>	18
<i>Leptotes bicolor</i>	12
<i>Oncidium Papilio</i>	10
<i>Peristeria elata</i>	8
<i>Stanhoepia oculata</i>	8
<i>Lycaste tetragona</i>	6
<i>Phalenopsis amabilis</i>	6
<i>grandiflora aurea</i>	6
<i>Schilleriana</i>	6
<i>Odontoglossum vexillarium</i>	8
<i>grande</i>	6
<i>Angrecum sesquipedale</i>	7
<i>Cypripedium Chantini</i>	13
<i>Bullenianum</i>	8

"In the case of vigorous, well-established specimens, seed-bearing, as I have many times had occasion to observe, does not act injuriously. This may be seen in the case of plants belonging to various species in my collection which at the present moment are in this condition, but one must be careful not to operate on weakly or imperfectly established plants, or they will be exposed to the risk of perishing, or at the least of losing much of their normal vigour. In this respect Orchids form no exception to the general rule."

J. C. B.

Improving garden plants.—When a young man I once came across a scientific paper discussing the Van Mons theory in regard to plant improvement, and my mind got so strongly impressed by its principles, that since that time I have followed the statements of that eminent Belgian pomologist in my endeavours to improve certain races of plants. By constantly taking seed from new generations, most carefully selecting the seed-bearing plants, very favourable results may be obtained. To prove this more than can be done by words, permit me to submit to your judgment specimens of *Primula rosea* and *Crocus aurea*, treated according to the principles here laid down.—MAX LEICHTLIN, *Baden-Baden*.

* * * The flowers which M. Max Leichtlin sends with the above show in a striking way the results obtained by successive seeding and selection in the case of *Crocus* (*Tritonia*) *aurea* and *Primula rosea*. In both instances flowers showing the typical form of the plant are sent, then the first improvement and the second, which in both cases is twice the size of the original. The typical flower of the *Crocus* measures 2½ inches across, the flowers of the first improvement 3 inches across, and those of the second variety, which is named *macrantha*, just upon 3½ inches across, whilst the sepals twice as broad as those of the original. The flowers of *Primula rosea* also show similar

differences as regards size. The flowers of the second generation called *grandiflora* are quite a third larger than those of the type, and the colour seems also improved. These illustrations indicate how plants can be improved by selection, and doubtless, if further carried out, we should obtain even more beautiful races of plants than we at present possess.—ED.

NEW SEEDLING AMARYLLISES.

SINCE Amaryllises have become so popular, London nurserymen have found it necessary to make increased accommodation for them, and now houses solely devoted to their culture have been built in some of the chief nurseries. Last year Mr. B. S. Williams, of Upper Holloway, found that his stock of Amaryllises necessitated the erection of a special Amaryllis house; he, therefore, built one embodying all the new improvements of hothouse construction, and specially adapted to the requirements of Amaryllises. It is span-roofed and divided for convenience into two compartments. A central bed for plunging the pots in occupies the middle area, with a walk running round it, and around the sides are similar plunging beds for succession bulbs. These plunging beds contain spent tan, and are sufficiently deep enough to allow the pots a layer of tan below, but not so thick as to hinder the heat from below from permeating the beds. Beneath the roof immediately over the succession beds are rows of hot-water pipes, which also pass along the pathway, and thus afford ample heat, while the ventilation both at bottom and top is planned specially to suit Amaryllises. This being the height of the Amaryllis season, this house at present presents a gay appearance, there being scores of flowering plants in it, the majority of which are seedling varieties. Among these we singled out the following as the finest in the collection and distinct from older sorts:—

ALBERT VICTOR.—This we consider the finest coloured Amaryllis that we have seen. The flowers are not remarkable for large size, but they are tubular, and a good deal after the style of *Acramanni pulcherrima*, from which it is evidently descended. The colour is an intensely deep and rich crimson, deepening towards the centre to almost black.

BARON FERDINAND ROTHSCHILD.—This is similar to the preceding, and though a little less rich in colour is of finer form, the sepals being broader, more rounded, and of that thick texture which holds them out firmly.

DR. BERNARDO has very large flowers, crimson with white stripes, fine in form and substance.

EXCELSIOR.—Flowers broad and of good shape, pale crimson with dark crimson reticulations and spots towards the base.

MRS. FINDLAY.—A very distinct and beautiful variety. Flowers scarlet, with broad white stripes down the centre of each petal; throat white.

ORNATA.—Flowers 8 inches across, white, rayed with yellow and striped with crimson. An extremely handsome sort.

MASTERPIECE—with flowers very large and spreading, an intense crimson—and *Excelsior*, much in the same way, are very fine sorts; and *Harlequin*, with singularly mottled and streaked flowers, is the best in its section.

DR. MASTERS is by far the finest of all the older sorts, and is distinct from the rest in every respect. Its flowers are of moderate size, but of perfect shape, and are entirely of a brilliant scarlet colour, without even a suggestion of any lighter tint. This variety has been a most valuable aid to Mr. Williams, as it has enabled him to produce a distinct race.

Tree pruner.—"J. C. C.," in describing the pruning chisel used in the west of England (p. 222), omits some important particulars. The edge of the chisel is curved, to prevent it from slipping, and the shoulders are barbed to form hooks for drawing away the lopped branches. The staff, which is from 8 feet to 10 feet long or even more, is of the best Ash, and has a ferrule at the

opposite end to take the blow of the mallet and prevent splitting by constant hammering. It is surprising how soon in practised hands the densest tree heads can be opened by this tool and without the toil of climbing. In using it the edge is applied to the back of the base of the branch to be removed; the cut is then made grainways and clean, otherwise it would be ragged and more difficult to sever.—J. M., *Charmouth, Dorset.*

PLANTS IN FLOWER:

Foraythias in pots.—These shrubs are used with admirable effect in the greenhouse (No. 4) at Kew. Some large bushes in pots, now profusely laden with golden, bell-like flowers, have a bright appearance mixed with other flowering shrubs. Both *F. suspensa* and *F. viridisima* are thus employed.

Abutilon Firefly.—Some flowers of this brightly coloured variety, from Mr. Mounsdon, of Sefton Park, are the finest we have seen, being fully a third over the usual size and of a richer colour. We suspect that they are from planted-out specimens. Comte Brazza's Violets also from the same garden are exceptionally fine.

Coloured Primroses.—Every spring Mr. Caudwell, of Wantage, sends us samples of his Primroses, to which he seems to pay particular attention in the way of improving them by seedling and selection. This year we fancy they are better even than any he has hitherto sent. They are of all colours that Primroses are capable of producing, and the flowers are so round as to almost fit into the florist's ideal circle, and both the blooms and foliage are withal sturdy.

Prunus divaricata.—This Caucasian Plum tree is at present in great beauty on the lawns at Kew. A fine spreading tree with branches sweeping the turf is now a snow-white mass of bloom. This is the earliest of the large family of Rosaceous trees which will flower in succession now onwards until June. Being so early, this *Prunus* is doubly valuable, and its admirable style of growth makes it the more desirable as a lawn tree.

Lachenalia tricolor.—One may see at the present time in a greenhouse at Kew some groups of plants of this bulbous plant grown as fine as can possibly be wished. The plants, which are arranged in masses, have a charming appearance, and are much more effective than if they had been dotted about among other plants in the usual way. The crowds of yellow-green spikes tipped with red rising from a carpet of healthy foliage attract the attention of all visitors.

Ochna Kirkl.—This is a new introduction from Tropical Africa and remarkable for the deep scarlet of its cup-shaped persistent calyx surrounding a torus of the same colour, and bearing several large berry-like ovaries which grow out from the torus in a singular manner. These ovaries are at present bright green, whereas in *O. atropurpurea*, recently figured in *THE GARDEN*, they are black and glossy. As a distinct berry-bearing plant, this novelty is not without its attractions; its yellow flowers are also handsome, but they are very fugacious.

Acacias in flower at Kew.—No time could be better than the present for seeing the bulk of the many kinds of Acacia in their best flowering condition in the temperate house in Kew Gardens. The huge planted-out bushes of such as *A. armata* are glowing masses of sulphur-yellow, while on the side benches there are hundreds of plants of many kinds in flower, such elegant species as *A. leprosa*, *Drummondii*, *pulchella* being particularly noteworthy. The Himalayan *Rhododendrons* in the same house are also attractive, though the crop of bloom does not promise to be so plentiful this year as last.

Fortune's yellow Rose.—So seldom do we see this lovely Rose in flower or receive blooms of it, that a boxful from Mr. Warkinslaw's garden at Hartley Graze, Winchfield, deserves notice. Beautiful in form and exquisite in colour, it has no rival, even among the numbers of Roses which we have. If improvers of the Rose could, while retaining its colour and delightful fragrance, infuse a little more strength into its growth, so as to enable the flowers to carry themselves more erect, the result would be a boon indeed. The colour of Fortune's yellow is a kind of coppery yellow, flushed on the petal margins with a flesh tint, and quite pink in the centre. Mr. McClure, who sends

us the blooms, does not say under what conditions he grows it.

Notes from Baden-Baden.—In my former notes (p. 277) I forgot to allude to the striking beauty of *Bulbocodium ruthenicum*; it flowers in February, and though not so large as *B. vernum*, it is more elegant and of a bright magenta-red colour. *Helleborus porphyromelos* is a late flowering species and the darkest in flower and foliage. In a frame *Tropæolum rhomboideum* shows its little bells in great abundance; it is in form and colour of flowers intermediate between *T. tricolor* and *T. brachyceras*.—MAX LEICHTLIN.

Daffodil Sir Watkin.—The first flowers of this fine new Daffodil that have reached us this season came from Mr. Woodall's garden at Scarborough. He sends them to show how much earlier it is than the rest of the incomparabilis section. This is indeed a fine flower, and, seeing how different it is from its relatives, is it not possible that it is a cross between the incomparabilis and the Ajax sections? The longer tube and broader sepals suggest this. Barr's Hudibras is much in the same way, but rather smaller in size, in fact but one remove from it, and this is ostensibly a hybrid.

Lachenalia Nelsoni in sand.—From Bickling Hall gardens Mr. Ocle sends us the finest bunch of flowers of this *Lachenalia* that we have yet seen. Not only are the spikes long and crowded with flowers, but each bloom is much larger than usual. The plants have been grown in a cold frame with the pots plunged in ashes. The compost used for them, Mr. Ocle says, is a mixture of pure sand and dried cow manure. Here, then, is a hint for *Lachenalia* growers. Finer blooms than these, we are satisfied, could not be produced of this, the best of all the *Lachenalias*. Their rich golden colour, too, seems to be brighter than usual.

Spring flowers.—What a charming flower is *Narcissus pallidus præcox*! It seems to vary in height and in colour, but is a treasure in early spring. Among other good things this spring I have noted in my garden are *Fritillaria oranensis* and *Erythronium Nuttallianum*, the latter conspicuous from its very rich golden colour. I send you a bloom of what I have always believed to be a different *Puschkinia* from *scilloides*; it is, I think, called *P. libanotica*, and is taller and handsomer than *P. scilloides*. *Scilla bifolia rosea* is a perfect gem; its shade of rose is unusual among colours. The golden bells of *Fritillaria pudica* are just opening, and *F. pallidiflora* will be the next. Directly these easterly winds take their departure there will be quite an army of flowers pressing forward. I send blooms of almost the last *Iris reticulata*; the first came out in the middle of February.—H. STUART-WORTLEY.

Greenhouse Rhododendrons.—Flowers of several varieties of greenhouse *Rhododendrons* have been sent to us by Mr. Thornber, the gardener at Fairlawn, Lytham, who evidently grows them to perfection, judging by his letter. He says: "There is here a plant of the Countess of Sefton variety 7 feet high and 6 feet through, with over 1000 blooms open and about as many buds to open; also one of Lady Skelmersdale 5 feet by 5 feet. By the time it is at its best it will have at least 1000 blooms open on it. The beauty of these plants may be better imagined than described. Being strong in growth, they need no training, which adds greatly to their beauty. Others named are Marchioness, delicate bluish; *Formosum grandiflorum*, large white; Mrs. James Shawe, Duchess of Netherlands, both white. This is surely a class of greenhouse shrubs worth a great deal of attention as spring flowerers.

Corydalis racemosa.—A distinct-looking *Fumitory* bearing this name is now flowering in the T range at Kew, whither it is said to have been introduced by means of seeds from Hong-Kong. It has an erect, smooth, watery stem, which is pale brown, and bears numerous large bipinnate leaves, and a branching head of yellow flowers arranged in spikes. These flowers are of the usual form, approaching in this respect *C.*

nobilis, as also they do in colour, which is bright yellow with the blotch of reddish brown on the top of each flower exactly as in *C. nobilis*. This new species is apparently an annual, and should it prove capable of cultivation out of doors in England during summer it will be a good addition to the species of *Corydalis* already in cultivation. These are *C. nobilis*, just mentioned, a handsome foliage plant as well as being beautiful for its flowers; *C. lutea*, also graceful and pretty, and useful for rock gardens; *C. Ledebouriana*, which is remarkable for its singular leaf arrangement, and pretty in having deep purple flowers with rose-coloured spurs. These are all hardy, and when once established able to look after themselves.

Cereus Mallisoni.—This is a beautiful *Cactus*, and one of the most accommodating for small houses, as by grafting its shoots on to the stem of some of the stouter growing kinds, it forms a drooping curtain of stems which produce an abundance of bright crimson flowers, often 6 inches in diameter. It is of hybrid origin, being the result of a cross between the old *C. speciosissimus* and *C. flagelliformis*, the habit and form of its branches being like those of the latter, whilst in the size and brilliancy of its blooms it resembles the former. There is a plant of it in the succulent house at Kew, where, grafted on the stems of *C. Macdonaldiae* and trained along a rafter, it hangs down from the roof, and bears over a score of flowers, the effect of which is excellent. For rather dry and light stoves, this and a goodly number of other species of *Cereus* are specially adapted, owing to their delighting in the conditions afforded by such a house and to the abundance of large and beautiful flowers they annually bear. For their successful management they require to be planted in a light, well-drained soil, watered now and then, afterwards simply let alone and allowed to grow and take care of themselves.

Lachenalias.—A few weeks ago there was brought to one of the meetings of the Royal Horticultural Society a handsome and distinct-looking *Lachenalia*, handsome in its having flowers of the same size and colour as those of *L. Nelsoni*, and distinct, because instead of being arranged on the stalk in a drooping manner they are semi-erect. This plant was said to have been raised from seeds saved by the late Mr. Nelson, but the facts of its origin are unknown. In the Cape house at Kew there are now flowering three species of *Lachenalia* with characters exactly like those of the above named seedling, except in colour, and it may be that Mr. Nelson obtained this new hybrid by crossing *L. tricolor* or one of its varieties with one of these semi-erect flowered kinds now flowering at Kew. The prettiest of the three is *L. orthopetala*, which has narrow leaves with incurved edges, an erect flower-spike, and about a score of white campanulate flowers, each segment having a spot of brown on the tip; the stamens are as long again as the flower segments. To our taste this is a pretty little spring-flowering plant which is worth looking after. The second of the Kew plants is *L. erecta*, which has broad, strap-shaped, spotted leaves, a long slender flower-scape bearing a cluster of about twenty flowers, the segments of which are three outer ones much shorter than the three inner ones, both series being pale yellow, with a greenish stripe on the outside of each segment. *L. orchioides* is the other plant referred to. It has broadish strap-shaped green leaves and a slender scape of bluish, semi-erect flowers. There are some pretty varieties of this at Kew, though not now in flower. In addition to the above there are also now flowering at Kew plants of *L. tricolor*, represented by some beautiful bold groups in the conservatory, and *L. Nelsoni* in flower in the Cape house, where also are plants of *L. tricolor luteola*. Judging from the good results obtained with *Lachenalias* by Mr. Nelson in the short time he experimented with them, there seems good promise of some really ornamental garden plants being within easy reach of anyone who would devote attention to the subject. Has anyone tried these plants out-of-doors?

FLOWER GARDEN.

ZINNIAS BEST IN LARGE MASSES.

ZINNIAS are a useful class of annuals, which specially deserve cultivation on account of their hardiness and showy flowers. They vie indeed in beauty with the best classes of Asters, but while Asters often fail to grow freely or bloom profusely, Zinnias are certain to succeed in every respect. We have frequently had them growing here and there in mixed borders, but last year they began blooming so early, and produced such masses of fine flowers until November, that we have resolved to give them a place in the flower garden this season, and plants are now being prepared for this purpose. In previous years our plants have been grown in little groups of four or five together, and in this way they are attractive to a certain extent, but large masses of them are most effective. Double-flowering ones are decidedly the best. The blooms vary from 2 inches to 4 inches in diameter in the best strains, and the petals are beautifully arranged, while the colours are of every known hue. The single ones bloom equally free, but the flowers have a ragged appearance, and are not so effective when seen either close at hand or at a distance. Both, however, require the same treatment. If the plants are required for blooming in June the seed must be sown in a gentle heat in March. A hot bed need not be specially prepared for them, as a large number of plants may be raised by sowing the seed in one or two cutting boxes of fair size, or quantities of plants may be produced by sowing in 6-inch pots. The seed germinates freely in light sandy soil, and in either house, pit, or frame where the temperature is from 60° to 65°. At first the young plants may be quite close together, but as they form a few leaves, they should be taken from the seed quarters and be given more space in pots or boxes. We dibble from fifty to sixty into our bedding plant boxes, which are 2 feet 6 inches long, 1 foot 6 inches wide, and 3 inches deep. After being transferred to these they are kept in a close frame for a short time, when they are gradually hardened off and planted out in May when other flower-garden subjects are put out. They grow freely from the first, and are not troublesome to raise or manage. Their easy culture is greatly in their favour, and those who have no houses or frames in which to advance them may have them in bloom from July until November by sowing in April in positions which the plants are to occupy. In this case the seed should be sown very thinly, and only slightly covered. If the plants happen to be too close, some of them may be drawn up and be dibbled in elsewhere about the end of May. Any ordinary soil which will grow the common classes of bed-

ding plants will produce perfect Zinnias, and it is astonishing how little the plants are checked or the flowers injured by either excess of drought, heat, or wet. M.

Transplanting Primroses.—Like Mr. Molyneux, we have here a terribly tough clay soil in which Primroses thrive well from seed for a year or two, but suffer afterwards from two causes. One is the baking hard of these stiff soils in summer and their getting so heated, that the plants suffer from thrips and lose their leafage. When that is the case the crowns are always weakened,

and the plants so obtained are first-rate the second year, and fairly good the third, and then they decline. With special kinds the best plan to deal with them is to lift them in the autumn, divide to single crowns, plant in a frame in good soil, and then re-transplant outdoors just as the young plants are making new roots at the end of March, giving them some shade and water during hot, dry weather.—A. D.

THE GREAT REED ON LAWNS.

AMONG the nobler forms of hardy plants there are many capable of making a garden landscape effective from a sub-tropical point of view. Foremost among these are the great Grasses, Reeds, and Bamboos, the giant Polygonums, Screw Pine-leaved Eryngiums, the Rheums, the Gunneras, the Yuccas, and the giant Heracleums. These are all more or less hardy, and if placed in positions where they attain full development, they give a lawn quite a different appearance from that derived from other hardy plant growth. The effect produced by the great Italian Reed (*Arun-do Dorax*) is well shown in the annexed sketch of a pretty American garden, where the Tulip Tree and deciduous Cypress are native trees. This great Reed of Southern Europe is a stately, yet elegant, plant when grown in an isolated position on a lawn in good deep soil. Ten feet is the common height of its canes, and these when clothed with silvery foliage have an aspect totally distinct from that of other open-air subjects. Like all large-growing plants, it loves shelter, yet it does not like to be so hovered in as to exclude sun and air. Being quite a southern plant, it often feels keenly our severe winters, but even when cut down it usually pushes up again vigorous shoots. It likes a damp spot, such as the margin of a lake or stream, but abundant moisture is not indispensable to it, as it grows to its fullest size anywhere in a deep, moist, loamy soil. There is a variegated variety of it, and this is the one shown in the engraving. Another excellent *Arun-do* for a lawn is the New Zealand Reed (*A. conspicua*); it has very much the appearance of the Pampas Grass, but is more graceful, and quite distinct in one respect, viz., it flowers at midsummer instead of in autumn.

Day Lilies (Hemerocallis).—These so-called Lilies, if planted in company with *Tritomas* in moist borders or on the margins of lakes or rivers, have a truly grand appearance. Why this plant should be called Day Lily I know not, for the flowers last good for several days after they expand, and as fast as one flower fades others succeed it. There are two double kinds in this family with variegated foliage, both very fine;



THE GREAT REED IN THE GARDEN LANDSCAPE,
with deciduous Cypress and Tulip Tree in the background.

and seldom do they come so strong as previously. The other cause is found in the tendency of the soil, let it be ever so well stirred, to run together on the surface and prevent the free passage of water through it when heavy rains come; hence moisture lies about the plants and frosts following do much mischief. Clay soils are very well for the plants until they become hard set, and there is no remedy for that but in lifting and replanting the Primroses in fresh soil, a very risky job, as I have often found to my cost, for if done in the autumn the winter rains soon harden the soil and render it worse than was that of the old bed; or if the transplanting be done in the spring, then the plants may be destroyed by drought ere they have become established. The very best plan in my case is to make sowings of seed every year,

one is named *H. Kwanso* fl.-pl., the flowers of which are bronzy yellow; the other, *H. disticha*, a very fine variety. There are also several single forms, the flowers of which are of various shades of yellow. One named *H. flava* is sweet-scented; in fact, all of them should be grown, for they are indeed fine. Though hardy, they look well in pots. They require plenty of room, and therefore look best in a large conservatory.—W. C. LEACH, *Stamford*.

DOUBLING OF LENT LILIES.

As my observations upon Lent Lilies have extended over many years, I propose to record my own experience in reference to the vexed doubling question without giving any opinion upon the conclusions at which others have arrived. About twenty-four years ago I transplanted many single wild *Pseudo-Narcissus* bulbs into my garden in Shropshire. It was a good wholesome soil, and the plants grew and flowered freely, but there never was the slightest tendency to doubling. After four or five seasons I removed the same bulbs into a garden in Cambridge, with the like result; they were vigorous and full of flower, but five seasons left them single, as they began. In 1872 I removed into a part of Devon, where we have a bright red soil, a kind of disintegrated old red sandstone, and I brought my bulbs with me; here, however, I found them growing wild in great abundance, and I transplanted many hundred bulbs (single) some into my garden, partly into soil in its natural state, partly into soil highly enriched, but the greater number I planted in Grass land. In all these years up to the present time there has not been a single instance of doubling. I come next to the double and semi-double forms of the flower. I doubt whether they are often met with. I know of one spot only, which I have carefully abstained from publishing, where I have found them in any quantity, and there they occupy a space not exceeding a very few superficial yards; there are a few single ones not far off, but no intermixture. The doubles are dotted about in patches, each apparently originating from one bulb, with many off-sets, and some small bulbs, not flattened like offsets, but of rounded form like seedlings. This, however, is mere surmise; I never saw a ripe seed vessel upon them. In every instance I found no single flowers mixed with the others; the whole patch was double or semi-double. Some patches were a foot apart, some a yard or more; no great number in all. Beyond this limited area, I never found a chance double amongst the singles any more than any single intruding amongst the doubles. I have transferred many of these double forms into my garden; they do not turn single, but they do not thrive, dying out after a year or two. The double *Telamonius*, on the contrary, grows splendidly under the same conditions. I have also transferred many wild doubles into a Grass field; here they thrive, flower, and preserve their double character. The majority of them have double trumpets only; some are rose doubles, some imperfect; they increase by offsets, but I have never found seed. In two instances I found a scape bearing two double flowers, not a monstrosity, with two scapes run into one, but a genuine single scape and two perfect flowers. I transplanted them into my garden; one died the first season, the other produced only one double flower, instead of two, as in the previous season, and then died. The doubles of which I speak are distinctly the double of the wild Lent Lily; none like double *Telamonius*; not the slightest tendency to such a change have I seen during all the years I have grown them. They retain their size, shape, colour, and season of flowering, in all of which they differ widely from *Telamonius*.

The above is what has passed under my own eye. In one instance only I must give a joint experience, half mine, half that of Mr. Wolley Dod. One year I sent him half a dozen bulbs of double Lent Lily; in his soil and climate they were single the following year, and he returned them to me. Next year the same bulbs in my garden recovered their double form. Again I returned them to Cheshire, together with a bag of

our red soil, and the result promises to be a maintenance of double flowers, so far as can be known from the yet not fully expanded buds. The result, then, of my experiments is that out of many hundreds, I may safely say thousands, of single forms transplanted by me, not one has doubled, and again of some hundred double forms none have turned single. From the complete isolation of the double patches I have always thought they must have had their origin in seed; if from other causes, singles would probably have been growing with them.

South Devon.

T. H. ARCHER-HIND.

COLOUR EFFECTS IN GARDENS.

WHEN the bedding system first came into vogue, it was no doubt the extreme brightness, or what we should now call gaudiness, that for a time caused it to hold the position in popular favour that it did. But, like every other hobby that from time to time takes possession of the gardening fraternity, it was soon done to death, as anybody with the least perception might have foretold would be the case, seeing that only scarlet *Geraniums*, yellow *Calceolarias*, blue *Lobelias*, or purple *Verbenas* were used; and, by way of a change, the following year there were *Verbenas*, *Calceolarias*, and *Geraniums*, the constant repetition of scarlet, yellow, and blue being nauseating even to those who had little or no taste whatever in gardening matters, whilst others with finer perceptions of the beautiful began to inquire for the Parsley bed, by way of relief. As a matter of course, such an unsatisfactory state of things could not continue; but yet the system could not for several reasons be given up—a very good one being that the great bulk of hardy flowers had been ruthlessly swept out of the garden to make room for bedding plants, and so, gardeners being, as it were, in desperate straits, the developing of the bedding system began, foliage plants of various colours being mixed with the flowers. Then followed standard graceful foliaged plants, hardy carpeting plants, and now dwarf and formal-growing shrubs are being used freely in association with the commoner types of bedding plants; indeed, the improvement both in taste and arrangement, as well as in variety of plants, has been so rapid that the most relentless opponents of the system have—reluctantly, it may be—admitted that the system has some redeeming qualities, and has certainly given a great impetus to horticulture in general; but I think that the strongest reason of all for its retention is the suitability of it to formal or geometrically designed parterres.

Perhaps the general re-action now going on in favour of hardy herbaceous perennial plants may quite oust the system, but whether it does so or not, so long as it is practised, the question of colour must ever be of paramount importance. Most people have their own notions as to what constitutes perfection of colour in bedding arrangements. This the writer has not attained to, nor is he certain that he has any decided preference for one colour over another, but he has very decided notions as to arrangement of the various colours, which are, that the whole shall be so completely commingled, as to be puzzling to determine what tint or colour predominates in the entire arrangement. This rule he has followed for years, and has had a fair amount of success in the working out of it, but is still learning, the latest lesson being that if any colour at all may predominate, it is what gardeners know as glaucous, that is, a light grey or whitish green. Of such a colour the eye never tires, perhaps because it is in such harmony with the predominant tints of the landscape, and particularly of the lawn.

To successfully carry out the rule as to arrangement of colours here advanced, there are other, what may be termed collateral, rules that must be studied, the first being that high colours, such as scarlet and yellow, must be used much more sparingly, that is, in less proportion than colours of a softer tint, for the obvious reason that these colours overweigh, as it were, all others; secondly, there must be no violent transition from one

colour to another; the contrasting of colours must be avoided as much as possible in favour of the gradual intermingling or harmonising of colours; thirdly, the most decided or high colours, being the heaviest, ought to occupy the most central position of beds, or else be distributed in due proportion over the entire garden, to ensure an even balance of weight throughout; and, further, when dealing with such colours, just to use them in necessary proportion, and no more, and, if to err at all, to take care that it be on the side of niggardliness. By close adherence to these rules, the writer has for years had no difficulty in producing a harmony of colour that has worn so well, as to be just as welcome viewed at the end as it was at the beginning of the season, for the quieter the colouring the more lasting is the enjoyment of it. And it is pleasant to observe the great advance yearly made in favour of what may be called neutral or the quieter tints; gaudiness, as applied to bedding out, being now the exception rather than, as was the case but a few years back, the rule.

To fully carry out the ideal of colour here advocated, a great variety of plants is needed, but not more than in gardens where bedding out is practised; but, lest the owners of gardens of smaller dimensions may think it an impossible attainment in their case, it may be well to add that there is colour and colour, and that if they cannot, owing to lack of appliances, &c., for raising plants, have elaborate designs and variety in colour, they may have an equivalent in the way of graceful foliage and beautifully tinted shrubs of varying hues and habit, from deep green to bright yellow, conical, weeping, and feathery. *Retinosporas*, *Cypresses*, *Yews*, *Yuccas*, and many others not only associate well with all kinds of bedding plants, but with their congeners in hardness—the various kinds of hardy *Sedums*, *Saxifrages*, and *Veronicas*; and these are all within the means of the most utilitarian owner of a garden, and might be arranged in bedding out form, the shrubs for centres and panels, and the dwarf hardy plants for massing and carpeting. Such a garden, though somewhat sombre in colouring, would be infinitely more interesting and pleasing than if it were planted after the orthodox fashion of bedding out.

W. W.

HYACINTHS IN THE OPEN GROUND.

I DO not possess more than a dozen roots of *Hyacinths* in all, but they have been planted some years, and the way in which they bloom causes me to disagree with those who assert that, under open-air cultivation in this country, the *Hyacinth* gradually deteriorates, ultimately becoming of no decorative value. One bulb I have particularly noticed as coming up in the same spot six or seven years in succession; it is a pink-flowered kind, and seems, of the two, to bloom stronger every year. The head of bloom it gives is good enough for pot culture, and is much better than that which the majority of imported bulbs yield. Not only local influences, but very generous culture are what brings the *Hyacinth* to such perfection in Holland, and there seems to be no good reason why, with fair treatment, we should not maintain in them a fair share of blooming power. One reason why *Hyacinths* deteriorate so quickly in English gardens is the fact that they are generally planted in beds on the lawn required for bedding out; consequently they have to be disturbed just as they would be making themselves fit for another year. From this check they require a season or two to recover, producing, meanwhile, no flowers worth speaking of, so that the grower comes to the conclusion that *Hyacinths* the second year are useless. The result is different when allowed to remain where they have flowered. Naturally no *Hyacinth*, which has been brought to the perfection we see in the choice named varieties, can be expected to retain it undiminished, but there seems to be a certain standard of excellence at which by fair treatment they can be maintained. Under pot culture the superexcellence of bloom which a fostering care develops causes a corresponding fall in quality the following season—much below the average, in fact, so that a year

or two must elapse ere this is reached again. Undoubtedly, the best way is to pick off the flower truss the second year, and plant in well enriched ground, which will better allow the bulbs to recover their lost energy. It has often appeared to me that bulbs deeply planted throw up more strongly than when they are near the surface. In light soils, I believe that quite 6 inches is not too deep for them, because at that depth the bulb and roots are sure of a good share of moisture whilst making their growth. So far as I have been able to judge, the wild Hyacinth prefers a light soil, and it is really remarkable how deep the bulbs often are in it; and I fancy that the typical form of our cultivated kind would be found similarly circumstanced in its native habitats. There is at any rate one advantage derivable from deep planting—the soil can always be stirred sufficiently deep without touching the bulbs to allow of planting some summer flowering thing, so that the annual lifting may in this way be obviated.

J. C. B.

Primula obtusifolia.—I was quite prepared for the information given in *THE GARDEN* (p. 278) by "K." about this plant, and am glad to have elicited it. These seeds are collected, I believe, by natives, who are seldom botanists. Amongst other seeds of "unknown" plants collected at altitudes of five figures in the Himalayas, came some from which I have raised splendid crops of *Senecio Jacobææ* and *Verbascum Thapsus*, but such seeds are always worth trying.—C. WOLLEY DOD.

Hardiness of *Sarracenia purpurea*.—"M.C.," referring to *Todea pellucida* and *Sarracenia purpurea* in a notice of Dr. Paterson's Orchids (p. 205), asks the question: "Are greenhouse and stove plants really the tender things we imagine them to be?" As regards *S. purpurea*, it certainly is not a tender plant. In its native habitats here it stands from 40° to 60° degrees of frost. The probability is that the climate of England is not severe enough for this very hardy plant.—P. J., *Halifax, N.S.*

Eryngium amethystinum.—Not one word too much has been said in praise of this distinct family of plants so well illustrated recently in *THE GARDEN*. We have two or three of the varieties, but the favourite amongst them is *amethystinum*, which grows and flowers with us in a very satisfactory manner without any special attention. For mixed borders these *Eryngiums* are very valuable, as they make an agreeable variety; the pleasing metallic blue colour which overlies the stems and flowers is very distinct from anything else, and, if not striking, is at least uncommon.—TAUNTON.

Grape Hyacinths.—What a wealth of beautiful hardy spring flowers it is possible and not difficult to get together! The pretty little *Hepaticas* are just over; their charming tints of blue and pink have been very pleasing. These are succeeded by the lovely *Scilla sibirica*, *Chionodoxa Luciliæ*, and the always charming *Grape Hyacinths*, the last named being now at their best, and very beautiful their spikes of purplish blue flowers are as they appear in masses in the mixed border. I have never yet met with anyone who was not delighted with this early spring flower.—J. C. C.

***Yucca filamentosa variegata*.**—In *THE GARDEN* (p. 266) this *Yucca* is described as delicate, and best confined to greenhouses or cold frames. This is directly contrary to our experience; we have grown it in the open air without protection for at least twenty years, and Nottinghamshire is supposed to be favoured with as great extremes of temperature as any county in England. Our plants are simply planted out in sandy peat and then let alone. In short, we attribute having the good stock we have of this *Yucca* to the absence of coddling.—CHARLES E. PEARSON, *Chilwell Nurseries, Notts.*

***Primula helvetica*.**—What is this? It came to me from Scotland under this name, and it bears a close resemblance to what I have obtained

from Messrs. Backhouse under the name of *P. pedemontana*, but the leaves have a more decided glaucous hue, and the flowers, which are borne in large trusses, are larger and of a deeper colour. The York plant of *P. pedemontana* was, however, only received a short time ago, and is scarcely established in the pot; therefore, in all probability it is flowering weakly. There is, I think, a good deal of confusion about the nomenclature of these hardy *Primulas*. I have received from three different sources different types under the name of *P. viscosa*. I hope that one part of the work of the suggested *Primula* conference will be to revise the nomenclature. I am inclined to doubt if there is any very great specific difference between *nivea*, *spectabilis*, *intermedia*, *ciliata*, *pedemontana*, and *helvetica*. I know that in saying this I am laying myself open to criticism; a little discussion may, however, do good.—R. D.

Single Dahlias.—Seeds of these germinate freely if sown in a frame or greenhouse. I have a quantity now coming through in a cool house sown a few weeks ago, and thus I shall presently have a lot of strong plants to turn out in May without trouble. It is to be feared that amateur gardeners who have no heat at command are often deterred from raising many good things from seed simply because the common directions are "sow in heat." No doubt such advice is thought to be good, because germination may be, if not more certain, at least more rapid; but many of these tender things, such as single Dahlias, *Petunias*, *Lobelias*, *Stocks*, &c., if sown in March in a cool house or frame will give a good growth and an abundant stock of plants.—BEDFORD.

Empress Candytuft.—A big patchy plant of this giant white *Rocket Candytuft* from self-sown seed has stood the winter well without any protection and in a cold spot. The plants are far more robust than those carefully housed in a frame for the winter, and I now heartily wish I had served those raised from seed in the way in which accident has saved these. It is true we have not had a hard winter, but still sufficiently severe to test the hardiness of annuals, and it would seem as if this truly grand *Candytuft* was very hardy and would stand our ordinary winters well. Without doubt the finest results in many annuals are obtained from them when treated as biennials. The *Empress Candytuft* is a remarkably fine kind, far beyond all other annual species in the size and spiral character of the spikes of bloom. Strong plants, lifted carefully from the open ground and dropped into pots, make effective material for the decoration of windows or even greenhouses.—A. D.

Phloxes.—Of the taller kinds of *Phloxes* we grow some hundreds in the flower garden, pleasure grounds, and in the kitchen garden borders, and we have no flowers which are more admired from July until October than our rows, masses, or single plants of *Phloxes*. They are so hardy, that no excess of drought or frost will injure or kill them, and their freely produced and noble spikes of varied and richly coloured blooms are most conspicuous and attractive. They may be associated with bedding plants of the proverbial *Geranium* type, *Evergreens*, annuals, or, in fact, with anything, and they always prove interesting, appropriate, and pleasing. They are admirably suited either for small or large gardens, and are specially well adapted for all gardens in or near towns, as they are not by any means liable to suffer from exposure to dust, smoke, or murky atmospheres—so injurious to many flowers. Just now is an important period in their culture, as propagation, planting, and transplanting should receive attention. It is not a satisfactory way to raise plants from seed, as much time and expense may be devoted to producing a very inferior crop; but the best named varieties may be bought very cheaply, and, after growing for a season or so, they may be divided into many plants. *Phloxes* are frequently propagated from cuttings, and the young growths root freely under a hand-light or in a frame at this season. But of all the ways of increasing them which we have tried, we prefer dividing the plants. Roots of one or two years'

growth may be taken up and cut into from six to ten plants, each with a good root attached, and if replanted at once they never feel the change, but grow on and flower freely throughout the season. We have treated hundreds of them in this way about the first week in April, and 99 per cent. of them have succeeded as well as we could desire. In dividing them the roots should be preserved as carefully as possible, and they should not be allowed to dry up before being replaced in the soil. To grow *Phloxes* to perfection, they must have deep and rich soil. They will live and bloom, too, in light, poor material; but they will never fully develop their gorgeous spikes under such circumstances. When a whole bed or border cannot be deeply dug and heavily manured for them, a small spot to be occupied by each plant should be treated in this way. In most instances *Phloxes* are pushing up growths now, and in replanting they should not be put deeper than they were previous to being taken up.—J. MUIR.

Alpine plants at Belvoir.—It has been the coldest March I can remember. Frost was recorded on eighteen nights, giving a general sum of cold of 65°. Although only 6° (26° Fahrenheit) were registered on the 23rd, 14° were recorded on Grass; yet with all this cold weather plants most commonly cut up by frost have scarcely suffered. The explanation is the extreme dryness of the ground; only 74, or less than three-quarters of an inch, has fallen. We entirely escaped the falls of snow which occurred both north and south of us. Alpine plants delight in this dry, cold spring weather. *Saxifraga oppositifolia*, *Anemone blanda*, *Chionodoxa Luciliæ* are gloriously in bloom, and no one who has seen our Violet beds could ever forget them. I should not, however, overlook the vigour and beauty of *Iris reticulata*, *Puschkinia scilloides*, and *Narcissus minimus*.—W. INGRAM.

***Geranium Lambertianum*.**—In *THE GARDEN* (p. 264) this *Geranium* is said to have highly coloured cherry-red sprouts, a statement that does not correspond with my experience of the plant. *G. Lamberti* (Sweet), *G. eriostemon* (Don), and *G. Backhousianum* (Regel) are all synonyms of *G. Grevilleanum* (Wall.), a plant closely allied to *G. Wallichianum*, and, like it, a native of the temperate Himalayas. The leaves and stalks of this plant are light green, thickly beset with greenish yellow hairs, and although slightly tinged with purple of a dull or lurid hue, are far from answering to the description given. *G. armenum*, a well-known plant, is probably the plant meant, as it answers in every detail to the description given in the note in question. *G. Grevilleanum*, though having a neater habit than either *G. Wallichianum* or *G. armenum*, is certainly inferior to both as a garden plant, and as I have seen instances of both of them grown under the name of *Lamberti*, it may be so in this case.—K.

Ivy on rockwork (p. 228).—In bold arrangements of rockwork Ivy may often be advantageously employed, but I should recommend your correspondent to hesitate ere he allows even a small-leaved kind to grow all over a fernery which is planted with delicate or even robust-growing subjects. Vigorous sorts, such as the Male Fern and others of its class, will hold their own, but the Ivy is a liberal feeder, and by taking complete possession of the ground it would injure all the delicate kinds. It may be utilised for covering perpendicular rocks and so forth, but its employment as a carpet plant would certainly be unjudicious. Ivy too is a favourite hiding place for snails, which often work havoc among choice Ferns. As carpeting that would not onst the Ferns from their positions may be mentioned some of the mossy *Saxifrages*, *Herniaria glabra*, *Sibthorpia europæa*, *Acæna Nova-Zelandiæ*, and above all *Arenaria balearica*, which entirely covers the ground and stones also, wherever there is the least foothold with a dense bright green carpet, dotted over during summer with tiny white blossoms. As a single plant for carpeting purposes I would recommend this, except in damp and shady spots, and there *Selaginella Kraussiana*

could be planted, for though patches may fail during severe winters they quickly recover and grow rapidly.—ALPHA.

FRUIT GARDEN.

VINES ON THE EXTENSION SYSTEM.

PEOPLE are often very impatient to get their vineries quickly filled with fruiting canes. I at one time firmly believed in the old method of pruning, and when my advice has been asked about the treatment of young Vines, I always recommended it, giving as a reason that it was very important to lay a good foundation for future years. In 1880, however, my faith in this method was shaken after reading an article in *THE GARDEN*, Vol. XVIII., p. 160, in which occurred this sentence, "Neither do I believe that the mere cutting back of a Vine induces a permanently stronger growth, or adds in any way to the vigour of the Vine." So impressed was I by these few words, that I made up my mind to follow the writer's advice on the first opportunity. I was unable to do so until 1884 when I had three new vineries to plant—one house with Hamburghs another with Madresfield Court, and the third with Black Alicante, Barbarossa, Gros Colmar, Lady Downes, and others. These were planted in the ordinary manner, but not cut back. They broke very well and made magnificent growths. This year I have left from 5 feet to 6 feet of young growth on each Vine, and I can assert that I am more than satisfied with my success. Instead of not having sufficient breaks, I have had so many, that numbers have had to be rubbed off. Last season being so favourable for getting the wood thoroughly ripened may, however, have had something to do with the matter, but, be that as it may, I shall never again be afraid of rapidly filling a house with Vines on the same plan.

R. L. MCINTOSH.

The Abbey, Great Grimsby.

STRAWBERRY PROTECTOR.

THE contrivance of which I am now about to write is well calculated to answer the purpose for which it is intended and not expensive, although ingeniously designed. It is what the inventor, Mr. Matthews, of Weston-super-Mare, is pleased to term a Strawberry protector and snail trap, and is composed of two semi-circular pieces of well-turned clay, which when fitted together form a convex support for the foliage and fruit, while a bead underneath keeps the outside edges clear of the soil, and forms a cool secluded retreat for snails and other marauders, which may be attracted to the dainty feeding ground which a bed of ripe fruit invariably offers. Now Strawberry tiles have been for some years before the public, but they are too small and too heavy, being neither more nor less than two solid blocks of burnt clay with a semi-circular piece cut out of the side of each to form, when placed together, a square block with a circular opening in the centre large enough for the collar of the plant. The tile manufactured by Mr. Matthews, as will be gathered from the accompanying illustration, is much higher and larger, and falls off from the centre at an angle which secures a comparatively dry surface for the fruit to rest upon in wet weather. Moreover, being supported clear of the soil by the inner and outer beads, it attracts some heat, which produces an underlying stratum of warm moisture, at all times acceptable to the roots of the Strawberry. Being made in two halves, these protectors can easily be raised from the ground whenever it is thought necessary to search for the enemy, which will be found snugly embedded on the moist earth beneath the outer edges of the tiles, quietly awaiting favourable conditions for emerging from his apparently safe ambush. Some two years ago when on my annual visit to Weston, this newly designed tile was, amongst other interesting articles, placed before a jury of horticulturists who happened to be there, and it struck me as being too flat and close-fitting to the ground to answer the dual purpose for which it was intended. This defect was at once

corrected, and, at my request, two were sent to Eastnor to undergo the crucial test of a fair trial; they have been in use up to the present time, and I am now prepared to say they answer admirably.

So much for snails and Strawberries, so frequently found occupying the same bed, especially in cool, calcareous districts, for much as the silent depredator objects to lime in a caustic state, he evidently enjoys and fattens on it in its primitive form. The use of the Strawberry tile does not, however, end here; on warm, light soils subject to burning and the sudden collapse of established plants, notably the British Queen, it is equally valuable in the prevention of splashing with gritty matter during heavy rains and in keeping the surface roots moist and active during a continuance of hot, dry weather. If in such a light and difficult Strawberry garden there are neither snails nor slogs to eat the finest fruit, the proprietor may indeed think himself fortunate.

From fruit we turn to plants and flowers. Everyone knows a snail will travel a mile for a Christ-



Strawberry tile.

mas Rose, a Dahlia, or the dainty point of a Lapageria shoot, and persevering must the attendant be who succeeds in keeping his treasures safe; but aided by Matthews' tile the feat may be accomplished, as the enemy, foiled in his attempt, settles down under the shelter of the zereba until the attendant can find time to dispatch him.

There are other uses to which this neat article can be turned, such as protecting newly-planted trees or choice plants in the flower garden or on the open lawn, where a ground covering of some kind is required and ordinary mulching may be objectionable. But sufficient has been said to show that the improved Strawberry tile is worthy of the inventor, and may be turned to many uses in every garden, beyond the purpose for which it was originally designed.

W. COLEMAN.

Eastnor Castle, Ledbury.

APPLES FOR BRITAIN.

"It is a continual surprise how bad is the quality of our Apples as regards flavour. In our best markets, even before Christmas, it is often difficult to get an Apple that one can eat uncooked. After Christmas it is almost impossible. We have few good flavoured long-keeping Apples, and the very best of our so-called late dessert Apples are poor in texture. Cooking Apples requiring quantities of sugar to make them edible are, of course, out of the question. It seems to us that the growing of our native fruits is deserving of the best attention. We should raise good kinds which grow their own sugar and be good eating fruits; we mean fruits that one can eat with the same pleasure as a Peach or a Gooseberry. There is far too low a standard of flavour adopted. The far-famed Ribston, although of fine flavour, is often poor and woody in texture. So much attention has been given to the quite secondary qualities of size, colour, &c., by growers and nurserymen, that the few well flavoured Apples we have are either neglected or forgotten. Gardeners waste much time improving Brussels Sprouts, Tomatoes, and other things which are perfection already, and might well turn some of their energy into raising really good eating kinds of Apples. In America there are some three or four kinds which are almost as tender as a Peach, and, whilst good in flavour, perfectly digestible. The variety in the qualities of our own Apples is so great, that we have no doubt whatever intelligent crossing or even seed-raising would give us every quality we seek, and we might have combined the flavour of the Ribston and the texture of the Irish Peach Apple. For at least half the year we ought to have really good eating

Apples. We hold distinctly that our most popular dessert Apples (as they are called) are not first-class Apples.

"The Ribston in texture is by no means so tender, nor the flesh so digestible, as such English Apples as Cox's Pippin, D'Arcy Spice, Claygate Pearmain, the Irish Peach, and such American Apples as Jonathan or Fameuse, which rarely come to this country. Our proposition that there are no good English eating Apples to be had in our markets after Christmas is based on many years' observation of the London markets. Our object in stating it is to call the attention of raisers to the fact that they have much to do if we are to supply the important wants of the market. The home grower has a distinct advantage in this, that the public prefer our own fruit, if good. But our own raisers are on the wrong track as regards well-flavoured late Apples, and we have no society which does such admirable work in this country as that done by the American Pomological Society, the most active for good in its way that we know of. There are good old English Apples which have excellent flavours, but they are little grown. The market growers are all now intent on the kinds they can clear off early in the autumn. The market will probably follow its own laws. That it does so, and that the trade are favouring showy Apples of little value for flavour, are only other reasons why country gentlemen, and those who plant for their own supplies, should take care to secure such well-flavoured late kinds as we already possess, but which rarely if ever find their way to our markets." We take the above editorial remarks from a recent correspondence on this subject in the *Field*.

MANURING BUSH FRUITS.

THIS is the time to lay the foundation of a heavy crop of bush fruits by giving them a liberal dressing of good rotten manure, for, unlike larger-growing fruit trees, in which luxuriant growth militates against fruitfulness, Gooseberries, Currants, and Raspberries fruit just in proportion to their strength—the greater the vigour the heavier the crop. Where the attacks of birds on the buds are not to be dreaded, the best plan is to get the pruning done in December or in January, and then put on a heavy dressing of manure, forking it in lightly around the roots. If, however, birds are persistent in their attacks, I would defer the pruning until the buds are ready to burst into growth, but not the manuring. I find that the young tender rootlets or feeders are actively at work even before any visible signs of leaf growth are perceptible; and this being the case, there can be no doubt that the majority of bush fruits are practically starved into an unfruitful state. The plan of planting bush fruits under the shade of large, overhanging Apple and Pear trees cannot be too strongly condemned. Under such circumstances the struggle for existence is great, and the weakest suffer; they are deprived of light and air by the branches that overhang them and robbed at the root by stronger feeders. Can it therefore be wondered at that their fruit becomes small and hardly worth the gathering? Fault is then found with the variety. I have, however, frequently seen young bushes of these apparently worthless sorts struck from cuttings planted in good positions and treated liberally that produced fruit more than double the size of that on the old bushes; and here let me remark that where an unlimited supply of nutriment has been placed within reach of the roots, small fruit bushes will remain fruitful and vigorous for at least a quarter of a century. Black Currants planted by the side of a ditch, where their roots can always find moisture, will produce heavy crops for an indefinite period, provided the old wood is cut away to make room for the young shoots that spring from the base. If grown as spreading bushes and kept moulded up at the base they last much longer than single-stemmed bushes do. The prejudice against what are called suckers, *i.e.*, shoots that spring direct from the soil, is entirely wrong in the case of bush fruits, for such shoots are quite as fruitful as those from any part of the tree; and

one great advantage of the system is that if any portion of the bush dies away or gets broken it is easily replaced, while single-stemmed bushes take much longer to fill up. As regards digging amongst bush fruits, a slight root disturbance is, I think, rather beneficial than otherwise, although I have seen good crops grown for years without any digging. The manure was simply spread around the bushes and allowed to lie as a mulching, when by next season it is all gone. For the few roots that get broken in forking in the manure are substituted quite a crowd of active rootlets, that are encouraged to spring from the old ones by the rich food placed ready for their use, and thus fertility is promoted.

J. GROOM.

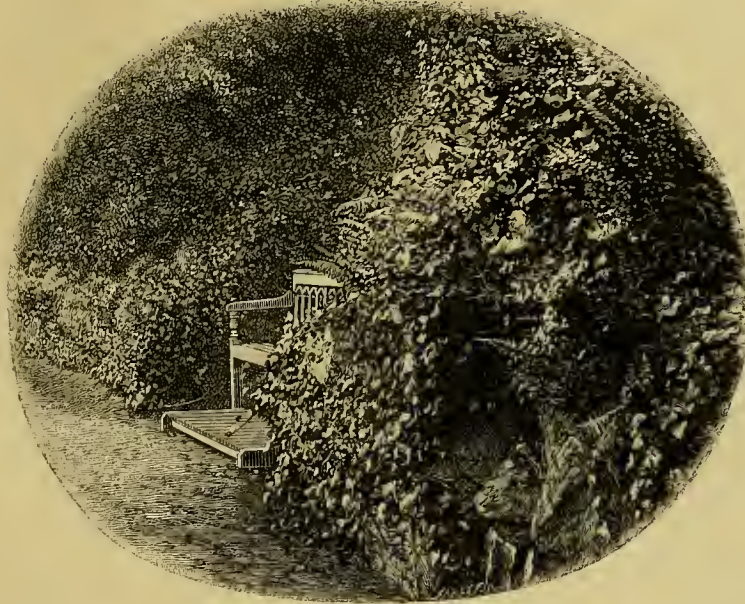
Hants.

Muscat Grapes (*F. W. C.*).—You ask, "What is the proper treatment of Muscat Grapes?" By the manner of your inquiry I take it for granted that you know all about growing other varieties of Grapes, and if so, the additional knowledge required to grow Muscats is of a very minute description; indeed it consists almost solely in using more fuel at certain stages of growth than is needed for other kinds. To be more definite, I would advise that 10° higher than the temperature needed for growing good Hamburgs be given to Muscats when in blossom and till the berries have begun to stone, when Hamburg treatment will suffice till colouring begins; then the temperature should be again increased till the Grapes are ripe; even on the warmest days when full ventilation is required a little fire heat is desirable. The soil of our borders is all of them of the same description, but the Muscat borders are given a much larger percentage of mortar rubble, charcoal, pounded bricks, or burnt soil than the others; indeed, any material of the foregoing description that will keep the soil porous, and as a matter of course warm, will answer. There are those who say Muscats can be grown with as low a temperature at all stages of growth as can Hamburgs. I once made the attempt, but as it ended in ignominious failure, I shall not try again, or advise others to do so.—W. W. H.

Fruit prospects.—In addition to a capital outlook for all other hardy fruits, Pears are a sight to see this season in most gardens, except in some districts over-filled with Evergreens and over-furnished with birds, in which the buds have almost been cleared off. Plums have also fared the same fate; and the same hungry crew are already haunting the Apple trees, and hopping about in tiptoe anxiety to devour them as soon as ready. Fortunately, there is a time of readiness for the birds, and until that is reached they are tolerably safe. Further, unless very hard pressed, the birds do not attack Peaches, Nectarines, nor Apricots; and they seem less fond of Apples than Pears and Plums. But the term "fond" is apt to deceive, and to lead to the impression that the birds ate the buds. They do not; they simply knock them off, at the rate of about a score a minute, and do not even seem to stop to swallow the peck they may possibly extract in the process of knocking the buds down. It seems, in fact, doubtful if they extract anything. It seems far more like a sudden rap or push down with the bill than an abstracting peck, with its sudden fall to the bud. But, apart from these destructive marauders, our fruit prospects are simply superb.—D. T. FISH.

SHADY WALKS.

IN these days, when the love of hardy plants is decidedly on the increase, it is well to recall the fact that many dainty beauties thrive best under such conditions of shade and shelter as this engraving suggests. Here it is where summer suns cannot burn too fiercely or winter frosts bite so keenly, that the first winter flowers will be most fitly placed; where shelter from nipping winds is afforded by the tangle of Fern and Ivy which so thickly covers rocks and ground. If in summer it is greenness and shade that are so grateful, in spring the yet faint sunshine flickering through the branches will here soonest bring forward a host of flowers, whose home is not on the exposed rockwork so dear to true alpinists, or yet in the open border where by-and-by so many flowers will be found, but rather here, where such shelter and retirement are granted. Peeping from the rough stones and through the prostrate Fern leaves, how bright are the little winter Cyclamens Coum and Atkinsi; how welcome the early Snowdrops spearing up through the Ivy; how dainty, a



A shady walk at St. Nicholas House, Scarborough.

little later, are the velvety green and brown leaves of the Dog's-tooth Violet, with here and there a pale pink flower nodding above them. Brighter still 'mid the russet-brown of that Male Fern tuft shine the trumpets of our wild English Daffodil, where coarser forms would seem out of place; and then under February sunshine how welcome stars of pink, white, and blue Hepaticas, nestling among the marbled foliage which here persists through all the storms of an English winter. Here, more in the open, a bolder tuft of Hellebores, and there, a spreading mass of Saxifraga ligulata shines bright and fresh, worthy of a place in any such garden for the sake of their leaves alone, while the beauty and colour of their flowers is heightened by the protection the spray overhead affords. In spring, the Primrose, Anemone, and Wood Hyacinth, or, better still, Scilla campanulata, which enjoys deep shade, contrast charmingly with the green unfolding crooks of the growing Ferns; and in autumn how welcome are the countless blossoms of the Ivy-leaved Cyclamens, which, left to themselves, will in time sow themselves amid the decaying leaves that are fitly hidden by the abundant growth of other plants. If, as in this case, there are such shady walks within sight of the sea, what pleasant memories will such a nook not recall? How sweet to dream away the sunny hours of some summer's

day, watching the countless smiles of mother ocean from amid a tangle of Fern and Ivy, under the dense canopy of an old-fashioned pleached alley, on one side backed by the rising cliff, and on the other open to the sea through a vista of tree trunks. Perhaps it may not be given to many to constantly enjoy such a scene, but who is there that at one time or other has not wandered on our own coasts, be they northern, eastern, southern, or western, but can recall some such happy day, and reap the more enjoyment by reproducing at home something that shall bring back beauty to those who have seen, and lead on others to admire that which is really good in Nature and art. Such are the attractions that any garden can afford where all has not been cut down, swept away and destroyed by the besom of destruction so dear to many who call themselves gardeners. E. H. W.

THE DIVINING-ROD.

ATTENTION having been directed (pp. 190 and 231) to this mysterious and apparently magical

little instrument, my recent observations in connection therewith and conversion against my will to having faith in its power may be interesting to "R. D." (p. 231), as well as to sceptics generally. Up to a very recent period I was amongst the unbelievers in regard to it, but upon the 13th of last month such practical demonstration was displayed by one John Mullins, that others and myself could not offer further resistance to it. Mullins is a mason by trade, intelligent, open, and frank, without any trace of the impostor about him. He attributes his power to animal magnetism, and says that on some days it is more vigorously developed than on others, and that a too frequent use of it exhausts him so much as to prevent him sleeping. He adds that when a youth he watched a dowser, or water finder, using a Hazel twig in search of water; whereupon he was induced to try his hand, when to his great delight he found he possessed the power or secret influence in this direction which so few experience. The rod or twig used is an ordinary branch of Hazel or White Thorn about 18 inches long, A shaped, carried between the thumb and the finger of both hands with the apex slanting downwards. The moment he carries it over a spring or pipe of water or other body of water, up to the perpendicular goes the apex of the twig, and so strongly does water repel its downward movement, that sometimes the twig will actually twist or break when forcibly held down. The electric or magnetic influence may be felt by holding his wrists; by his standing on glass, or other non-conducting substance, he becomes insulated, and the effect is lost. Many successes in finding water on Earl Beauchamp's estates could be named (in fact, not a single failure is known). Amongst the most recent consultations with Mullins was one concerning a well that had been sunk 116 feet without finding water. Mullins selected a spot a few yards distant, where at a depth of 50 feet an inexhaustible supply was found. He again selected a spot, naming water at 30 feet deep, and it was found at 27 feet. Many other instances could be mentioned, and so certain is he of his power, that he offers to dig the wells without charge if proved wrong in his judgment. Mullins was engaged to find water on some farms at Madresfield last week, and on the day before his visit we prepared for him a

series of severe tests. No 1 was to send him into a field which he had never seen before in which a 6-inch socket glazed pipe drain conveyed a stream of water to supply the moat. On the surface there was not the slightest trace of this drain, the depth of which was about 3 feet. A party of fifteen had assembled to witness these tests, and all being in readiness, Mullins commenced to cast about with his twig, when to everyone's astonishment the moment he came upon, or over the water, up went the twig to the perpendicular. He further proved the exact subterranean position of the drain again and again. No. 2 test was similar to the last, but the pipes in this case were of iron, and rather deeper; nevertheless the result was equally satisfactory. Of course every member of the party tried to use the rod, but amongst them only one young lady had any influence over it. Mullins states that the twig or rod also rises when held over copper or gold, but silver has no effect on it.

Madresfield Court, Malvern.

W. CRUMP.

ROSE GARDEN.

ROSES ALL THE YEAR ROUND.

ROSES, like Violets, are always welcome; their delicate beauty, their fragrance and associations, their very name, all stamp them as the most select among flowers. Roses to cut in abundance early belong, however, only to a fortunate few who can devote space under glass to their culture. Those who have no such advantages must do the next best thing, viz., grow out of doors good numbers of the best varieties of all the sections; and by carefully preparing for and planting out a Rose here and a Rose there in the corners or ends of various fruit and plant houses, and at the foot of warm sheltered wall spaces outside, also by forcing a few dozens in pots, one may succeed in encircling the whole year with Roses or Rosebuds. The supply during the darkest winter days may be limited, but even the worst month need not be entirely roseless. Very valuable, then, is the kind called *Homère*, planted in a warm conservatory, the vigorous young autumn growths supplying beautiful chaste buds freely, though a sunny outdoor wall best develops the peculiar crimped beauty of this Rose in the bud stage. I am informed that some twenty or more years ago *Homère* was, for a brief season or two, the pet of fashionable society, just as *Niphetos* is now. *Comte de Paris*, a pinky flesh-coloured Tea of continuous flowering habit, occupies part of the back wall of a late vinery here, and it yields a perpetual crop of delicately beautiful and fairly fragrant flowers, which are peculiarly neat and elegant in the bud state. Equally useful is the lemon-white indispensable *Niphetos* just alluded to. So persistently, indeed, does it flower, that it makes comparatively little haste to fill its allotted space. These, with *Isabella Sprunt*, carry us on to the time when *Maréchal Niel* makes his appearance, which, if gently forced in successional fruit houses, is in March and April. When cut in the half-unfolded state and carefully packed in Moss, blossoms of this fine Rose travel well. They are at that time more appreciated than any other Rose. An annual rejuvenating process in the case of this Rose is the best treatment, as we always get the best crops of bloom by high feeding, and by removing the old wood back to a certain point entirely immediately after flowering, and annually encouraging the production of long, strong maiden canes. Occasionally they break down under the strain, but not so frequently on their own roots as on an alien stock. To succeed the *Maréchal* and *Niphetos* in warm houses, we depend on two trusty veterans growing in a cool greenhouse. One is a *Gloire de Dijon* and the other *Solfaterre*, both on the Brier stock, and growing luxuriantly. They are planted on the floor, level, at opposite back corners of the house, the stems being trained up each end, and the flowering wood carried along on several lines of light wire till they meet in the middle. The best blooms we find are produced from the buds of well-ripened, strong young growths; and of late years we have adopted a system of partial

yearly renewal of the wood with these two Roses—treatment which gives capital results. It would be wasteful to sacrifice succession crops of the grand old *Gloire de Dijon* by cutting back after the first flowering, as is done in the case of *Maréchal Niel*, so there are two sets of wires, one above the other. The flowering wood is in winter all brought down to the lower wires, and the strong young shoots, often 10 or more feet long, which this Rose makes when flowering are trained as they extend along the top wires close to the glass. These in their turn are brought down at the usual winter thinning to the blooming wires. These being at some distance from the roof, room and freedom are afforded the stiff, erect-flowering laterals of the *Gloire de Dijon*, and they do not suffer from coming in contact with the glass. *Solfaterre* succeeds well under similar treatment, and its clusters of pale yellow flowers are delightfully Tea-scented. The protection of glass improves this fine old *Noisette* Rose wonderfully. *Niphetos* and *Maréchal Niel* again in a cool house succeed these, thus enabling us to meet the early blooms that come in on sunny walls of *Catherine Mermet*, *Céline Forestier*, *Triomphe de Rennes*, *Devonien*-is, and *Cheshunt Hybrid*. The queenly *Devonien*-is needs a great deal of room in which to flower freely; and so do *Madame Berard* and *Belle Lyonnaise*, both seedlings of *Gloire de Dijon*, but lacking the merits of their parent. *Cheshunt Hybrid* is a magnificent Rose, though not so fragrant as many, and being a rampant, vigorous grower, suits a high wall. Ours are on the *De la Grifferaie* stock, and bloom early and well. One, having strongly outgrown its space on a not very high wall, the coping was faced with rounded board, and the long growths turned over the top on to a roof beyond to scramble where they liked, and last spring we gathered dozens of Roses from it. *Triomphe de Rennes* is an exuberant climber, towering above *Mrs. Bosanquet* and the old pink *China* planted as undergrowth, thus very profitably furnishing the wall and yielding many beautiful pickings. Outdoor plants in beds and borders being partly on the Brier and partly own-rooted, thus afford a good succession, the own-root Roses throwing up strong summer growths from the ground, which flower abundantly later on, while the hard cutting to which all are subjected that can bear it in June in itself ensures a second growth, and consequently a plentiful crop of autumn blooms. J. C. C.

Japanese Rose hedges.—I have lately planted a hedge which I believe to be entirely new and very promising. It is of young plants of *Rosa rugosa*. This Rose, which is quick growing, has very close strong thorns, and if a hedge of it is carefully made at the bottom, I should doubt if even rabbits could get through it. I used seedling plants, but where the Rose thrives it makes many suckers, and it would save time to use these. This Japanese Rose flowers well even when closely cut in, and the early foliage stands frost.—*GEORGE F. WILSON, Heatherbank, Weybridge Heath.*

Mixed masses of Roses.—We began at the end of last summer to put long branches of our Roses in beds in the way of securing roots on their own account by bending them down, and with a wooden peg securely fixing them a few inches under the surface of the soil, leaving 9 inches or more of the end of the shoot above ground, and burying with soil that part which touched the surface. In this way the different sorts will get so mixed together that we hope to see such a tangled mass of Roses as could hardly be obtained in any other way, and yet differ materially from the ordinary pegged-down beds of Roses. In dealing with weak growers, we have to make the best use we can of the short branches. These are brought down, and a portion of the branch securely fixed under the surface, and if only 1 inch in length of the point of the shoot is out of the ground, it will suffice in time to form an independent plant; and as we value own-root Roses more than others, we do not mind waiting a couple of years, knowing well that at the end of that time

we shall get rid of all anxiety about their dying, and secure plants that will last a lifetime. To do this, however, the soil must be well prepared. It must be dug up deeply and a good dressing of farmyard manure be incorporated with it, placing a good layer of the manure quite 12 inches below the surface. The following sorts always thrive well with us for a few years when budded on the *Manetti* stock; they are a good selection for those who may wish to plant them with the view of ultimately converting them into own-root Roses in the way just described. The plan has much to recommend it, as it gives but little trouble, and the most inexperienced can accomplish all its details without any serious tax upon either time or patience. The sorts just alluded to are: *Glory of Cheshunt*, *Edouard Morren*, *Duke of Edinburgh*, *Dr. Hooker*, *Boule de Neige*, *Paul Jamain*, *Duke of Teck*, *Caroline de Sansal*, *Magna Charta*, *Charles Rouillard*, *Abel Carrière*, *La Reine*, *Jules Finger*, *Charles Lefebvre*, *Paul Verdier*, and *Empress of India*.—*TAUNTON.*

Profitable Rose growing.—A florist in a provincial town, who has six or seven houses heated by two boilers, devotes one of them to the growth of forced Roses. It is a span-roofed structure, one side of the roof of which is covered with *Maréchal Niel*, *Niphetos*, and *Souvenir d'un Ami*. Sufficient heat is given to bring these Roses into flower early in March, and although the house is only 20 feet long and the roof lights only 8 feet in length, sufficient blooms are sold from this limited space to pay for all the firing used for the whole of the houses. In one early Cucumbers are grown, and other structures are used for bringing on plants for cutting and for other purposes.—*J. C. C.*

ROSES AND CAMELLIAS AT WALTHAM CROSS.

THE huge specimen Roses which a few years ago were a sensational feature at our metropolitan and other exhibitions have in a great measure given way to plants of smaller size, but still large enough to exemplify high cultivation, and to show what really useful plants pot Roses should be. For the most part, too, they consist of the newer and better kinds, while the big examples were chiefly old varieties. The principal Rose house in the Waltham Nursery, some 120 feet by 30 feet, is now filled with a grand lot of plants representing all the best kinds proved to answer under pot culture. They are mostly confined to pots ranging from 8 inches to 15 inches in diameter, and collectively are in grand condition. The strength and vigour of the wood, which at the middle of March was a few inches long, was such that cannot fail to yield a magnificent display of flowers later on. The plants are ranged so as to form a central group and two side groups, with an ample pathway all round; standing, as they do, each on an inverted pot, with room enough between to admit of lateral growth, and each to be clear of its neighbour, they give a forecast of what the house will be when the plants are in bloom. No forcing is attempted; on the contrary, the house is kept quite cool with abundance of air on in the daytime both at the side and roof ventilators, when the weather is such as to admit of its being given, so as to keep the growth stout and robust. The construction and position of the house is such as to place the beautiful collection of plants which it contains under the most favourable circumstances as to light for insuring the true character of the varieties being fully brought out. It may be well here to remind those who have not had much experience in the cultivation of pot Roses that there is a wide difference in the treatment required in the matter of air when forcing Roses, so as to have them in flower through the winter and early spring, and their being brought on slowly in the way in which Messrs. W. Paul & Son's collection is managed. Few things are so tender as Rose leaves that owe their growth to fire-heat, and if such were subjected to the amount of air here given, if only for a few hours, the chances are they would be white with mildew

in very little time. When the Roses have flowered this house is filled with pot Vines, and a better structure for the purpose it would be difficult to erect, as the essentials for ripening up the wood, so as to insure the canes having plenty of fruit in them are present.

The companion house similar in size to that occupied by Roses, and standing near it is, as those who have visited this nursery in recent times will have noticed, planted with Camellias. From the season being somewhat advanced, some of the early varieties were getting over; nevertheless, there was a fine and varied display. The collection is a really representative one, including the best old as well as new varieties. Many of the plants have attained a large size, and being in a healthy, vigorous condition and clothed with fine glossy leaves, show up the flowers to the best advantage. Amongst them the following are a few of the most distinct and desirable sorts: Countess of Derby, beautifully shaped, ground colour white flaked with rose; Comtesse de Hainaut, blush, base of petals peach colour; Cup of Beauty, blush white flaked with red; Belle Jeannette, reddish crimson with broad bands of white; Princess Bacchiocci, crimson striped with white; this fine variety, although in cultivation for many years, is not so much grown as it deserves to be; Adamo, pure white flaked with crimson; Candidissima, an old variety not often met with; why, it is difficult to say; the flowers are pure white, and it has the merit of coming in later than most others; Tricolor, now that the beauty of many of the semi-double sorts is duly appreciated, this fine, profuse flowering variety will commend itself to many; the flowers, like those of Donckelaari, consist of about two rows of petals heavily striped and flaked with red. Comtesse Paolini Maggi, pink; Poliuto, deep rose red; Leopoldo Benucci, rose, with a white stripe down the centre of each petal; Dionisia Poniatowski, white; Mdme. Cachet, a large full-sized flower, white, striped with rose; Bella di Arlignone, deep rose, singularly shaded with dark purple; Fanny Sanchioli, creamy white, finely formed flower; Mathotiana, still one of the best of the large-flowered, deep crimson varieties; Mathotiana alba, similar to the last in every way, except that the flowers are white; Auguste Delfosse, shaded crimson, with white stripe, a beautiful sort; L'Innaspettata, deep red, one of the finest late sorts, and good in habit of plant; C. M. Hovey, crimson-scarlet, one of the best and most effective of the large-flowered varieties; C. H. Hovey, dark glowing crimson, medium sized flowers of beautiful shape; Jenny Lind, white, sometimes slightly flaked, a pretty small-flowered sort; Romaniensis, large and fine, white, marbled with lake; Montironi, beautiful, sometimes quite white, and at other times all pink on the same plant; Bonomiana, a beautiful white sort flaked with crimson; Reine des Belges, reddish crimson, fine; the Old Double White and fimbriata, and also imbricata, are too generally known to require more being said about them than that they deserve a place wherever Camellias are grown.

Amongst many other things well managed by Messrs. Paul are Lapagerias, the white and also the best forms of the red variety. These have a house to themselves, just the kind of structure they like—a lean-to facing northwards. Yet, except for the less direct sun they get consequent on the position, it is such as to admit of the plants having plenty of light. They are planted out in a bed some 3 feet or 4 feet wide running immediately up against the front wall, and in which each season the shoots are layered as close as they will allow of. The plants are in excellent order with a strong even condition of growth, there being an absence of the admixture of weak shoots, such as are generally, more or less, present in Lapagerias. In the annual layering effected the natural habit of the plants is considered; through this not being taken into account, Lapagerias not unusually go wrong. Only a portion of the shoots—say one-half—are layered, the remainder being trained up under the roof in the ordinary way. With an erect-growing plant of this description, when the whole of the shoots are brought

down and covered their entire length with earth, the unnatural position sometimes causes the destruction of the plants or reduces them to a weak, sickly condition, from which it takes some time to restore them.

A feature in the outside department here is a long walk running across the nursery, on each side of which is a row of handsome pyramid and bush-shaped trees of Pears, Apples, Plums, and Cherries, representing all the best kinds of each. The trees are in a good bearing condition, and as such add materially to the stock raised being true to name. This season they are covered with a profusion of fruit-buds, which, taking into account the backward state the bloom is in, warrant a crop being looked for.

T. BAINES.

KITCHEN GARDEN.

WHITE PLUME CELERY.

BY PETER HENDERSON.

SOME doubts seem to be entertained that the White Plume Celery sent out by us last year will not come up in all respects to the claims we made for it. The larger experience of last year, when it was grown to some extent for the market, showed it to be even more meritorious than we claimed it to be, particularly in its keeping qualities, which we find to be equal to those of any other Celery grown. We have at present on our grounds fifteen kinds of Celery put away in trenches in the ordinary manner, and find on examination of these to-day that the White Plume is keeping quite as well as any other white kind. When I first described the White Plume, I judged from the natural whiteness of the stalks that it would not be likely to keep well, but actual practice shows that that fear was not realised, and it has now proved to be the most profitable of all market Celeries, particularly for an early crop—that is, the crop that is used from October to January. Last season one of our largest Celery growers, whose grounds are not more than three miles from New York city, grew White Plume to the extent of one-fourth of his whole crop, and realised from it 6s. per dozen bunches, while the Golden Dwarf, after having received much extra labour in banking, sold from the same field at 4s. per dozen. This season at least half the crop will be White Plume. I have said that the White Plume keeps as well as any other white Celery, but all the red or pink Celeries not only keep much better, but are more solid and infinitely superior in flavour to any of the whites, and the wonder is that these are not more appreciated than they are with us.

You ask, who will give us a simple method of preserving Celery for winter? The following plan which we have again and again recommended, and which is practised by thousands of private growers of Celery all over the country, is, we think, the simplest and the best. Get a box 4 feet or 5 feet long, 12 inches wide, and 20 inches or 24 inches deep. In the bottom place 2 inches or 3 inches of sand or soil—it makes little difference what provided it is something that will hold moisture. Into this box at the time when Celery is dug up (which in this district ranges from October 25 to November 25) have the Celery stalks packed perpendicularly with the roots resting on the sand. All that is necessary is to see that it is packed moderately tight, for if not packed tight the air would get around the stalks and prevent blanching. The box may be then set in any cool cellar and will keep from the time it is put away until March if necessary. A box of the size named will hold about from seventy-five to one hundred roots, according to size. It is quite common for many families to purchase their Celery from the market gardeners, place it away in a box in this manner in their cellars during the winter, where it can be conveniently got at, and it costs also in this way less than half what it does when purchased tied up from the benches in the market in the usual way. We have for many years used this method for what we want for our own private use, finding it much more convenient to get it out of the boxes

in the cellar than to go to the trenches in the open ground for it in all weathers.—*Rural New Yorker*.

THE CHINESE YAM.

(DIOSCOREA BATATAS.)

WHEN years ago it was thought that this Yam might become a substitute for the Potato I well remember assisting in the propagation of a large stock of it. In spring the tubers were cut up into sets like Potatoes and started in pots, and as the climbing stems grew rapidly they were trained to stakes, and the young plants were gradually hardened off by exposure to the open air. In July propagation, by means of cuttings, was commenced; the cuttings, which consisted of one joint and leaf each, were inserted in very small pots and set under hand-glasses until well rooted, when they formed little tubers at the base exactly as Dahlias do. They were left in the pots and dried off for the winter, and by the end of the first season we had a large stock of roots ready for planting out. During winter a large heap of materials of all kinds was got together, such as old potting soil and other refuse, rotten manure, leaf soil, and ashes; in spring, about the end of March, the whole mass was turned over and levelled to a regular depth of 3 feet. In this the sets and small tubers were planted in lines 1½ feet apart in April, and as soon as growth commenced supports were put to the twining stems. Beyond keeping them free from weeds, no other attention was necessary until the time came for lifting the crop in autumn. In doing this we began at one end; the whole mass of soil was turned over, and the tubers were taken out, carefully laying them straight in boxes, for if broken they lose a great deal of white, milk-like juice, and when cooked were by no means so good as those whose skins were uninjured. In fact, they want treating as carefully as Beetroot as regards this matter. These Yams had a peculiar nutty flavour, and it is singular that they have not found more favour than they have done as a change now and then; but as a profitable crop for market, I feel confident that, with Potatoes at the price at which they have been during the last few years, the balance of profit would be on the wrong side. Doubtless the Yams might be grown with less labour than those to which I have just adverted, but they will never make a substitute for the Potato.

J. G.

Gosport.

Cure for the Potato disease.—In a circular now being distributed by the manufacturers of Thomson's Vine manure, it is certified by that firm that of a house of Tomatoes grown at Clovenfords "one half of the plants were manured with farmyard manure, the other with the Vine manure. The former were attacked with the Potato fungus and nearly all destroyed; the latter had not a spot of disease on them." I consider this a most important contribution to the history of the Potato plague. One half of the plants destroyed by the disease and the other half with "not a spot" of fungus upon them is a most remarkable result.—POTATO GROWER.

Cropping south borders.—I have here six south borders, each 80 yards long and 14 feet wide, which I take especial care to keep fully employed. No. 1 is now sown with Onions, following Brussels Sprouts. To this border we gave a capital manuring and top-dressing of Beeson's manure. The Onions will be followed by Cabbage and then Brussels Sprouts, the latter two crops without any digging or manuring. No. 2, now occupied by Snow's Broccoli, will be dug and manured, and planted with early Potatoes the first week in April, to be followed by Spinach and Brussels Sprouts. No. 3 is now occupied with Peas; this crop follows Cauliflowers, and will be succeeded by Snow's Winter White Broccoli (still the king of winter Broccoli). This border was well manured for the Cauliflower and Broccoli crop. No. 4, now occupied by Brussels Sprouts, after Spinach, will this year be well dressed and planted with pot Strawberries, which have been forced, for an autumn crop. No. 5, now used for

Spinach, which succeeded early Peas, will this season be planted with Brussels Sprouts without any further digging, and here I may note that we have gathered on an average 3 bushels of Spinach weekly since the 1st of last October. No 6 and last is now cropped with a miscellaneous collection; in fact it was our autumn seed border, where we grow a plentiful supply of young Carrots all through the winter, Tripoli Onions, Lettuces, Cabbages, &c. The whole of this border will be cleared and planted with a selection of all the best Kidney or early Potatoes, merely as a trial border, so that should this meet the eye of any of my Potato-growing friends, I hope they will enrich the collection by sending by parcels post a few samples for trial.—R. GILBERT, *Burghley*.

Root-restricted Tomatoes.—It is a fact that Tomatoes grown in pots or boxes and allowed to root into the border produce fruit more freely and of better quality than when planted out. Instead of starting into strong growth, they experience a check, which causes the first of the flowers to set, and by the time the roots have found their way into the border the plants will have set a considerable quantity of fruit; this keeps them from becoming over-luxuriant afterwards. We prefer the cordon style of training, not as single cordons, but three stems to each plant. When about 3 feet long fresh shoots are started from the bottom and trained on the top of the first ones. In this way plenty of fresh foliage and young wood is maintained, and the first shoots can be readily cut out when done fruiting. Some growers do not syringe Tomatoes, alleging that it brings on disease. We do not find it to do so; in fact, it is the most effectual remedy with which I am acquainted for white fly.—J. B.

RAIN-WATER TANKS.

THE advantage of having a good supply of rain water for horticultural purposes is generally acknowledged, but, like many other things, inadequate means are often taken to secure it. Usually bothouse designers have no idea of the quantity of water required in houses full of plants in pots, or fruits either in pots, or planted out; during the past few years fruit tree borders have received far more watering than they used to do, and with better results than formerly. Rain-water tanks are as a rule too small; they hold enough to supply all wants so long as it rains a good downpour about once a fortnight, but anything like a protracted drought soon exhausts the supply, and hard water is again in demand, necessitating the employment of extra labour to get an inferior article. Passing through a trade establishment the other day in which cut flowers are grown for market, I noticed a very good arrangement for catching rain water—viz., that of making the pathway between every second pair of houses a large tank by simply carrying the outer walls down to the required depth, paving the bottom and covering the whole surface with cement; this did away with the necessity for a gutter on one side of each house, as the water ran right off the glass into the tank, and that from the opposite side was carried down to one end, and thence into the tank. Inside the houses the same kind of tanks under the stages as those in ordinary use were employed, and as soon as the supply of tepid water in these ran short they were filled up from the reserve outside. I am aware that it is not all times practicable to adopt such a plan, and I only give it as an illustration of the high value which growers of flowers for market set on rain water, and private gardens ought also to be well supplied with water of this kind. As a rule houses in private gardens are too much scattered, thus involving extra labour. It is no exaggeration to say that the water supply in many good gardens is of the most makeshift kind. Plenty of it is allowed to run to waste down the drains when it rains, and in time of drought a water famine is the result. Everyone who has a garden, large or small, should make provision for storing every drop of rain water that falls off not only the glass roof, but also off those of every kind of building on the premises, and cement

tanks in some form or other offer the readiest way I have yet seen of maintaining a reserve supply. J. GROOM.

WATERING-POTS TOO LARGE.

Few garden utensils are in more constant use than watering-pots, and yet it appears to me that we have not yet adopted the most convenient form or selected the best material for them. Of one thing I feel sure, and that is, if we cannot improve their form we might reduce their size with advantage. For years I have set my face against using the largest size that is common in many gardens. The ordinary 4-gallon pot is too heavy for any man to use with comfort if he has any distance to carry it when full. In such a case I consider it an unnecessary tax upon the labourer and no gain to the employer. At first sight a large pot might appear to be economical, but when put in practice it is not so, as I learnt years ago from actual experience. Since I have had the direction of garden work my largest pots only hold 3 gallons, and I find with these that men do more work without experiencing the amount of fatigue which they do when larger pots are used. Respecting the wear of watering-pots, I am not sure that all of us pursue the most economical course in order to keep them in good condition. It is the rule, I believe, to use them without bestowing on them any attention while there is no leakage. I am satisfied that this is not the sort of treatment likely to insure the best results. If they got a coat of paint both inside and out once a year, it would prevent the tin rusting, and thus obviate leakage. Of course there will be a time when even a coat of paint will not keep them sound, but it would certainly be the means of their lasting longer than if without it. I have found that an iron rim fixed on the bottom to be a great saving. This rim is simply a piece of iron hoop placed edgewise, and about an inch in depth, so that the bottom of the can is that much above the ground. The ordinary plan is to place three pieces of tin in a convex form on the bottom to keep them off the ground, but it is well known that these soon disappear and the bottom has to come in contact with whatever comes in its way, and as a consequence there is soon holes in it. Not long since I had a water-can shown me that was made of copper, and which had been in constant use for twenty-three years. It had cost scarcely anything in repairing. It was certainly heavier than one of the same size made of tin, but the lasting property of copper over tin was so manifestly clear, that I have often since wondered why copper has not been more generally used than it is. The first cost would of course be more, but in the end the gain would be on the right side. J. C. C.

Soot water not only assists growth, but makes the foliage dark in colour and healthy. This is seen in a very striking way when soot is sown over Grass if a portion of a meadow happens to be missed, as the herbage on the part dressed will assume a rich green hue very different from that of the other. The same thing happens in the case of plants in pots, or fruit trees in the open, where one has it and the other is missed. Not only has soot water a very beneficial effect when given to the roots, but it is of great value for syringing, as it keeps insects in check without in any way doing harm to the leaves if quite clear when used. In order to have it clear, put the soot in a coarse canvas bag, and then sink it in a tank or tub of water, and there let it remain till the water is deeply stained, when it may be taken out, emptied away, and the bag dried ready for using for the same purpose again. Where soot water is required in large quantities it may be made by first mixing up the soot into a thick paste, and then putting it into a large tank, when, after a few weeks, it will settle to the bottom, leaving the water coloured, but clear, and if not, a little lime will soon make it so by helping to precipitate the soot; besides which the lime will make the liquid better for plants, except Heaths and Azaleas and such as are of a hard-wooded character.—S. D.

GARDEN FLORA.

PLATE 487.

SOME CULTIVATED STONECROPS. (WITH A FIGURE OF *SEDUM CORSICUM*.)

No class of hardy plants can, as a whole, perhaps, be cultivated with greater ease or better repay any little attention bestowed on them than Stonecrops. Both Stonecrops and Houseleeks are familiar window plants, and patches of the latter may often be found nestling on the roofs of country cottages. As regards Sedums, *S. acre*, album, rupestre, and many others grow freely almost anywhere, and crumbling walls and loose rubble are the favourite resorts of others. The tall-growing kinds, such as *S. spectabile* and maximum, fill important gaps in mixed borders, where their tinted leaves of many hues may often be effectively distributed. Kinds belonging to this group require a strong rich soil. All the deciduous Stonecrops are readily increased by division of the roots, an operation which may be effected as soon as the stems die down in autumn. The evergreen class are increased by means of cuttings, which root readily if taken off about the end of July, and form sturdy plants before winter sets in. The rarer species may be raised from seed.

S. ACRE (Biting Stonecrop).—A native species and very common, but too useful to pass unnoticed. For covering wall tops, barren sandy banks, and as an edging plant this *Sedum* is invaluable. In short, it thrives admirably in the bleakest spots. It may be used with advantage as a carpet plant. It may be propagated to any extent by simply parting or dividing it.

S. ALBUM (White Stonecrop).—This is not so plentiful as *S. acre*, being only occasionally met with in chinks of rocks or on old walls. As a flowering plant it is superior to *acre*, and indeed vies in that respect with the majority of the genus. Its long cyme-like panicles of pure white or slightly pink-tinged flowers, set off by bright red anthers, are hard to surpass amongst dwarf summer flowering plants of this class. It grows from 4 inches to 6 inches in height, its barren shoots generally creeping and rooting at the joints. The leaves are alternate, spreading, roundish, slightly glaucous, and often changing in autumn to red or bronze. It flowers in July and August, and will be found suitable for the positions recommended for *S. acre*. It varies somewhat under cultivation, the following being the most distinct varieties, viz.: *Tetrefolium*, having more flattened leaves; *brevifolium*, leaves not so long, and a little thicker than those of the type; and *micranthum*, leaves ascending not spreading, flowers smaller.

S. CERULEUM (Blue Stonecrop).—This is a charming little plant, its pretty globose tufts of pale green reddish-spotted leaves setting off its handsome blue star-like flowers to advantage. It may easily be established on narrow ledges, or on the tops of rough tufa stones, where it never fails to be attractive; when grown on stones, where soil is scarce, it should be placed in semi-shady positions. It forms ball-like tufts of stems branched from the base, and hardly more than 2 inches high; its leaves are roundish and nearly oblong. It flowers in July and August, and is a native of the Mediterranean region (syn., *S. azureum*). It is an annual and easily raised from seed, which it ripens in abundance.

S. CORSICUM, of which a coloured illustration is here given, is named in the *Botanical Magazine* *S. dasyphyllum* var. *glanduliferum*, but it is better known in gardens as *S. corsicum*, and as such it is described in De Candolle's "Prodromus." The shorter name, which is most convenient, marks a plant distinct enough under cultivation to entitle its separation from *S. dasyphyllum*. It belongs to a group in which *S. brevifolium* and *S. album* have been placed, and, like its allies, it grows



SEDUM CORSICUM.

freely when fairly established on overhanging ledges and dry warm shelves where there is just sufficient soil for root-hold, or on dry stony slopes on the rockery it succeeds perfectly. It is one of



Blue-flowered Stonecrop (*Sedum carnium*).

the reputed tender species, but that may be owing to the difficulty that exists in getting it established, for, as has just been said, when once fairly started it gives little or no trouble and seems to flourish best during the warmest seasons. Under conditions similar to those just stated it forms close neat carpets of pure white flowers, relieved here and there by breaks showing its pretty foliage, the latter backed up probably by some Moss-covered rock. The flowers, which are about half an inch in diameter, are borne on short stalks, and the plant altogether is not more than 2 inches high. It is a native of the Mediterranean region and flowers more or less throughout the summer. To the above may be added

S. EWERSI.—A perennial species, of singular value in gardens owing to its neat habit and ornamental foliage. It is reported to be tender, and is recommended for indoor cultivation, for which it is very useful; but we find it to withstand our most severe winters in the open air, especially plants of it raised from seed sent from Siberia and Northern India. It is very useful for mixed borders, and though it rarely attains half a foot in height, it forms nice spreading tufts suitable for front rows or for edgings. The stems are close and trailing; the leaves opposite and almost round, with cordate bases, and intensely glaucous. The flowers, which are numerous, are of a purplish or violet colour and very pretty. They are produced in July and August. The variety *S. E. pedicellatum*, which is upright in habit, has the same characteristic leaves as the type, and flowers about the same time.

S. FARINOSUM.—An extremely pretty dwarf species, not unlike alburn in habit and in the shape of the leaves, but covered with a white



Bird's-foot Stonecrop (*Sedum pulchellum*).

or mealy pubescence, which makes its tufts conspicuous even at a distance. It should always be planted in sunny dry positions, for when too much shaded the mealiness, one of its most conspicuous features, almost disappears. The flowers, which are small, are white, and produced in July. It is a native of Madeira.

S. GLANDULOSUM, a rare and beautiful annual species, introduced, it is supposed, from Escorial,

in Spain, a few years ago by Mr. Maw, of Broseley. It is found also on the Sardinian Mountains, where in large masses it is said to present a striking appearance; like *S. corsicum*, its habit is branching, and the whole plant is thickly beset with small gland-tipped hairs. Its flowers, which are pink with dark reddish or purple anthers, are produced in the greatest abundance. It blooms in April, and therefore may be used advantageously for pot culture.

S. KAMTSCHATICUM.—This species is nearly allied to the ordinary *S. hybridum* of gardens, but differs in being taller, and in invariably having opposite leaves, and flowers with more pointed sepals. It seems to be a combination of *S. stoloniferum* and *S. aizoon*, possessing the habit of the former and the flowers of the latter. It is a useful rock plant, thriving alike well in shade or sunshine. It grows about 9 inches high; its leaves, which are oblong, gently taper into the leafy petioles; they are dark green in colour, and regularly toothed. The flowers, which are borne in umbels, are about 1 inch in diameter and numerous. They are yellow, and produced late in autumn. It is a native of Kamtschatka and Japan. Along with this may also be mentioned *S. Selskianum* and *S. japonicum*, the latter a rare species.

S. LYDIUM.—This charming little species makes a good carpet plant, and it also makes a good edging. It grows on old walls, even if wholly shaded, and thus situated its leaves assume a rich



Sedum spectabile.

deep green colour, different from the brownish red colour which they attain when growing on dry, stony grounds. It may be propagated much in the same way as *S. acre*—i.e., divided into small pieces and planted in spring, when they attain good-sized tufts before autumn. It grows from 2 inches to 5 inches high; its leaves are flattish and crowded on the stem; its flowers, which are small, pink, and very pretty, are produced in summer and early in autumn. It is a native of Asia Minor (syns., *lividus-anglicum* and *pulchellum*).

S. GLAUCUM, a nearly allied species, is used for similar purposes, and, having pretty glaucous foliage, is known in gardens as *S. hispanicum* and *S. sexfidum*.

S. MAGELLANICUM.—This handsome species forms spherical tufts of bright, shining, yellowish green leaves, not unlike those of *S. alburn*. Its flowers are not showy.

S. MULTICEPS.—This is an Algerian species arboreal and distinct in habit, and though little known in gardens at present, of rare merit for carpeting and similar work. It is also admirably adapted for shady nooks on rockwork, where it may be grown with ease in ordinary soil. It rarely attains more than 6 inches in height, forming much-branched tufts, which emit roots in abundance, and thus greatly facilitating its propagation. Its leaves, which are borne in dense rosettes, are almost globular, pale green in colour or slightly glaucous, often pink-tipped in autumn, and very pretty. The flowers, which are pale yellow or straw coloured, are borne on erect

stems, as high again as the barren ones. It flowers late in the summer.

S. PULCHELLUM.—This has rosy lilac flowers, which are extremely handsome, and these, coupled with its neat trailing habit, make it an attractive plant for rockwork. Its stems, on which the smooth, obtuse, pale green leaves formed at the base into two, ear-like appendages are scattered,



Sedum spurium.

grow about half a foot in height. Its flowers are produced in umbellate heads, curved like claws. It is a native of Virginia and Georgia, and flowers in July; in gardens it is often confounded with *sexangulare*, but the latter is easily recognised by its yellow flowers.

S. POPULIFOLIUM.—This is one of the few species of *Sedums* that are shrubby, and one well adapted for rockwork. It may also be grown in pots for the greenhouse, for, although perfectly hardy, its sweet Hawthorn-scented, whitish flowers are both agreeable and desirable indoors. It grows about a foot in height, has erect brown glabrous stems, and pretty, irregularly toothed leaves of a soft green colour, borne alternately and deciduous. This species may be easily propagated by cuttings taken off in the latter end of summer and placed in a little heat; they root freely, making sturdy plants, which may be wintered without hurt in a cold frame. It flowers in July and August and is a native of Siberia.

S. SEMPERVIVOIDES (Houseleek Stonecrop).—A peculiar and interesting species, closely resembling the Houseleeks. It is rarely met with in gardens, probably owing to its not being perfectly hardy, except in favoured localities, and also to its being a biennial. It flowers freely the second year, after which it dies, but as it is easily raised from seed, no difficulty will be found in perpetuat-



Common white Stonecrop (*Sedum alburn*).

ing it. The seed may be sown about the beginning of February in gentle heat or even in a close cold frame. Prick the young plants off as soon as ready to handle, and when large enough they may either be potted off singly or transferred to the rockery. From a rosette of thick, fleshy, wedge-shaped leaves it sends up a many-flowered panicle

of handsome scarlet flowers, resembling those of *Rochea falcata*. It is a native of the Caucasian Mountains, and flowers in July. It is the *Cotyledon Petalozæ* of gardens.

S. SIEBOLDI (Siebold's Stonecrop).—Although fairly hardy as a rule in sheltered positions out-of-doors, this is essentially a greenhouse species. Under glass it can be utilised in a much better way than in the open border. It makes a good basket plant, a purpose for which its gracefully drooping stems well adapts it. It is a fast grower, and a good basketful of it may be had from autumn-struck cuttings, which strike root freely.



-leaved Stonecrop (*Sedum populifolium*).

The stems, which grow about a foot in length, are slender and curving or drooping; the leaves, which are glaucous and pretty, are borne in whorls of threes. The flowers are produced in compound heads, terminating the stems. They are bright rosy purple. It is a native of Japan, flowering in August. There is also a variegated form of this species, the branches of which, like those of the type, quite hide the pots, and both are very effective when placed along the edges of front stages.

S. SPATHULIFOLIUM.—This may be met with in gardens under the name of *S. obtusatum*, but it is distinct from the Californian plant. In addition to being useful for rockwork, it makes a good pot plant, and may be used with success where variety is wanted, not only on account of its showy flowers, but also on account of its blood-red or bronze-coloured leaves, which are very beautiful in autumn. It grows about a span high, is more or less creeping, and much branched in habit. Its leaves are irregularly scattered on the stem, in the case of the barren shoots, forming a close and pretty rosette, spatulate, and tapering quickly to a broad stalk; those on the flower-stalk are narrower and more or less club shaped. The



Common Stonecrop or Wall Pepper (*Sedum acre*)

flowers, which are yellow and produced in profusion, are about half an inch in diameter, and borne on short branchlets, forming handsome clusters in June and July. An inferior form of dwarfier habit, and having much smaller leaves, is also in cultivation. Both are natives of North-west America.

S. TRIFIDUM.—A Himalayan species found plentifully on rocks and also on trees, and although one of the most distinct of *Sedums*, often confounded with *S. asiaticum* (*S. Wallichianum*) in gardens; the latter an inferior species. *S. trifidum* grows about a foot high and unbranched; the leaves are collected at the tops of the stems, which are spreading, and from the centre the flowers are produced; they are purplish or red, and last all through the summer. It is increased by division. It thrives best in shady nooks

S. TELEPHIUM.—This belongs to a group which furnishes not a few desirable border plants. Their foliage is handsome, and the charming way in which their various colours combine with those of other plants enhances their value for the decoration of mixed borders. *S. Telephium* has an erect habit, and grows from 1 foot to 2 feet high; its large oval or oblong leaves, which are



The Orpine (*Sedum Telephium*).

purplish coloured, are spread at intervals on the stem, and in spring, when young, are very ornamental. The varieties are *arduenense*, *Jullianum*, *thyrsoides*, *umbellum*, and *repens*.

S. MAXIMUM.—This belongs to the last named group, some of the forms of which, especially *cordifolium*, *hamatodes* (better known as *atropurpureum* or *purpureum*), *ternatum*, and *serotinum*, owing to their variously tinted leaves are very useful on rockwork, and, like the varieties above named, very effective in spring; indeed, almost as much so as when in flower. *S. spectabile*, *S. erythrostichum*, *S. telephioides*, &c., are all useful for succulent bedding or mixed borders in prominent positions.

The following species may often be met with in gardens, viz.: *S. Aizoon*, a good yellow-flowered rockwork plant; *S. alsinacifolium*, *S. amplexicaule*, *S. asiaticum*, *S. Beyrichianum*, *S. Cepea*, *S. collinum*, *S. crassipes*, *S. dentatum*, *S. elegans* *Fosterianum*, *S. Maximowiczii*, a pretty species suitable

for the rockery; *S. Middendorffianum*, *S. Nevi*, *S. ochroleucum*, like a miniature *Crassula coccinea*, a fine plant for scrambling amongst loose stones or overhanging ledges, its stems trailing about 2 feet in length. This species is remarkable for the time it can remain without water. *S. oppositifolium* and *S. oreganum* are pretty species, the



Sedum maximum.

last with fleshy leaves about half an inch long. It is quite hardy, and does well on dry slopes. *S. reflexum*, *S. rhodanthum*, *S. Rhodiola*, a fine border species; *S. roseum*, *rubens*, *rupestre*, *Semenovi* *sexangulare*, *spurium*, and *stellatum* are also all good. D. K.

WORK DONE IN WEEK ENDING APRIL 7.

APRIL 1.

COLD winds, but otherwise grand weather; having continued for so long, all our kitchen garden seeds that it is advisable to sow at present have been got in, and Potato planting has also been completed to day. Our favourite main crop varieties are *Magnum Bonum* and *Reading Hero*. A few early Ashleaves planted on a south bank that were just breaking through the soil have been earthed over to protect them from frost, and eventually, as growth advances, they will be given additional covering in the form of straw or long litter. Planting out hardy plants in formally designed flower borders. The design consists of oblongs and circles, and in the latter are small shrubs—*Retinospora plumosa aurea*—and in the oblongs the small, upright-growing *Lawson Cypress*, *erecta viridis*. They are kept in compact form by "knifing" out the points of the branches twice a year, now and again about midsummer. *Herniaria glabra* and



Sedum Maximowiczii (flowers yellow).

Sedum acre elegans are the plants used for forming the divisional lines of design, the width of the lines being 9 inches. Filled in drills of earliest

Cauliflowers, and planted out a few more also of Lettuce and Coleworts that were sown in warmth in February. Many of the spring Cabbages are running to seed instead of bearing, and these Coleworts will be needed to fill up the gaps that this mishap occasions. Put in cuttings of

for Brussels Sprouts and sowed the drills with soot, to make short work with slugs before the plants are put out; planting flower border, as yesterday, and sowed Asters, Stocks, Zinnias, and Everlastings in cold frames; about 5 inches depth of light soil is all that is required, and the seeds

we sow thinly in shallow drills made by pressing in the edge of the measuring-rod, and which are 4 inches apart; the seeds are carefully covered in with the fingers and a watering given to settle the soil about them, and the frames kept close till the seeds make their appearance through the soil. Muscat Vines being in full flower, are artificially fertilised at midday by use of a camel's-hair pencil on dull days, but when sunny a gentle tap of bunches and rods, to cause the pollen to disperse, is sufficient. The foliage has been tied aside to let full daylight and sunshine on the bunches, and no pinching whatever of shoots is now done, or will be, till the fruit has set; 70° on the coldest and 5° more on warm nights is our minimum temperature for Muscats in flower. Strawberries give us no anxiety now—only labour, and this is great, both as to watering, thinning the fruit, and shifting about of plants as ripe fruit is gathered. Watering is of first importance now, and if fine fruit be required, early thinning out is equally so. Disbudded Peaches in late house and gave the

border (inside) a thorough watering with tepid water, a heavy mulching of litter being afterwards given. Pricked out sundry seedlings for the flower garden, amongst them being Perillias, Amarantus, Scabious, Grevilleas, and Centaureas.

APRIL 4.

There is as yet no cessation of the biting north-east wind, or of sharp frost by night, and the bright sunshine having forced into flower Plums and Pears on walls, more covering netting has been applied, and the movable coverings are kept down day and night as long as keen winds continue. Planting hardy plants in flower borders and also Asparagus. Sowed half-a-dozen kinds of midseason Broccoli, Curled and Cottager's Kale, also Savoys and Cauliflower. They are sown on a border having an east aspect, and in drills 6 inches apart, a distance that renders it unnecessary to transplant them till they are finally planted out. They are netted over soon as sown, else sparrows and tomatoes would have every seed. Now that herbaceous plants have started into growth and that vacant spots can be seen, layers of Pinks and of the old red Clove Carnation have been dug up and planted to fill up such vacancies. A few good kinds of summer-flowering Violas have also been planted in bare spots near the front of the borders. Swept up walks and lawn where needed. Indoors, but little else has been done except the usual routine and Saturday's cleaning, re-arrangement, and shifting of plants. Watered Pines and threw away some that were fruiting prematurely, owing to lack of bottom heat in the winter, which gave them a severe check that did not show itself till the plants had been re-potted and plunged in proper bottom heat, when, instead of growth as desired and expected, they showed for fruit, but such puny shows as not to deserve house room, and more particularly so as we have abundance of

good shows and fruit. Tied up Melons and well soaked the border (2 feet in width only) with water at a temperature of 80°; the bottom heat ranges between 68° and 75°, and it is our invariable rule to have the water a few degrees warmer than the temperature of any border that is to be watered. Disbudded some of the young Vines in latest house—Lady Downes—the weakest break first, as well as most regularly, scarce a bud remaining dormant. I have observed such to be the case for years now; at the same time I have never experienced any difficulty in getting the strongest to break well by slinging down or bending the Vines, giving abundance of atmospheric moisture and syringing the canes at least twice a day.

APRIL 6.

Showery in the early morning, but fine and mild afterwards. Took stock of tender kinds of bedding plants, that numbers, &c., might be compared with the computed numbers that our bedding arrangements take, that propagation of the several kinds might continue or not, according to requirements. Put in other cuttings of *Kleinia repens*, *Pompone Dahlias*, variegated *Mesembryanthemum* and *Ageratum*. Potted off remainder of *Abutilons*, and potted into larger pots *Fuchsias* and *Pelargoniums* intended for vase plants. Pinched out the points of the most prominent growth of *Figs* and picked off more of the fruit. This house is badly heated, and we have therefore to force it along on sunny days by closing up very early, at which time both trees, floors, and walls are heavily syringed. Tied down shoots of second Peaches, and took off a few more to prevent overcrowding. The fruit is ample, though not abundant, and, therefore, none but those in clusters have been thinned out. Rolled all parts of walks that were recently newly gravelled; the showers were needed before rolling could have the desired effect—that is, of binding the gravel together. Weeding of gravel we also do in showery weather, and roll as each part is finished. Turf that was laid in the winter, and plots sown with Grass seeds for forming a turf, have also been rolled, and the process will in each case be repeated in suitable weather till seedlings and turf are deeply rooted. The perfection of both walks and lawn is attainable only by frequent rolling. Other outside work has been of the same description—mostly kitchen gardening—as for several days past. In the forcing department the linings of manure frames have been renewed, and the second lot of Potatoes earthed up with leaf-soil. Herbs are now coming on fast out-of-doors,



Sedum trifidum (flowers crimson).

Alternantheras; all are struck in manure frames, and remain there till planted in the beds. These cold nights the lights are thickly covered, and the sides of the frames securely packed with litter. Potted young Vines out of 3-inch into 6-inch pots; the points of extra strong roots we pinch out, as their tendency is to strike right down into the crocks, and this the pinching prevents, and tends to the production of a greater number of lateral rootlets. Watered young Vines that were planted out a few weeks ago; they have already made over 2 feet of new growth, and will now take a lot of water, part of which labour, however, we save by the coverings of litter that are given to all our borders. Finished thinning early Grapes, and stopped and tied down the shoots. Our night temperature will now be 65° and the same by day, with a rise to 80° by sun-heat, and at closing-up time walls and floors will be well syringed, and on alternate days a couple of pots of manure water will be sprinkled over the floor surface for the creation of an ammoniacal atmosphere, which is detrimental to the spread of insect life, and is otherwise beneficial to the Vines—if I may so put it, as a manure for the foliage.

APRIL 2.

Making a new plantation of *Asparagus*. The ground was trenched as deeply as we could do it in the winter and a couple of layers of well decayed manure given during the process; trenches a yard apart and 9 inches deep have now been thrown out, and in these, at 2 feet apart, the plants are being laid and covered in to the ground level only, the soil being made moderately firm, and soon as the planting is done the entire plot will have a good sprinkling of salt, and the process is completed. Staked more Peas and earthed up first lot of Broad Beans, and drew deep drills



Sedum kamtschaticum (flowers yellow).

and, therefore, those we have had in pots and boxes for the winter have been turned out; supplies of Mustard and Cress are being now sown under handlights on any spare border in kitchen garden.

APRIL 7.

Another sharp frost this morning—8°. The frequent recurrence of such sharp nights has caused us to keep wall fruits covered all day long, as it is but reasonable to suppose that the extreme of heat by bright sunshine, and of cold by night, must in some measure be more injurious to the trees than when the temperatures are more equable. On dull days, and when the wind is not a stinging north-easter, the coverings are rolled up. Finished planting Asparagus, mulched Globe Artichokes with good stable litter (I know of no vegetable that needs more feeding than this, and certainly there is none that proves less satisfactory under impoverished treatment; the heads are produced just as freely, but they are small in size and wretched in quality); the thick mulching applied now, whilst the ground is wet, will keep the plants in the finest order all the summer, though if the season should prove very dry we shall give them a soaking with diluted sewage. Dug up the last row of Celery, and heeled it in on a north border, the ground it occupied being required for Peas, another sowing of which we made to-day, the varieties being Champion of England and British Queen. Staked Hyacinths in beds; mats resting on Hazel sticks bent over the beds and each end stuck in the soil is our mode of protection on cold nights. Potted off latest lot of Chrysanthemums, and set them in a cold pit, which, for about a week after potting, is kept rather close, but afterwards abundance of air and room is given to induce a stocky growth. Bouvardias have all been re-potted, and to start them into kindly growth they are placed in a heated pit, in which a temperature of 65° is maintained, with a moderate amount of moisture. Euphorbia jacquiniæflora and young plants of Gardenias share the same pit and do well therein. Stopped and tied down shoots in greenhouse viney; these Vines are planted at a great distance apart, and therefore the shoots are allowed to extend several points beyond the bunches before they are pinched, and I think this extra amount of leafage has much to do with their vigorous state at their advanced age. Repeated restriction of growth must necessarily cripple root action, and as a consequence, sooner or later, beget decrepitude. Hardy plants, or those that are nearly so, and that have been propagated in cold frames, have had a general overhauling to-day in the matter of weeding, stirring the surface soil, and watering. Some of the frames are required for propagation of Alternantheras, and these have been taken off the plants, and a few sticks bent over on which to fix the covering of mats that will be needed on cold nights.

HANTS.

FRUITS UNDER GLASS.

FIGS.—Pot trees plunged in bottom-heat and started at the end of November or early in December will now show signs of swelling off their earliest fruit for ripening, and as flavour is the true test of merit, a gradual change of management must be brought about if this important point is to be secured. If the roots have been well mulched and fed, and the foliage copiously syringed, the Fig grower's pest (red spider) will not yet be present, but if in any dry corner it has gained a foothold, a strenuous effort must be made to dislodge it before the trees are subjected to a higher and drier temperature, at all times so essential to the proper maturation of this delicious fruit.

Syringing may be vigorously followed up twice a day until the fruit begins to change colour, and then the walls, stems, and other surfaces, including the lower parts of the trees, must not be neglected. The water used for syringing should always be a few degrees warmer than the mean of the house, and it should be applied to the under sides of the leaves with considerable force, as it is there the first web is invariably found. The Fig, like all other free-livers, delights in a variety of food, and luxuriates on the ammonia given off by clear, diluted liquid when syringed in amongst the pots and stems, or clarified soot water, not too strong, applied as a regular leaf bath once or

twice a week. The best way to make soot water is to put a given quantity into a bag, tie tightly, and sink into a soft-water cistern whence the liquid can always be obtained clear and fit for use. As a root stimulant it is an excellent change from animal liquid manure and guano, and it is a good insecticide.

Watering is an operation which must not be neglected for a single hour, for if pot trees once get dry and flag, the finest fruit will most likely fall off just when it should commence the last swelling; therefore, to avoid this great disappointment the first operation every day should be watering copiously and well with pure water or diluted stimulants of various kinds. In course of time the crotch and surface roots find their way into the bed of decaying leaves, from which they draw support, but nothing can prevent the fruit from falling when the soil in the pots is allowed to become dry.

Pinching and stopping.—If pot trees, be they pyramids or bushes, are not kept well pinched through the early part of their growth they soon become loose, straggling, and unprofitable, but pinching may be, and often is, carried too far. If all the strongest growths are pinched at the fifth or sixth leaf, many of the second breaks from which the second crop of fruit is obtained will not require further attention, but weak spray and crowded growths should be thinned out to let in light and warmth when the fruit begins to change colour, more air and fire heat will also be necessary, otherwise the Figs will be pale, vapid, and unsatisfactory.

Succession houses.—The trees in succession houses are generally planted out in internal borders and the shoots are trained over wire trellises some 16 inches from the glass, where, if space admits, extension training leads to the most satisfactory results. Where the branches that had reached the extremity of the trellis last season were well thinned out to make room for others following, the young growths can be laid in at full length until they reach their limit, when pinching will result in the production of as many Figs as leaves, and as these will ripen in succession the root space should be limited to admit of constant feeding throughout the season. When treated in this way Brown Turkey, still one of the best for forcing, becomes a perpetual bearer, and the fruit, by full exposure to sun, heat, and light, is larger and better than that obtained from pot trees. Trees started in January and now presenting a large leaf surface to the sun must have copious syringing and plenty of water at the root throughout the season. The quality of that supplied to the roots need not be very strong, as grossness of growth is objectionable, and good mulching, while giving off atmospheric moisture, generally keeps the trees in a healthy fruitful condition.

Late houses.—If the latest houses are heated by hot-water pipes the trees may now be started into growth by means of gentle syringing and early closing on fine afternoons, but where this provision is not made for the protection of the fruit during frosty or ungenial weather, their breaking into leaf should be retarded by liberal ventilation and the withholding of water from the roots until by the swelling of the buds it becomes evident that further delay may prove injurious to the crop. When once started into growth the borders will require good mulching and a sufficient quantity of water to keep the roots in a growing condition, and the lights must be closed early with sunheat and atmospheric moisture to hasten the development of the foliage and fruit. As days increase in brightness and nights become warm, liberal ventilation by night and day will secure a free, short-jointed growth of wood, from which a supply of fruit will be obtained from the middle of July until the end of September, when dry heat will again be necessary to ripen up the wood. There are now a number of varieties of Figs which may be grown in cold or late houses, but as none of these structures can be expected to ripen up two distinct crops of fruit, free hardy kinds, like Brown Turkey, White Marseilles, Negro Largo, and the Ischias are best adapted to this kind of culture. The quality of the fruit is all that can be desired, and the

trees being very hardy, the points of the young wood ripen up well in ordinary seasons, when, if carefully protected from severe winter frosts, they generally carry over a good sprinkling of embryo Figs, which in the following year are the first to ripen. The taste for Figs and their culture having greatly increased, the following list will be found useful to amateurs and others who may wish to grow a choice collection. The greater part of them are suitable for pot culture, but all are not alike early and fit for forcing. Some are comparatively new, having been quite recently introduced from Spain and Italy, and on this account their culture and development cannot fail to interest the grower. Angélique or Madeleine, Bourjassotte Black, Bourjassotte White, Brown Turkey, Col di Signora Bianca, Col di Signora Nero, Datte, Daphin d'Argenteuil, Fig d'Or, Doctor Hogg, Grosse Munstreuse, Grosse Verte, Black Ischia, Brown Ischia, Green Ischia, White Ischia or Singleton, Marseilles or Black Provence, Marseilles White or Raby Castle, Negro Largo, Osborn's Prolific.

CHERRIES.—When the petals begin to fall from the trees the syringe must be brought into use to cleanse the young fruit and foliage, and to produce conditions favourable to their development, which, all having gone well, will be very rapid, particularly when the house can be allowed to run up a few degrees on fine afternoons under the influence of solar heat and atmospheric moisture. If the fruit has set thickly, all the smallest, which would eventually fall off, may be cleared away with a pair of sharp-pointed Grape scissors, but the final thinning will be best deferred until after the Cherries have passed the stoning process. About this time the Cherry weevil, which so quickly destroys the crop, must be diligently sought for and killed, and the appearance of the first green or brown aphids must be the signal for mild fumigation on a calm evening. Black fly sometimes springs into life on old trees in old houses, and so persistent an enemy, if once allowed to get established, does not readily succumb to the fumes of Tobacco smoke, for the simple reason that they cannot reach it when snugly housed in curled-up leaves and spurs; but if taken in time, dipping and syringing with Tobacco water steadily followed up will speedily destroy it. Trees confined to internal borders, if not mulched at the outset, should be top-dressed and watered as soon as the fruit is set and beginning to swell. Good rotten manure will not be too strong for old established trees, but young ones that do not require a strong stimulant will make the most satisfactory growth if dressed with turfy loam, old cow manure, and burnt earth or lime rubble in equal parts, well mixed and spread rough and loosely over the whole face of the border. As Cherries cannot succeed under close treatment, the temperature should not exceed 50° at night, with a chink of air, 55° to 60° by day, and 65° after closing with sun heat and moisture.

PLUMS.—The general treatment recommended for Cherries also applies to Plums, at least through the early stages of their growth. But as Plums require a much longer period to bring the fruit to maturity, the latter part of it extending over the months of June and July, arrangements should be made for liberal ventilation. If this is not provided insect pests will be found very troublesome and the fruit will not make satisfactory progress, as many kinds positively refuse to swell or colour in a close, high temperature. If the trees are grown in pots or planted out and root-lifted every other year, they should be well mulched with rotten manure and liberally watered not only about the roots, but all over the surface of the bed in which they are plunged or planted. Good syringing twice a day is of great importance, and as the delicate bloom on the fruit is easily injured, soft water, or water free from calcareous sediment, should always be used from the time the petals fall until the Plums change for ripening. Some growers introduce more trees than they can accommodate when in fall leaf, and remove duplicates to ripen in the open air after all danger from frost has passed away.

W. COLEMAN.

Eastnor Castle.

INDOOR GARDEN.

NEW SHOW PELARGONIUMS.

As is usual at this season of the year, Mr. Turner announces a set of new varieties raised by Mr. E. B. Foster, of Clewer. As I had an opportunity of seeing these at one of the exhibitions of the Royal Botanic Society early last summer, I am able to speak of them with some confidence. The most attractive of the whole batch was *Man-at-arms*, a very large flower of fine form, rich dark top petals, and shaded crimson lower petals, both stout and well formed, and forming a noble truss; the habit of growth appeared to be in every way desirable. *Chief Secretary* has dark top petals, the lower petals rosy crimson shaded with maroon and orange, bold white centre; a fine and very effective variety. *Democracy* has dark top petals also, the lower petals purple suffused with a paler tint or lilac, and clear white throat; flowers of good form. *Magnate* has the top petals wholly suffused with black, with the exception of a narrow margin of fiery crimson, the lower petals rose and orange, white throat; large, fine, and very free. *Mandarin* is a rich dark crimson flower with black blotch on the top petals and broad, bright margin; very free and of a good dwarf habit. *Outlaw* has black top petals with a narrow margin of bright crimson, rich rosy crimson lower petals, clear white throat; large and fine. *Purpureum* is, as its name implies, a purple-coloured show Pelargonium; the colour is rich and striking and edged with bright lilac; the glossy black top petals are very striking, pure white centre; large and very fine. *Rising Sun* is of a rich scarlet colour with a dark blotch on the top petals; rich, effective, and a very fine decorative Pelargonium. Lastly comes *The Czar*, rich deep crimson with dark top petals of great substance and quality; free, distinct, and of an excellent habit. Now is a good time to obtain plants of all kinds of Pelargoniums. They should now be nice specimens from autumn-struck cuttings that have been stopped twice and have broken out into three or four leading shoots. As soon as received from a nursery they should be kept close for two or three days, and then, if the pots are fairly full of roots, be repotted again, kept close for a short time, then placed in a house where they can have plenty of light and air when necessary and unfailing supplies of water. A beginning should be made in tying out the plants in order to lay the foundation of good specimens. It is a good plan to tie a piece of bast round the pot just underneath the rim; then the leading shoots should be tied to this, just drawing them towards the edge of the pot, so as to widen the foundation of the specimen, and at the same time secure more space in the centre of the plants for young shoots to develop. Another shift will probably be necessary, as plants of this character will flower a little late, but much depends upon the variety and the habit of growth.

Anyone growing on large specimens of Pelargoniums for early flowering will find by this time, supposing they have been well attended to, that they are pushing their trusses above the foliage. We will imagine some specimens are being grown on for exhibition by the end of May. This being so, the shoots should be tied out to shape as they increase in size, air given early in the mornings, and the house shut up fairly early in the afternoon as soon as the sun leaves it. The plants will be served by the floor of the house being moistened by sprinkling it with water after a bright day. If the weather is cold and dull, a little fire-heat may be given at night with advantage. No shading will be necessary until the plants come into bloom, but should a clear, bright, warm, sunny day follow dull weather, it will be beneficial to shade for a few hours in the middle of the day. Due care must be exercised to keep the plants clean and healthy, as a perfect plant should have an even balance of robust clean foliage, and in addition a good head of bloom.

R. D.

EARTHENWARE JARS FOR FERNS.

THE accompanying sketch was lately made in Mr. B. S. Williams' ferneries at Upper Holloway. It represents, as will be seen, a Fern growing in an earthenware jar made of the same material as an ordinary garden pot, and being good in form it makes a really pleasing object, more especially as the surface is so roughed as to cause it soon to become covered with mossy growth, thereby softening the glaring red of the pottery ware. This way of growing Ferns and other fine-leaved plants recommends itself to those who like to have plants in rooms, as it does away with the necessity of hiding the inelegant garden pot in some sort of vase. Moreover, these earthenware jars are porous and are otherwise made suitable for plant growth; therefore plants may be grown in them for an indefinite period, which is not the case with ornamental vases that are often unsuitable for permanent plant growth. The plant represented in the accompanying sketch is *Lomaria gibba*, an excellent Fern for the purpose, but there are others equally suitable, such as the *Blechnum corcovadense*, various kinds of *Pteris*, *Nephrodium*, *Adiantum*, *Gymnogramma*, and even



Lomaria gibba in an earthenware jar.

small Tree Ferns, while Palms also look well in such vases, and may be successfully grown in them.

HARDY PLANTS FOR POT CULTURE.

It cannot be too generally known that all kinds of hardy herbaceous and alpine plants can be grown in pots more or less successfully, and that their culture in that way is merely a matter of necessity or taste. The Hyacinth, Tulip, Narcissus, Lily of the Valley, Crocus, and many other subjects are all hardy border plants, that we have long been accustomed to regard as greenhouse pot plants; but plenty of others never grown in that way are equally good for the purpose, and it is of some of these I propose speaking now. It may be remarked at the outset that the chief interest experienced in growing hardy plants under glass is having them at a season when they cannot be had out-of-doors, as, for example, in winter or spring, or even early summer, and at these seasons a collection of border plants in flower in pots is a wonderfully attractive sight. As a rule, any hardy plant grown and flowered under glass attains a degree of perfection and delicacy of growth and colour that it never reaches out-of-doors in this country; hence people unaccustomed to see them in that condition are charmed with their appearance. I need not mention two plants that present quite an altered aspect, viz., the *Dielytra spectabilis* and the beautiful white *Anemone japonica*—two subjects that

are not surpassed even by some of the finest greenhouse plants proper when at their best. Another advantage belonging to the culture of such subjects is, that they may be kept safely without any fire-heat during winter, and yet be had in perfection in spring. The chief point is to know when to pot the plants and how to prepare them. Some species may be lifted out of the ground and forced at once, while others will not succeed in that way, but must have some previous preparation, an account of which will be given here when needful in treating of some of the best subjects for pot culture.

BULBS.—Of Hyacinths and Tulips, &c., we need not speak, as their treatment is familiar to most people. Of the seldom forced species the Daffodil rank first. All of them force more or less successfully, but the most useful variety is undoubtedly the charming little Hoop-petticoat. A potful of this Daffodil in flower beats the Tulip or the Crocus, and in many places it does far better in pots in a cold frame than out of doors. The Poet's Narcissus is also a popular variety, both the double and single sort. The bulbs should be selected early—large bulbs only for flowering—and potted pretty thickly in pots from 6 inches to 8 inches wide and deep, according to size. Good light loam should be used, and if the plants are not forced too early, but allowed to come on gently in a cool frame or greenhouse after the new year, and all taken care of till their foliage decays, they may remain in the same pots several years.

LILIES.—All the Lilies may be grown in pots, but the two best are auratum and candidum. I am not sure but the last is, after all, the best looking of the two when cultivated in good masses; its beautiful pure white and highly fragrant flowers are always much prized when grown outdoors, but in pots they are purer and larger. *L. auratum* may be potted and forced the same year into flower, but *L. candidum* must be potted from six to twelve roots in a 10-inch or 12-inch pot, in good compost of loam, sand, and old hot-bed manure, grown in the border in the open air the first year, and flowered in the conservatory or window the next. It does not flower certainly or well the first year, but will the second, and for years after if the stems are matured properly and the pots set out of doors plunged in a favourable position afterwards. The best way is to pot a quantity of bulbs and plunge them all in the border, to lift and force, or flower where they are just as may be required. Those left in the ground will increase in size and flower there while they remain.

ANEMONES.—The two tall Anemones of the herbaceous species that succeed admirably in pots are the now much esteemed pure white variety named Honorable Jobert, or *Anemone japonica alba*, and the rosy red kind of the same habit. Both flower in the autumn in the open air, but in pots in a window, or in a cool pit or house, they flower much earlier, and the white sort makes one of the handsomest of specimens, and needs no training of any kind, while it never fails to flower freely and for a long while. It does not lift and force immediately like the *Dielytra*, but must be prepared. The creeping rhizome roots may be taken up at any time while dormant, and potted in good garden soil in from 8-inch to 12-inch pots. After potting they should be plunged in ashes outdoors like Chrysanthemums, and allowed to grow during the summer, and they will be ready for putting into the window or conservatory any time after the new year. We have seen a magnificent specimen grown in a window. It is an easily grown subject, and not affected by insects.

SPIREAS.—There are four of these suitable for pot culture: *S. palmata*, rosy red; *japonica*; *Filipendula fl.-pl.*, white; and *venusta*, pink. The first is by far the finest of the lot. The panicles are large and perfect, and extremely effective. It does not lift and force at once like *S. japonica*, but must be prepared the year before, like the *Anemone*, and should always be kept well supplied

with water. *S. venusta* is more stately, but not such a free flowerer, and should be treated in the same way; the two others may be lifted out of the borders in autumn and forced soon afterwards. *S. palmata* is probably one of the most ornamental subjects that can be grown in a cool house.

PHLOXES.—Some of the later kinds of these are rather too tall for pot culture, but the early dwarf kinds will bloom in April and May in a frame, and are very showy, the flower trusses being large in proportion to the stems, and the flowers individually broad and good. Some of the pure white varieties are most telling subjects in a group. The roots may be lifted and potted any time between November and March, and pushed on into flower in spring. They will endure in pots for years and flower well, just according to the treatment they receive.

CHRISTMAS ROSE.—No hardy plant succeeds better under glass than this and its many varieties. The true Christmas Roses, with their large and pure white blooms, do better under protection during the flowering period than out of doors; the flowers are purer and cleaner. Clumps should either be grown in pots plunged in the border, or they should be lifted and potted in autumn with good balls of roots, but not housed till shortly before Christmas; then, if they are placed near the glass in a cool house or pit, the flowers will come out with a rush, and remain long in perfection if kept cool and dry. If the foliage is too abundant, it will do no harm to remove a few of the outer leaves, and those in the centre may be pegged back, to give the flowers light and enable them to show themselves off.

PYRETHRUMS.—The fine, free-flowering single varieties of these make pretty pot plants, although rather tall. They should be grown in the pots in the open air during the summer, and flowered in April and May.

CARNATIONS.—The winter-flowering sorts of these are commonly forced, but it is not so generally known that there is very little distinction between them and the common border kinds, all of which readily bloom in pots in spring if grown in cold frames during the winter months. Here they begin to push up flower-stems in February and March, just according to their strength, and the buds will continue to expand during April and May without any assistance from fire heat. Plants layered in July and potted up in autumn are best for the purpose, and they may be afterwards planted in the border, to bloom there the following season, when they will make large and fine plants.

SPRING-FLOWERING PLANTS.—that is, such as bloom in spring and early summer—furnish in themselves many most accommodating pot subjects, and they are mostly neat and handy for the purpose. Amongst the very best of these are the many varieties of the coloured Primrose and Polyanthus, which are quite capable of producing a display equal to or surpassing the Chinese Primrose, because they are so bold in habit, free flowered, and so rich in colour. One year's seedlings make fine pot specimens, but good plants of any age may be lifted from the borders and potted, and they will flower most abundantly at various times from the new year onwards with the protection of a cold frame merely. The less fire heat they get the better. The crowns when mature only need the least possible excitement to make them burst into flower. We recommend a large proportion of these to be mixed in with any collection of hardy pot plants, and the wild Primrose will do as well as any. The giant varieties of the Polyanthus and Primrose are, however, the best. A pretty companion to these is the common Arabis. Plants propagated from tops in spring make compact little tufts about 6 inches across by autumn, and if they are potted up soon, they will flower with the Primroses. The *Iberis corifolia* is an even better subject, being shrubby and neat, with very fine pure white, waxy-looking flowers produced about the same season. It is a typical hardy pot subject, flowers constantly and well, and is very pretty and useful. Plants should be lifted and potted in

November, and may afterwards be planted out again. Any of the summer flowering Pinks may also be potted up then and plunged outdoors till February, when, if placed in the cool frame, they will begin to flower and be very attractive, both red and white kinds.

AURICULAS.—These have been long grown in pots by florists, whose culture of them and other hardy subjects in pots may be quoted as an example of what can be done with almost any subject of that kind one chooses to take up in that way. The Auricula can, however, be grown in a simpler way than by the florist's method. For our purpose, plants lifted in November or at almost any period during the winter, and potted in moderately good soil, will bloom well in spring, and form a good addition to a collection. They may be treated like the Primroses, and placed along with them. Big or little masses may be lifted out of the ground and potted in pots of the necessary size, keeping the leaves clean and taking care not to break them in the handling.

SAXIFRAGES.—Three of these which we recommend are *pyramidalis*, *Wallacei*, and *paniculata*. The two first are grand plants, one throwing up a tall pyramidal spike, as its name indicates, and the other a mass of white flowers of large size, the habit of both being neat and clean. Neither must be potted in too rich soil, but in a compost of loam, sand, and gravel, or broken stones or potsherds; and both are better left out-of-doors plunged in the ground till wanted, when they may be placed in the cool frame to come on. They make the neatest specimens grown in pots, but they lift perfectly well. *S. Wallacei* soon covers much ground out doors.

FORGET-ME-NOT.—Plenty of this should be potted up from the open ground about now, as it masses effectively in a collection, and is extremely pretty in itself. *Myosotis sylvatica* is one of the best kinds for pot culture, as it is a good grower in almost any soil. Self-sown seedlings, which are now abundant on the borders, may be pricked off in 6-inch pots; they produce finer flowers than two-year-old tufts.

CAMPANULAS.—The variety named *pyramidalis* has long been a popular pot subject. Thirty years ago it used to be grown extensively in greenhouses; the plants were raised from seed and potted singly in 10-inch pots and flowered the following year, producing pyramids of bloom 5 feet and 6 feet high. It is a plant of easy culture.

FRANCOA.—This is likely to become a most useful greenhouse plant. It may be grown in a small pot, in which it will produce tall neat wreaths of white blossoms, that are invaluable for personal decoration and other purposes. If potted in autumn or spring in ordinary soil, it will make a nice compact little plant, and during June, July, and August will flower freely.

ANNUALS FOR POTS.—There are three good things among these at least; namely, the common blue *Lobelia*, the common *Nasturtium*, and the Canary Creeper. In one large conservatory I know of these are used as basket plant with telling effect. The *Lobelia* is sown in February and put in the baskets among the *Nasturtiums* a little later and both grow together throughout the summer, the *Lobelia* making a pretty basket of blue hanging down 2 feet, among which the yellow and crimson flowers show to much advantage.

In the culture of all hardy flowers of the kind mentioned, all that is needed is a cool corridor, a large light bay window, or a cool frame. In any of these positions the plants will succeed perfectly well if not pushed on too early in the year by fire heat.

S. W.

SHORT NOTES.—INDOOR.

CAMELLIAS.—From "R. D.'s" notes on the Camellias at South Kensington I have made a selection of six varieties, which I have long known as being amongst the best. For those who have only room for a few plants this short list may be useful: White, Cup of Beauty and Ambriata; red, Chandleri and Leena superba; rose-striped, Fabiana and Marchioness of Exeter.—J. C. C.

Plantain Lilies (Funkias).—When these get well established they flower freely both in summer and autumn. They are quite hardy, but well deserve indoor culture. There are many sorts, but I have only grown three, and to these I must confine my remarks. They are: *F. alba*, a charming plant, which produces graceful spikes of pure white flowers in abundance; *F. grandiflora*, another fine kind having grand foliage and pure white flowers produced in profusion; and *F. lancifolia*, another free flowering kind, not so pure as the other two, but well worth cultivation. If intended to be had in flower in pots during the autumn and winter months, they should be potted at once in some good soil; loam and cow manure suit them well with a dash of sharp sand added. After they have been potted plunge them up to the rims of the pots in coal ashes, and as they advance in growth see that they get plenty of water; encourage them to make sturdy foliage, and take care to remove all flower-spikes until such time as they are placed inside a pit or greenhouse. When flowers appear they should be given manure water twice or thrice a week. If these matters receive the attention which they deserve, you will be rewarded with these fine Lily-like flowers during the dull months of winter.—W. C. LEACH, *Stamford*.

Fruiting of the Mango.—With reference to the paragraph in THE GARDEN (p. 278) on the flowering of the Mango in the Palm house at Kew, may I correct one or two errors into which the writer has fallen? First, it is stated that "in English gardens the Mango has never borne fruit." I clearly remember Mr. Smith, the ex-curator of the Royal Gardens, telling me that the Mango plant in the Palm house had borne fine fruits in his time, and on referring to his "Dictionary of Economic Plants," under the article "Mango" I find the following: "Some years ago fine luscious fruits, each weighing half a pound, were produced on an old tree in the Palm house at Kew." "The very large and interesting collection of Mango fruits preserved in spirit" referred to by your contributor as having been obtained from the Health Exhibition for this museum came in reality from Siam, and not from Assam—JOHN R. JACKSON, *Curator Museum, Royal Gardens, Kew*.

—It may be interesting to your readers to learn that a large plant of *Mangifera indica* in the economic houses in this garden ripened over two dozen fruits in the year 1877. In '78 and '79 it again bore fruit, but not so profusely as in '77. Some of the fruits are preserved in the Society's Museum; they had a strong flavour of turpentine.—WILLIAM COOMBER, *Royal Botanic Gardens, Regent's Park*.

Hepaticas.—There is so much that is lovely and unpretending about Hepaticas, that one is surprised that they are not more widely grown than they are. Perhaps one reason is to be found in the common defect of losing foliage in the summer; that is the experience of so many, especially in warm, dry localities, that without doubt it largely explains their scarcity. I have seen in dark, deep, loose soil Hepaticas full of luxuriant leafage all the summer through, and yet in clay soils close by quite leafless. It is true that leafless plants at this season still bloom beautifully, but the want of foliage presently tells on the strength of the crowns, and in time the plants die. Hepaticas are specially deep rooters; indeed, few of our spring flowers go so deep in search of nutriment as these do. For that reason they should never be planted in shallow soils or in dry, arid positions. Naturally they are shade-loving, and specially so are the less robust kinds. Thus we see the single blue and the double red fairly abundant, because they seem to be the most hardy, but the single white and red and the double blue are seldom met with in ordinary gardens. Even the robust lobe-leaved *angulosa* is a rarity in most gardens. Probably most of these plants thrive best, as double Primroses do, where the temperature is rather low and the atmosphere moist.—A. D.

TREES AND SHRUBS.

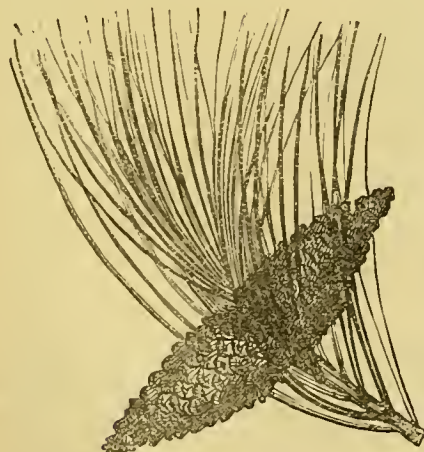
THE CORSICAN PINE.
(PINUS LARICIO.)

THE beauty of this pine, in its native Corsican forests and for its value as timber, make it so desirable a tree, that its merits deserve to be ex-



Branch of Corsican Pine and full-sized leaves.

tended. Introduced a hundred years ago, it has proved itself thoroughly hardy in all parts of the kingdom; and, though well known, has not yet nearly reached the favour it merits. Like the Scotch Fir and the Larch, it is worthy of universal cultivation. It is a native of many parts of the



Coning branch of Corsican Pine.

south of Europe, Spain, the Morca, Mount Etna, the coasts of France, and also the Caucasus, and

parts of Asia Minor, but grows to the largest size in Corsica, where it is often found from 120 feet to 140 feet high, attaining its full size at the age of seventy or eighty years, and being used as good timber at the age of thirty. The first planted in England is said to have been brought in 1759, and is probably the very tree which may now be seen growing at Kew, and which is therefore about 126 years old. Loudon figures this tree as it was in 1838, when it was about 85 feet high. It was then branched to within a few feet of the ground. It is at the present time 88 feet high, with a trunk as straight as a ship's mast. The next tree of which the progress is recorded was planted in the Jardin des Plantes, at Paris, in 1774. Loudon speaks of this tree as being 80 feet high in 1838. It would be interesting to know whether it is still standing. About the time that the latter tree was planted the quality of the timber, which had long been used in the French navy, became the subject of investigation. It was left uncertain whether the timber of Scotch Fir from the Baltic or Corsican Pine from Corsica was the better; but it was recommended by the French Government that the tree should be cultivated in France. However, the cones were so difficult to obtain, that those of *P. maritima* (Pinaster), a closely allied species, were fraudulently sold as those of *P. Laricio*. In 1822, owing to the continued difficulty of obtaining genuine seeds, many thousand Corsican Pines were grafted on Scotch Fir in France and planted in the royal forests.



Terminal shoot buds of Corsican Pine.

As a Timber Tree

This Pine is generally admitted to be next to the Larch, the most valuable of introduced trees, for a timber crop. The wood is extremely resinous, tough, and, although tending to coarseness, not so brittle as Scotch Fir or Austrian Pine of equal age, but is elastic and durable; under the tools of the carpenter it works smoothly and easily. Felled when about seventy or eighty years old, the wood is found to be well matured and of a whitish colour and brown near the heart. Mr. A. D. Webster, the forester at Penrhyn Castle, in North Wales, states that what was in all probability the largest Corsican Pine (*Pinus Laricio*) ever felled in this country was one which grew there, and owing to an accident recently found its way to the saw-mill to be cut into boarding. He gives the measurements: The cut end was 32 inches in diameter, and at 9 feet it measured 6 feet 2 inches in circumference. For 18 feet it was free of branches and as straight as an arrow, and contained exactly 30 cubic feet of timber. As to the quality of the wood, he says it appeared to be of excellent quality, very closely resembling the red deal of commerce and full of resin. From this it appears to be deserving of regard, and being planted as a timber tree, and not merely for its excellence as a hardy shelter tree for the most exposed situations.

In England *Pinus Laricio* has been extensively planted during recent years as a timber crop, and since the Larch failure probably this Conifer more than any other has been substituted for it. It thrives in almost any soil where the Scotch Fir or Spruce succeeds, but will not attain its full development at the higher altitudes, preferring a rather good deep soil and sheltered situation in its younger stages, for being of very rapid growth and early vigorous habit, like *P. austriaca*, it is apt to form a top rapidly, which the slower formation of roots cannot support during high gales of wind. In this aspect, however, it does not equal the Austrian Pine, and is materially assisted by its characteristic tendency to throw the vigour of its growth more into the trunk and terminal leader than to form a dense head or many heavy

side branches. Another benefit accruing from this erect or fastigiate habit is the ultimately enhanced value of the timber, by its being less knotty and of better texture. In general appearance when young the *P. Laricio* somewhat resembles the Scotch Fir of the old Strathspey indigenous type, but it is more open and longer between the tiers of branchlets. Its value as timber is not so marked when the tree is young, for thinnings of *Laricio* are found too soft and less durable than Larch, but when old it is reported to be remarkable for its toughness, and it is strongly impregnated with resinous sap.

This Pine has the reputation to be almost if not absolutely rabbit and hare-proof, for these animals have been known to nibble the bark of every tree before they will touch the Corsican Pine. At Tortworth Court some years ago Lord Ducie planted a young *Laricio* in the centre of a rabbit warren, and which until the ground was quite covered with snow, the teeming population of the spot did not touch; and even then, when starving, and naturally less capricious in their choice of diet—after an attempt to eat the young needles of the buds—they abandoned the task, and sought some less bitter and astringently resinous food. That it is so distasteful to rabbits is a great point



Seedling of Corsican Pine.



Full-sized cone, scale, seed, and leaves of Corsican Pine.

in favour of the Corsican Pine. It is, however, liable to be attacked by the Pine beetles and weevils, though in a less degree than some others of its tribe.

The Corsican Pine exhibits a preference for a deep, good soil; it thrives in almost any other description, if we except soft, spongy, and undrained marshy ground. Throughout the entire country it has within the last thirty years been freely planted in all sorts of soils and elevations, and has been proved to be perfectly hardy, and

altogether such a variety as ought to be more generally cultivated; for while it is a rapid grower and a handsome tapering tree, it is well calculated for planting in masses, as a crop to produce not only quantity within a period of forty years, but quantity of heavy size and timber of excellent quality. Although in its native country it is felled at about eighty years old, it may be profitably used at even thirty years. From the long tap-root of this Pine, it is, unless frequently and regularly transplanted when young, somewhat difficult of removal, and when forming plantations small plants should be used, as they will ultimately succeed better than those that have had their tap-roots cut when young.

DESCRIPTION.—A tree, attaining the height of from 80 feet to 140 feet, with a regular pyramidal head, and the branches disposed in whorls of five or six in a whorl, which are distinguished from the branches of *P. Pinaster* by being often twisted and turned in a lateral direction at their extremities, especially in full-grown trees. In the island of Corsica it is said that there are trees of this species from 140 feet to 150 feet in height.

The trunk and branches of full-grown trees have a reddish grey-coloured bark, not unlike that of *P. sylvestris*, and the bark of the trunk cracks and partially separates in the form of large plates, as in that tree.

The leaves vary much in length, according to the age of the tree and the soil on which it grows. The shortest are generally 4 inches or 5 inches, and the longest 7 inches or 8 inches long. They are slender, not sensibly rough, and much darker coloured than those of either *P. sylvestris* or *P. Pinaster*. In young plants, and on the extremities of the shoots of the lower horizontal branches of old trees, they are frequently much waved and twisted, but near the top of the tree they are straight, and on the leading shoot of young trees three leaves are occasionally found in a sheath. The sheaths of the leaves vary from half an inch to 1 inch in length, and have generally four or five rings. At first the sheath is white and membranaceous, but it becomes torn and shortened as the leaves advance in age and ultimately becomes black.

The male catkins, which are produced at the extremities of the shoots, are from six to fifteen in number, and they are surrounded by numerous scales. They are from 1 inch to 1½ inches in length, and from three-sixteenths of an inch to one-quarter of an inch in breadth; yellowish before the bursting of the anthers, which are terminated by a round crest, and which contain abundance of pollen of a beautiful sulphur colour. After the male catkins drop off, the part of the young shoot which they occupied is left naked, and hence the branches of old trees, particularly at their extremities, have those tufts of leaves, alternately with naked places, which are so conspicuous in *P. Pinaster* and all the Pines which have either large and very scaly buds, or which produce a great number of male catkins.

The female catkins are egg-shaped, reddish, becoming straight after flowering, and they are borne on peduncles, from quarter of an inch to half an inch in length, surrounded at the base with scarious scales; the fleshy scales which form the female catkin are terminated by a blunt triangular point, which is often persistent, and which, when the cone is mature, renders it very slightly prickly.

The cones are commonly in pairs, but sometimes three and sometimes four occur together; they point horizontally and slightly downwards and sometimes they are slightly curved, so as to be concave at the extremity of the side next the ground. They are from 2 inches to 3 inches or more in length, of a ruddy yellow or tawny colour, or greenish. They attain their full size in the November of the second year, and shed their seeds in the April of the third year. The scales of the cones are remarkably distinct from those of *P. sylvestris*, and the prickly cones of *P. inops* and *P. Teda* on the one hand, and from the hard, angular, regular-sided scales of the cones of the sections of *P. Pinaster* and *P. halepensis* on the other.

The seeds of *P. Laricio* are greyish and marked with black spots; deprived of their wings they are scarcely one-eighth of an inch in length, but with the wings they are more than 1 inch. The tree is readily known from *P. sylvestris* by its more conical form and crowded, longer and darker foliage, and from *P. Pinaster* from many of its

“*Britannicum*” (the latest authority on Conifers), then *P. pyrenaica* may be said to be an offshoot in one direction, having the leaves longer and more slender and somewhat falling back, while *P. austriaca* (including *Pallasiana*) is an offshoot in another, having the leaves shorter and more rigid, more numerous, and of a darker green, and



The large Corsican Pine in Kew Gardens, as it appeared 30 years ago.
Present height 88 feet; girth at base of trunk, 12 feet; girth at 4 feet up, 8 feet 9½ inches.

branches being twisted, as it were, round the tree, and from its foliage being shorter, more slender, and much darker. The rate of growth, even in Britain, is more rapid than that of *P. sylvestris* in a similar soil and situation, being in young trees, in the climate of London, from 2 feet to 3 feet in a year.

Varieties.

Taking the normal *P. Laricio* as the type of the whole of the *Laricio* forms, says the “*Pinetum*

standing bristling straight out. The cone of *Laricio* is generally smaller and less tumid than that of *austriaca*, while that of *Pallasiana* is larger, longer, straighter, and more like the *Pinaster* than is that of *austriaca*. The prickles on the scales of the cone is stronger and more persistent on *Pallasiana* and *austriaca* than in the Corsican *Laricio* and *pyrenaica*. The habit and form of the trees is another character by which to distinguish them. The branches as well as the leaves of *P. austriaca*

are much more numerous and upright growing, so that it makes a narrower and closer tree than *Laricio* proper.

P. PALLASIANA, again, is a still broader growing tree, the branches springing from near the ground, and spreading out so as to give it the appearance of a broad, compact pyramid. *P. pyrenaica*, on the other hand, when growing alone is more like *Laricio*, although in its native mountains it is bare until near the top, leaving only a tufted summit somewhat in the fashion of *P. Pinea*—a character probably due to their having been crowded in their youth.

P. CALABRICA.—The variety which grows in Calabria is more cylindrically conic, its branches more upright and, as it were, adpressed to the stem, forming a narrower and more compact head, looking in general more like *Cembra*. In plantations of this variety there are usually a great number of trees with two or more leaders. This may be due to the more upright direction of the branches above alluded to. This variety was named *calabrica* by Tenore, and strictly by Carrière and other horticulturists. M. Carrière doubts whether it may not in fact be a distinct species. "This form, perhaps indeed this species," says he, "is very constant in its reproduction, and among the individuals of which I have spoken none has wandered from the characters above mentioned." But we find Professor Schouw observing no such difference; he says, "The variety called *calabrica* by Tenore, of which I obtained specimens from the Botanic Garden at Naples, perfectly corresponds with Duhamel's figure and with the great tree of this species (*Laricio*) in the Garden of Plants at Paris."

P. HELDREICHI and *P. FENZLII* (Antoine and Kotschy) are synonyms of a variety of *calabrica*. It is said that it will, in a given time, become one-third thicker than the ordinary variety and as high.

Gordon in his "Pinetum" enumerates six varieties of *P. Laricio*, viz., *calabrica*, *caramanica* (syns., *caramaniensis*, *Heldreichi*, *romana*, and *Fenzlii*), *pygmæa* (syns., *magellensis*, *Laricio montana*, and *Laricio nana*), *contorta*, *subviridis*, and *pendula*. The Pyrenean form, *pyrenaica*, he describes as a species, as also *P. Pallasiana*. London describes seven species, which includes, in addition to the above, *P. nigricans* or *austriaca*, which is still regarded by some to be but a form of *P. Laricio*. Apart from the views of botanists, we consider that, from a cultivator's standpoint, such well marked Pines as *austriaca*, *Pallasiana*, *pyrenaica* might well be regarded as separate species. The synonymy of the Corsican and its varieties would make a long list, but as it would serve no useful purpose, we omit it here.

SPIRÆA THUNBERGI.

THIS is the earliest flowering of all the *Spiræas*, the blossoms being borne just as the leaves are expanding, and very pretty it is when in that stage. The habit is that of a low, rounded bush with very slender branches, all of which slightly droop. These flexible branches, when studded with small, light green leaves and clusters of tiny white blossoms, are veritable living wreaths, while the graceful contour of the branches render the plant when out of bloom a pretty and attractive little shrub. In common with the rest of the *Spiræas*, it succeeds best in fairly good soils, and in a position that is not too much dried up during the summer, so that in hot and sandy spots, though the plants may just drag out an existence, they are never at their best, the branches being short and twiggy rather than the long, flexible shoots that add so much to the beauty of the specimen. It is a native of Japan, and is perfectly hardy in this country. Another kind flowering soon after *S. Thunbergii* is the double *S. prunifolia*, a good-sized, free-growing bush, studded along a great part of its shoots with clusters of small, white, rosette-like flowers. This double-flowered kind possesses the great advantage of continuing in bloom for a long time. Both these kinds, and, indeed, nearly all the *Spiræas*, can be readily increased by detaching rooted suckers or by splitting up the whole plant, which can usually be done

without difficulty, but if it does not appear likely to be carried out with success, some of the branches may be layered. Though far too much pruning is indulged in by a great many, most of the *Spiræas* are certainly benefited by a judicious use of the knife, for the finest blooms are borne on the strongest branches, and if some of the exhausted wood is not cut out, sometimes the plant is apt to become overcrowded with attenuated shoots that afford but a meagre display of bloom.

T.

GOLDEN-LEAVED SHRUBS AND TREES.

In the following notes we only enumerate such golden-leaved trees and shrubs as we have at different times seen in a satisfactory condition. As to cultural details, all that need be said is, that for the most part they all like a rather light and deep soil, and it is indispensable that they be planted in positions in the full sun, or the foliage will be more green than golden. The Golden Elder may be thought rather common, but it is the most striking and also the most accommodating of all deciduous shrubs with golden foliage, for it will thrive in almost any kind of soil. To say that it is striking conveys no adequate idea of its telling character when grown in positions in the full sun. It is just the plant to light up and give colour to situations in which there are masses of Evergreens of more sombre hues, not the least of its merits being, that it is as well suited for small gardens as for large ones, as by judicious winter pruning it may be kept to any size. *Cupressus Lawsoniana aurea* no one can mistake for anything else, as it has all the characters of the original type except foliage, and that, especially during winter, is bright golden. It differs from a good many of the same class, as the old growth as well as the young retains its golden colour, while so many Conifers said to be golden have only the tips of the young growth of that colour. The golden form of this Cypress grows freely, but not quite so vigorously as the green form. *Thuja aurea* is a well-known plant, and indispensable in certain forms of gardening, such, for instance, as the Italian style, and in other cases it associates well with statuary, on account of its formal growth. It is a plant that generally succeeds well in all but a heavy clayey soil, and is so hardy that a severe winter does it no harm, unless it should be set in the full blast of the east wind in a draughty corner. A noteworthy feature in this plant is the fact that young ones wear a constant golden hue as well as old ones. We are disposed to think that this *Thuja* loses its usefulness with age, as we have frequently noticed that when plants have attained a good age, they not only lose their symmetry, but the branches are liable to die away in parts, a circumstance which causes a disfigurement that cannot be remedied. Plants of medium age are therefore more desirable than old ones. In transplanting this *Thuja*, we have always found it to bear removal best early in the month of May. *Retinospora pisifera aurea* is a very distinct form, and valuable in the mixed shrubbery, or in the shape of isolated specimens placed about pleasure grounds. Its feathery growth contrasts well with that of trees of larger size. To appreciate the contrast, it should be seen growing by the side of green forms of the same genus, such, for instance, as *plumosa*, which at certain seasons wears a distinct tint of blue. It is then that this variety is welcomed for its fine golden colour. It is a neat-growing shrub, but requires sufficient room in order to show off its true character to advantage. The Golden Yew is valuable on account of its informal growth, as well as the strong contrast in colour produced by it when seen by the side of the green forms. It never shows better perhaps than when grafted on the leading shoots of the Irish Yew; but whether grafted on the green forms or growing on its own roots, it adds a rich and distinct appearance to the landscape. We once saw some very striking plants of it growing on a sunny bank, the sides of which it covered gracefully with drooping branches,

THE GOLDEN QUEEN HOLLY has foliage so yellow that it must not be omitted from this list. How it is that its fine ornamental character is not more appreciated than it is, one can hardly understand. The fact is, it is seldom seen under favourable conditions—that is to say, enjoying plenty of room in which to develop itself into a handsome specimen. The trees of it to be seen about the country growing in suitable soil, and with room in which to develop their branches without coming in contact with other trees, are few indeed. For an isolated specimen to stand on Grass, nothing in the whole list of trees can surpass it; it bears a bright and cheerful appearance, even in the depth of winter. *Elæagnus angustifolia* has leaves so nearly golden, and is such a beautiful plant in winter, that it deserves to be placed in this list. I know of no plant which retains its foliage throughout the year that is so striking. Here in Somerset we have had it planted out in an open border for the past eighteen years, and no sort of weather seems to injure it; while, as regards the beauty of its leaves, we cultivate many tender plants under glass for the value of their foliage that are not nearly so handsome. It only requires a rather light, deep soil and a sunny situation to induce it to grow vigorously, without any other care or trouble whatever. The golden *Laburnum* is a tree that has not yet had time to develop into specimen size, owing to its not having been many years distributed. In garden scenery it will undoubtedly take a high place when it gets better known. The foliage is of a bright golden colour, which it retains during the summer. This variety of *Laburnum* appears to be fairly vigorous, and cannot fail to be useful amongst green-leaved trees. If we are not mistaken, this tree had a first-class certificate conferred upon it by the Royal Horticultural Society a few years ago. The silver-leaved Poplar is very ornamental, especially when its leaves glisten in the summer sunshine, and the golden form is not less so; but this variety is not often seen in good condition. It is generally planted under unsuitable conditions, either in a cold ungenial soil, or else shaded and overcrowded by other trees. Like all other trees with golden leaves, it requires a sunny situation. No doubt, to make this Poplar thoroughly effective, it should be planted in groups of four or five together. We have noticed how peculiarly pleasing the colour of the leaves of this Poplar are when seen in lines in nursery quarters. The golden *Acacia* is a comparatively new variety of *Acacia*, but if, when it grows to the size of a large tree, it retains the fine golden colour that it possesses in a young state (and we see no reason why it should not do so), it will make an effective tree for large shrubberies and as isolated specimens on lawns. Its vigour is in no way impaired by the absence of green in its foliage. This is to be accounted for, perhaps, by the fact that, when the leaves begin to unfold, they are greenish yellow, a colour which deepens to bright gold in the autumn, rendering the tree more effective when planted in suitable positions.

OF GOLDEN OAKS there are two forms; one, named *Concordia*, is not yet largely grown, but in a few nurseries it may be seen, and it promises to make a distinct and telling variety. This has golden foliage, which takes on a deeper shade of yellow as autumn approaches. The other form has leaves with golden variegation, but we have never seen this variety to possess any particular merit. The first-named, we think, only requires to be better known to be freely planted where diversity of character in trees is a desideratum. The golden Horse Chestnut, in a shallow soil resting on the red sandstone, attains noble proportions in Somersetshire. Its far-reaching branches give it a very stately appearance. One remarkable feature of a fine specimen here is, that some of the branches produce leaves with a deeper shade of yellow than others, and this very frequently on branches most shaded by others. The strong contrast in colour of this tree when seen against dark-coloured surroundings is very striking—a circumstance doubtless owing to the large size of the leaves as compared with those of other species,

Like the green-leaved form, the golden variety requires plenty of room, and then it makes an object worthy of a prominent position.—*Field*.

The Stone Pine (p. 245).—We have several good specimens of this here, the largest of which has a clean stem 15 feet high, where it forks off into two strong branches, and runs up to 48 feet in height; the head measures 45 feet in width, and produces cones freely. The trees here are, I believe, the produce of cones brought from Italy between sixty and seventy years ago. One or two have been blown down, but those remaining are healthy and vigorous, and increase in size annually.—J. MUIR, *Margam Park, S. Wales*.

Pyrus salicifolia.—The leaves of this tree are narrow and Willow-like, but another distinctive feature is the white woolly hairs with which they are clothed, and which render them almost silvery. This is especially noticeable during sunshine, or when associated with dark-leaved trees. Though so distinct, it is considered by Loudon to be a variety of Pear, but its fruit, which is small, is of no value. The flowers are white, and when fully expanded effective. This Willow-leaved Pear is a native of Siberia, and was introduced into this country towards the end of the last century, but it is even yet comparatively scarce. Among ornamental trees it occupies a prominent place.—ALPHA.

The Red Maple (*Acer rubrum*).—Probably, owing to the absence of sharp frosts during the present spring, this North American Maple has been unusually full of flower, while the blossoms seem to be of a brighter tint than usual. So bright, indeed, are the flowers now, that when lit up by the rays of the sun the whole tree appears to be enveloped in a red cloud, by which the tree can be singled out at a long distance. Apart from the blossoms it is, however, a valuable ornamental tree from its pleasing outline and handsome lobed leaves, which die off a red colour. It is not very particular as to requirements, doing fairly well in light sandy soil, but, like all of its class, a good loam suits it best.—W.

The Acacia.—The Acacia tree is, notwithstanding all that has been written or said of it, but imperfectly known in this country. It has been cultivated in our nurseries for a very long period, introduced as an ornamental tree into our shrubberies, and its foliage universally admired; nevertheless, its qualities, habit, mode of culture, and general value as a timber tree have not been understood. The Acacia is a tree which, in addition to other sterling qualities, possesses that of rapid growth, so that it will insure a reasonable prospect to the planter of obtaining a return for his outlay. This being so, I should like to see some further information with regard to it given in the columns of your paper. I have no doubt many facts are available.—D.

Murthly Conifers.—There has been apparently no exact record kept of the number of trees planted at Murthly. In this respect, therefore, I am unable to answer Mr. Webster's query, but for size and number combined Murthly can have few rivals in this country as a home for Douglas Firs. The average height of the avenue is, I find, more than I expected; it is found to be from 85 feet to 90 feet. In one part there are more than forty trees over 90 feet. The girths Mr. Webster gives, if measured round trees with their leaders still on and avoiding swollen knots at the end of branches, are larger than any at Murthly; but the largest barked trees are not always the tallest, and if the woods of Penrhyn contain Douglas Firs that can be reckoned by the hundred over 80 feet high, as at Murthly, it must be indeed a noble place. The tallest Douglas at Murthly is 105 feet.—C. A. M. CARMICHAEL.

Greenhouse Azaleas out-of-doors.—"West Surrey" may safely risk his white Indian Azaleas outside in a sheltered border or lawn. I can give him good grounds for doing so from the fact that the Azalea indica alba and A. amœna have been planted out on some rockwork and in

the centre of a shrubbery at Hewell Grange, near Bromsgrove, for over ten years. These plants are healthy and vigorous, and some have grown into dense bushy shrubs. They are not protected in any way during the winter. The soil, however, in which they are growing is well prepared for them. This "West Surrey" will find a necessity. It is singular that more of the dwellers in the south of England do not plant out the hybrids between A. amœna and A. indica. They will find them very nearly, if not quite, as hardy as amœna. Mrs. Gerard Leigh, Miss Buist, William Carmichael, and Lady Musgrave are very bright and free-flowering varieties, that will enliven the foreground of any border or give pleasant variety in any shrubbery. These hybrids have become very popular for early forcing, and are, I think, bound to become equally so for planting out in warm southern gardens.—M. C.

—It may be interesting to know that I have for six or seven years grown about half-a-dozen plants of the white as well as the rose-coloured Indian Azaleas in a raised peat bed in a small American garden in South Carnarvonshire, N. Wales. The plants have received no protection during the winter beyond a top-dressing of leaf-mould and rotten manure. According to the warmth of the preceding autumn they flower more or less abundantly, if not profusely.—MARGT. T. WHITAKER, *Bryn-Celyn*.

The Spindle Tree (*Euonymus europæus*).—This tree is deservedly popular in ornamental plantations. It always looks best when trained up for a few feet from the ground to a single stem, the upper branches being allowed free scope, or at least only pruned sufficiently to give it a trim tidy appearance. It is scarcely necessary to add that it is one of the hardiest of the group, and that it succeeds well near the sea. Of several varieties the most interesting is the white-fruited kind, which differs from the species in producing white instead of pink capsules; the variety with scarlet leaves; and nanus or pumilus, a neat little plant, very bushy, and one which never grows higher than about 2 feet, and it is admirably suited for a rock garden, or any situation where a compact, dwarf plant is desirable. Its small, greenish white flowers expand in May, and are followed almost always by an abundant crop of fruit, produced in bright pink capsules, which, opening up in the autumn, reveal the orange-coloured sac which envelops the seeds, producing a strikingly beautiful effect. It is indigenous to England as well as to a wide area on the continent of Europe, and forms a deciduous bushy tree varying in height from 10 feet to 25 feet.—T. G.

The Weeping Thujopsis borealis.—When at the Milford Nurseries, Godalming, lately I was struck with the beauty of a very fine weeping form of Thujopsis borealis. The specimen is very large, and has been in the nursery no doubt for years. It is about 15 feet in height and some 10 feet spread of branches, the whole tree being furnished with masses of graceful, pendulous foliage as slender as a Weeping Willow. I have never met with a similar specimen of this Conifer, but cannot say whether it is unique. Perhaps some of your correspondents may be able to throw some light upon the matter; certainly it was the only one in this nursery. It seems to me very strange that no attempt should have been made to increase the stock, as it is such a fine addition to ornamental Conifers. Young's Golden Chinese Juniper, which originated in this nursery some years ago, is evidently still a stock plant; some thousands in all sizes, including some very fine specimens, and in the most perfect condition as regards health and variegation, may be seen here. The parent plant is now some 14 feet in height, and is still thriving. There is also a beautiful Weeping Birch which also originated in the neighbourhood. It is remarkable for its extremely fine branches, which are very pendulous, and some very handsome specimens are growing in the nursery. Apart from the generally beautiful scenery admitted to exist in Surrey, the neighbourhood of Godalming is somewhat remarkable for its Ivy-clad trees.—C. D.

GARDEN DESTROYERS.

PLANT MILDEW AND OTHER DISEASES. (SULPHIDE OF POTASSIUM.)

SULPHUR has been used from time immemorial for the destruction of mildew and red spider, generally in the form of flowers of sulphur—an imperfect remedy, the application of which is both inconvenient and unsightly. Some old gardeners recommend quicklime and sulphur to be boiled together in water; this makes a solution of bisulphide of calcium, which is probably a very efficient form of applying sulphur to plants, but as yet I have not tried it. The mixture of sulphur and carbon, or bisulphide of carbon, is known to be the best remedy against Phylloxera, but unfortunately it is very sparingly soluble in water (some treatises on chemistry describe it as insoluble); moreover, its odour is most offensive. The odour of the compound of sulphur and potassium (bisulphide or sulphuret of potassium, the "liver of sulphur" of the old books), which is here recommended, is not agreeable, being that of Harrogate water, but it is sweet compared with the carbon compound; however, I gratefully tolerate the smell, in recognition of the multifarious cures it effects in man, beast, and plant. A strong solution (half an ounce to a pint of water) applied to the surface affected, by means of lint or rag wetted in it, is a perfect remedy for many kinds of poisoned wounds, skin diseases caused by vegetable and animal parasites, whitlows, and many forms of inflammation involving the formation of pus. I have had thirty years' experience of its valuable qualities in such cases, and I never found it to any mischief in the few where no benefit could be traced to its use. On two occasions gardeners in my employed came to me with poisoned wounds, each with his hand and fingers swollen, and both perfectly stiff, with a red line up the arm, showing extension of the inflammation to the axilla; in each case I applied to the hand a bandage wet with a strong solution, and in each case on the next day the inflammation had disappeared, and the hand and fingers could be moved freely. I make no excuse for referring to this medical phase of the subject, for independently of the liability of gardeners to the accident referred to, the action of the potassium compound of sulphur on animals is of the same character as its action on plants, and what is very important, to neither, even when no direct benefit can be traced to its application, it does, as I have said, any harm even to most delicate plant when plunged overhead in it. Plunge soil and pot in a solution of a quarter of an ounce to the gallon (I have frequently used half an ounce to the gallon without mischief, but a quarter of an ounce is sufficient); I have saturated every Orchid, filling two houses, without a trace of injury to foliage, pseudo-bulb, or root; in fact, the growing points of the roots appear more active after the dose. As to the benefit to plants to be derived from its use, it arrests at once all forms of fungoid growth, even the hard fungus which grows on dead wood; it is a perfect remedy for mildew on Roses, &c. I have found it efficient against red spider; it is probably equally so against microbes, various forms of which are doubtless as injurious to plants as other forms are supposed to be to animals. It will probably relieve us from those diseases which are so destructive to the bulbs of Lilies, Eucharis, &c. My limited experience has already proved that it has arrested disease in many varieties of plants. I was driven to the necessity of taking some active steps to counteract a form of disease which had become endemic with me, the mark symptom of which is rotten roots. As this has increased so much of late, and had begun to attack every plant in my houses (a great variety), I began experimenting at the beginning of this winter very carefully with the sulphuret of potassium, and growing bolder as I traced no injury to its use, I ultimately applied it to nearly all my plants. I should have postponed writing until after an extended experience during the growing period of the year, but I thought that some benefit might arise from others joining in the experiment, even if they

limited themselves to testing its effect upon that very troublesome disease, mildew on Roses, which so frequently puts in its appearance at this season of the year. The compound is cheap—I paid 8d. per pound for it; it is very soluble in water, and is easy of application.—EDMUND TONKS, *Knowle, Warwickshire, in Gardeners' Chronicle.*

* * As some of our correspondents may be induced to experiment in the way here indicated with sulphide of potassium, we may mention that it is said to be a very variable substance, much that is sold in this country being not nearly so soluble as the kind used by Mr. Tonks. Care should therefore be taken to get it from some good manufacturing chemist.—ED.

Slug destroying.—Upwards of 31,000 slugs having been killed in my small garden last year. I think I may consider myself a sufficiently successful "slug hunter" to reply to Mr. Wilks' letter in a recent GARDEN. I have also found scissors very effective, especially on some lawn mowings with which a Rhododendron bed was mulched, but my usual mode of destruction is some strong lime water in a pail. Slices of Swede Turnip half an inch thick are placed beforehand on the borders, and then by the light of a lantern, holding the slices of Swede over the pail, I scrape the slugs into it with a small stick. Our best bag last year in one night was 1150. I have found Cucumbers cut lengthwise a better bait, but they are not always to be had. The Swedes should be looked over again in the morning, when many late-comers will be found underneath them.—ARTHUR G. NIX, *Mount Charles, Truro.*

Trapping ants.—The easiest and most successful way I know of destroying ants which have found a harbour amongst plants is to place inverted flower-pots where they are seen to be working, stop the holes, and allow them to remain several weeks without disturbance, and when you remove them you will find them full of earth and eggs. It is, however, necessary that a copious watering be given round the pots now and then, as it is the dryness and comfort which the pots afford which attracts the ants. In the open ground in showery weather they soon fill up the pots, and if these are removed three or four times during the summer, taking care that eggs and insects are destroyed, there will be an end to them in the course of two seasons; generally speaking, there are few left by the autumn. The best time to lift the pots away is in the evening, watering round them in the afternoon, as that drives the ants in. I have trapped millions of ants in this way, and have never known the plan to fail. A year or two ago I had some frames badly infested. I could not use hot water, as they were working amongst the roots of the plants. I put down three or four 2½-inch pots, and by the end of the summer I caught them all. Very often ants get in Box edging, and they cannot well be dislodged, but the above method will draw them all out in time.—J. C. B.

DO PLANTS FROM CUTTINGS VARY?

MR. PETER HENDERSON publishes in the *Philadelphia Press* the following sensible remarks on this subject: In speaking about Potatoes some one has said that "seed" taken from the most productive hills gave a larger yield of tubers than that taken from the least productive. I am inclined to believe that farther experiments will show that this increased productiveness will not continue to hold, because the reason for the greater or less yield was probably only an accident of circumstances, specially favourable conditions of the set made to form the hill, or by being highly fertilised, or some such cause that gave it this temporary advantage, and that the chances are all against any permanent improvement being made by such selections. The Potato is said to have been introduced into Europe in 1584. If the original tubers had had the highest cultivation that the skill of man could give, it is exceedingly doubtful if 300 years of culture would have changed them in the slightest degree

if propagation had been solely from the tubers and not from seed proper. I base this opinion on a very extended experience in the cultivation of plants from cuttings. Strawberry plants taken from any well known kind, such as Sharpless, for example, from strong, vigorous-growing plants, will certainly give better results than from weak plants of the same kind planted in the same soil. But if the progeny of the strong and the weak plants are again taken and replanted the difference between the two would hardly be perceptible after they had been grown together under the same conditions. Every now and then we hear of varieties of fruits or flowers said to be degenerating that are propagated from cuttings, grafts, or roots. I believe there is no such thing as permanent degeneration of any fruit, flower, or vegetable that is raised from cuttings, grafts, or roots. The Jargonelle Pear, the Ribston Pippin Apple, the Hamburgh Grape, or the Keen's Seedling Strawberry are found to look just as good, and as bad, under different conditions of culture as they were fifty or a hundred years ago, and that any change, either better or worse, is only an accident of circumstances and temporary. For be it remembered, that when a plant is raised from cuttings, as in the case of the Grape Vine, grafts as that of the Pear, or layers as in that of the Strawberry, or pieces of the root as in the Potato, such parts are not seed proper, but merely parts of the same individual first called into existence. The Early Rose Potato, introduced nearly a quarter of a century ago, is just as good to-day, under proper cultivation, as when first introduced, but it is certainly no better. It is often to be found, of course, under unfavourable circumstances, and then may be supposed to have degenerated; but when it is shown under other circumstances to be as fine as when first introduced, how can the assertion of permanent degeneracy be admitted? Permanent improvement, in my opinion, in varieties can only be made by the selection of the fittest specimens that have been raised from seed proper. Here we have, as in the Early Rose Potato, the Sharpless Strawberry, and the Concord Grape, varieties that have shot ahead of their fellows, having merits that the general public recognise, but all the art of man cannot further improve these so that their "progeny" (to use a convenient, though, perhaps, not a strictly correct term) will be permanently better or worse than when first called into existence. It is a very common error, when a luxuriant crop of anything is seen growing under specially good culture, to imagine that cuttings, roots, or seeds from such plants must necessarily give similar results when the same conditions to grow such crops well are not present. Not long ago Boston was famed for its Rosebuds, and even experienced florists paid double price for stock from such plants, only to find that in their hands these plants would not produce Boston Rosebuds. Now the case is changed. Madison, New Jersey, as a whole, beats Boston in Rose culture, and the demand has changed from Boston to Madison, and, of course, with the same results, for if the purchasers of Madison Roses cannot give Madison culture, there will be no Madison Rose buds. While we admit the advantage of a healthy stock, and even, perhaps, the value of a change of stock, what I claim is that no culture will permanently change the variety from the normal condition, and that the only advance that can be made is by selecting the best specimens, hybridising these from their seed, again selecting, and so on forward. To be sure, we have in rare instances what are known as "sports," or what Darwin has called "bud variation," which may be improvements on the original variety or the reverse; but culture, good or bad, has nothing to do with such anomalous cases. Again and again we see it asserted as a matter for wonder that the wild Celery of English marshes and the wild Carrot of the hedgerows have attained their present high condition by cultivation. If cultivation means that man has through generations selected the fittest of these again and again, taking always the flower of the flock, so as to have attained the present perfection, then that is true; but if by cultivation is meant that domes-

tication by high culture, manuring, &c., in garden or field has caused such results, then, in my opinion, it is not true.

OWENS' NEW SPRAY DIFFUSER.

A NEW machine for the garden has just been invented and patented by Messrs. Owens & Co., the hydraulic engineers, of Whitefriars Street. It is intended chiefly for applying liquid insecticides to plants; but we consider the appliance has another and quite as valuable a use, and that is the diffusion of a mist-like spray in plant houses, thus enabling one to create a moisture-laden atmosphere without the excessive amount of moisture which follows the use of the ordinary syringe. The new appliance, we think, will be an invaluable aid to Orchid growers, especially as by it they will be able to produce an atmosphere in which Orchids, especially cool-house kinds, delight. The machine in appearance is like an ordinary garden water-engine, but its action is on a different principle. The liquid is forced from the cylinder by compressed air. The short india-rubber hose-pipe and copper branch-pipe have an inner and outer tube, through which the air and liquid pass separately until they meet at the end of the jet and produce the spray or mist. It is, therefore, the compression of air which gives the force of ejection and the mixing of air with water at the point of the nozzle which causes the spray. The spray is so fine that where it falls no drops of water are perceptible, yet, like a "Scotch mist," it would soon wet one through. The force by which the spray is ejected from the machine is so great, that it may be made to reach every part of the plant, a point of importance when the liquid used is an insecticide. Tobacco juice, soap-suds, decoction of Quassia chips, or solutions of paraffin or Fir tree oil may be used, but it is necessary to strain the insecticides that contain solid matter in their preparation, and this is the only precaution necessary. As so little liquid is used in diffusing the spray, the machine is economical—a consideration in the case of expensive insecticides. Apart from its use in diffusing insecticides it is, as we before remarked, a valuable invention for the plant house, especially at those seasons of the year when a superabundance of actual moisture in the houses is undesirable. In Orchid houses where the machine is already in use it is found that one or two diffusions a day keep in the cool houses such a pleasant, cool, yet moist, atmosphere which Orchid growers all strive to maintain in their houses. The machines are made in two sizes, holding respectively four and eight gallons.

BOOKS.

CACTACEOUS PLANTS.*

SINGULAR to say, this large and distinct class of cultivated plants has had no book devoted to them until now. True, there have been various botanical treatises published upon Cacti, but this is the first book in the English language exclusively devoted to them. Mr. Castle has managed to cram into his little treatise, which consists of ninety odd closely printed pages, a great deal of useful information respecting the history and culture of this interesting family, undoubtedly the most grotesque in nature. The author commences by discussing briefly the points of structure peculiar to the family, its geographical distribution, and garden history, and his numerous references to old gardening authors show that he has left no stone unturned in hunting up the garden history of the family. Gerard (1596) appears to have been the first English writer who alludes to Cacti, the species he mentions being *Opuntia vulgaris*. From that date to this there has been a steady increase to the number of cultivated Cacti, till now they number about a thousand. The chapter on their general culture and propagation, though brief, is thoroughly practical, the

* "Cactaceous Plants: their history and culture." By Lewis Castle, 171, Fleet Street, E.C.

author's experience at Kew having served him well in this respect. After the twelfth page the book is devoted to a description, history, and culture of the various genera, and an account of the most desirable species in each. A botanical arrangement is followed, but we think that an alphabetical order would have simplified matters in this department. The author rightly pays most attention to the showiest plants—those which he considers most desirable for general cultivation, and among these are to be found some of the quaintest plants in the world, whose flowers are unsurpassed for loveliness; and if this little book tends to arouse an interest in them, the author will have done good work. Collections of Cacti in this country are so few that they may be counted on one's fingers, and these are mostly in botanic gardens, that at Kew being by far the finest, while Mr. Peacock's is pre-eminently the best private collection. A chapter upon growing Cactuses out of doors and in cold frames is useful. It is based chiefly on Mr. Loder's experience in growing the Cacti of Central North America. The book is illustrated, but a glance will show that all the woodcuts are not of equal merit; indeed, it would have been better if some had not appeared. The index, too, is very incomplete. A full alphabetical index of all the genera and species mentioned in the text would have been invaluable for ready reference. These minor defects may, however, be easily remedied in a new edition of the book, which is a good addition to the garden bookshelf.

PARKS & PUBLIC GARDENS.

NEW PUBLIC PARK AT BRISTOL.

WITHIN a month or two the city of Bristol will be in possession of a very pretty public park, encircled with scenery of a varied and charming character. Standing on the central mound, the panorama on all sides is very grand and beautiful. The east side supplies a grand view of Clifton, with the Suspension Bridge, the famous Leigh Woods, and the crescents of houses rising tier upon tier from the Hotwells. Northwards are the gently sloping and well-wooded hills of Leigh, with here and there a noble mansion. The north-western boundary is lined by Ashton Park, and the hills rising behind that palatial residence are almost continuous to Dundry, on the highest point of which stands boldly out the grand old church tower, while the Mendips form the skyline on the southern boundary. It is nearly two years ago since the 28 acres of land now formed into this picturesque public park was given to the Corporation by Sir Greville Smyth, Bart., of Ashton Park, for this purpose. The delay in laying out and planting arose from the operation of the Mortmain Act, which rendered it necessary to wait a year before the work could be commenced with safety. The contract for laying out the park was taken by Messrs. Parker & Son, of St. Michael's Nursery, St. Michael's Hill. They commenced operations in November last, and expect to finish about the end of this month. The undertaking was one of considerable magnitude to be accomplished in the specified time, but the undulating character of the ground and the tortuous nature of a great portion of the boundary afforded unusual scope for landscape gardening skill. The part that gave most trouble to the contractors was the western side, on which the ground was very much depressed and full of holes, and as this included the portion set apart as a ground for the Bedminster Cricket Club, it was necessary to raise and level the turf. The only binding stipulation in the gift was that this piece of the park should be reserved for ever as a ground for the Bedminster Cricket Club. From the central entrance three winding paths radiate. In laying out these paths, the existing rights of way had to be respected, and that to some extent hampered the freedom of arrangement

This difficulty, however, has been overcome without interference with these long-existing rights, and the paths have been made safer and better. Facing the entrance gate, and in the space separating the diverging paths, will be a large group of trees of various sorts. Westward, towards the banks of the stream, the path leads to a plot planted with a belt of Poplars, Sycamores, &c., with which are planted a variety of Conifers, Laurels, Aucubas, Hollies, Box, &c. At a foot-bridge crossing the stream towards Leigh, one of the ugliest parts of the old stream has been successfully dealt with. To the portion of the park liable to flooding at very high tides so much attention has not been given, but a bank has been formed to keep back the water. This was fairly tested in the recent high tides, for the water flowed over the bridge, but did not enter the park. From here passing towards the North Street entrance an avenue has been planted, and a winding path leads to the summit of the hill, where a circular shrubbery has been planted, containing about 1000 trees and shrubs.

IVY LAWNS.

IT is surprising that Ivy lawns have not hitherto been more generally adopted than they have been, especially in soils where lawn Grass refuses to grow, and in situations where it cannot properly be mown and kept neat and eye-sweet. Instead, however, of pointing out the advantages of Ivy lawns or of sounding their well-merited praises, I shall probably better fulfil the wishes of interested readers by plainly, and as practically as possible, giving directions for making and maintaining them. A piece of ground to be seen from some desired spot is selected, which may either be level, sloping, convex, concave, or all combined, as Nature has designed it. The ground should be dug to a depth of 12 inches, and in digging, care should be taken to either remove or bury all turf, roots, and stones nearer the surface than about a foot. The earth should also be thoroughly pulverised, and the surface made whatever it is designed to be in regard to shape and form. When the ground has been properly prepared the plants should be brought forward; they may consist of young shoots of common Ivy (*Hedera Helix*), which are best procured from walls, from which they can easily be removed by the hand without breaking them. Shoots of one or two years' growth are preferable to older ones, as they grow more certainly and quicker. The common garden line should now be stretched across the surface of the prepared ground a few inches in from the outer edge, and if the ground in the direction of the line is undulating the line must be pegged down. A notch should now be made along the line with a garden spade in the same manner as is done when planting Potatoes, except that for Ivy the notch should not be so deep, being only from 4 inches to 5 inches. If the soil is a light loam, or abounds with sand, nothing further will be required beyond laying the Ivy shoots in the trench and covering them to the desired depth; but if, as frequently happens, the soil is clayey or inert, a little sand should be strewn along the trench before the plants are put in, and again after being laid an inch deep or so should be put above them. The most important part of the work, and that which requires most care and attention, is that of laying the shoots along the notch, so that the greater portion of the leaves is kept above the ground. The length of the leaf-stalk, it will be observed, is that by which the depth of the notch has to be regulated. If long, the trench will require to be deep, and if short, it will require to be shallow, and, indeed, as is found in practice, some parts of the notch must be one depth and some parts another, so as to suit the description of plant that is to fill it. The shoots are, as it were, strewn along the trench, overlapping each other a few inches at their junction, and the leaves, as already described, are carefully kept above ground when filled in, raked, and smoothed over. The second and succeeding rows should be planted and proceeded with the same

as the first, and they should be about 9 inches apart. During the first and second season after planting, which is best done in April or about the beginning of May, the ground requires to be kept clean, after which, by reason of the dense foliage, weeds or Grass scarcely ever come up. All that is further required beyond what has already been described is annually clipping or mowing off the whole leaves nearly close to the surface of the ground. This should be done in May, as early in the month as convenient, which has the twofold advantage of clearing off all the damaged and weather-beaten leaves which the winter's severity commonly inflicts, and of allowing a fresh and new crop to come up and cover the ground quickly. If the old foliage is cleared off at the beginning of May, the ground will be all re-covered with new soft and shining verdure by the first or second week in June. We have probably no other evergreen plant at once so beautiful and accommodating as the common Ivy, not only for forming lawns and covering walls, but also for many other purposes.—M., in *Irish Farmers' Gazette*.

Gardeners' Benevolent Institution.

From Mr. John Lee, 78, Warwick Gardens, Kensington, we have just received the following circular: "Many of the subscribers to this institution have expressed an opinion that the time has now arrived when some signal recognition of the long services of Mr. Cutler, the secretary, now extending over a period of forty-four years, should be made. Within the last week a remarkable period in the annals of the institution has occurred, viz.: the increase of the pensions by £4 per annum each, and this mainly owing to the energy and perseverance of the secretary in raising the required amount for attaining that result." A committee is being formed to carry out this project, and as it is intended to make it as large and representative as possible, names to be placed on the general committee are solicited.

QUESTIONS.

5344.—*Gloxinia tubiflora*.—The description of this plant in "Dictionary of Gardening" is white flowers in trusses, resembling the single *Tuberose*; fragrance powerful and delicious, a single plant being sufficient to perfume a conservatory. I cannot find this in any plant list. Can anyone inform me where it is to be had?—RUBY.

5345.—*Brownea coccinea*.—Will someone kindly let me know if *B. coccinea* b. ought under that name from the West Indies, where it attains a height of from 15 feet to 20 feet, is identical with *B. grandiceps*, and do they regularly expand their beautiful, large and dense flower-spikes in this country?—J. H.

5346.—Pruning *Choisya ternata*.—I planted last spring a plant of *Choisya ternata* under a south wall in a border in my garden, but the foliage has been much damaged by the frosts we have had during the winter. Is it advisable to prune the shrub back with a view to its making new growth during the summer?—W. J. T.

*. This shrub needs very little if any pruning, the long straggling shoots only require cutting back. As it flowers on its young shoots you should encourage a vigorous growth, and before the winter tie or nail the shoots close to the wall, and during severe frosts it is advisable to throw a mat over the plant for protection.—ED.

LATE NOTES.

Vine shoots (*V. C. U.*).—There are no fungi or insects on the Vine shoots sent, but they indicate ill health, probably from bad root action.—W. G. S.

Naming plants.—Four kinds of plants or flowers only can be named at one time, and this only when good specimens are sent.

Names of plants and trees.—H. Stuart-Wortley.—Not *Narcissus obvallaris maximus*, but *N. maximus*, the former name being now obsolete; not *N. nappus major*, but *N. minor lobularis*.—D. S.—*Hebeclinium lantianum*.—S. E. P.—*Osmanthus ilicifolius* belongs to the Olive family, Oleaceae; a, *Berberis Darwini*; b, one of the Junipers, probably *Juniperus virginiana*; c, *Kilmarnock Willow* (*Salix caprea*); d, another Willow, but specimen insufficient to name.—J. L.—Queen Anne's Daffodil (*Narcissus cyathotensis*).—J. R. W.—Appears to be *Carnation Mary Morris*.—Mrs. M. A.—*Billbergia Liboniana*.—Johnstone.—1, *Pteris cretica albo lineata*; 2, *Onchocladia verna*; 3, apparently *Cystopteris fragilis*; 4, *Lonicera Standishii*.—S. Aisbet.—*Coleogyne flaccida*.—A. T.—*Rhododendron Falconeri*.—J. Downie.—Double variety of *Narcissus incomparabilis* called Sulphur Phlox ix.

WOODS & FORESTS.

VALUING STANDING TIMBER.

So "there is nothing but the eye that is really reliable" in measuring standing timber, is there? So says your correspondent "New Forest" last week, adding that "much that has been written on the subject is absurd." I should be inclined to enter this latest assertion of his under that head. Seeing there is nothing so reliable as the eye, how comes it that the eye is only brought into requisition when the tape or rod cannot be applied? Did "New Forest" ever know a buyer who would buy lying timber by the eye when he could measure it with the tape? Did he ever know a seller who would sell in that way, or a workman who would fell by the piece, and reckon contents by the eye? I will answer for him, No; and ask why the eye is therefore better than any other means in the case of standing timber. Every woodman is not an expert valuer, however proficient he may be in other respects, but he can always make up for that by care in measuring and using the rods, which every woodman possesses, and most of them use when accuracy is an object. These rods are usually made in 5-foot or 6-foot lengths, fit together like a fishing-rod, which they resemble when joined, and they can be put together and taken to pieces again in as many seconds. Fancy a valuer tackling say 4000 or 5000 trees in one or two lots, and taking the dimensions of each on "New Forest's" plan of "taking a fair look round on all sides" and taking the mean. I should say his experience has been confined to a few hedge-row specimens once or twice in the season. There are expert valuers who trust to their eye a good deal, I know, and when they have come to the same wood year after year; they may not be far out, but all young and inexperienced foresters I advise to proceed more carefully by measurement, otherwise they may make a serious mistake in valuing large quantities, suffer discredit themselves, and cause loss to their employers. In valuing, the main point is to ascertain the quantity in feet. Once you are sure about that, the money value can soon be fixed. I am acquainted with some of the most extensive purchasers of standing timber in England, and they always employ professional valuers, whose duties consist in estimating the probable quantity of feet and reporting on the general condition of the lots. Once in possession of this information, the merchants put on the value themselves. If the wood agent is sure about the quantities, he can meet the buyer confidently—not otherwise, and he must hence adopt the surest means. The first extensive valuation the present writer made consisted of three lots, comprising about 25,000 feet. The first thing he did was to divide the lots to be felled into trees and poles in the usual way, all being reckoned "trees" above 10 feet and "poles" beneath that figure down to 1 foot, the remainder being "rails." Next the trees were all correctly numbered, and the poles counted and crossed. Then a few of the trees here and there—fair average examples—were measured, the heights being taken with the rods and the girths at the proper height guessed after passing the tape round the trunks as far as a man could reach. Samples of the poles were gone over in the same way in different parts of the wood, and an average struck and applied to the whole in each lot. To do this carefully took the writer about two short winter days, with a man and a lad. The lots were then printed, the number of trees and poles only being furnished, and the papers sent to the buyers to tender privately. Two professional valuers went over the lots separately for the buyers, and it was found at the sale, when notes were compared, that between our own careful estimate of the quantities and those of the experts there was a difference on the total of three lots of a little over 300 feet in the 25,000 feet, a very near approximation indeed, and on our part entirely due to careful measure of the trees selected as averages. As may be expected, both sides knowing the value of the timber, there was not much difficulty in settling about the price. People are not born experienced valuers by

the eye only, and to advise a beginner to trust to that organ only is about the rashest counsel one man could give another. Some old authorities advise every tree to be gone over separately and a value put upon them, which may answer in the case of isolated specimens, but in setting out lots in a wood it is perfectly safe to strike an average if the trees and poles are divided. If there be much disparity in the sizes of the trees, they may be subdivided in the same way, as, of course, the finer and larger they are the better the price. It is a good plan, as "New Forest" suggests, for the novice to estimate trees standing, and note the contents when they are down, thus testing his abilities and gaining experience, but no valuer need pretend to tell as accurately with his eye as can be done by measuring. Let those who doubt this just put two experts to the test by making them give the contents of the same tree separately, and you will never find both estimates alike, thus showing what big blunders they might make in setting out large quantities. The most accurate judges of the contents of trees are the workmen who fell by the piece, but they cannot compete with the tape and measuring rods, and they always measure their lots after felling, and refer to their well-worn pocket copy of "Hoppus's" for the contents. Although timber is bought in lots by merchants, they sell by the foot as a rule, and it is therefore important for them to ascertain the quantity in feet in buying as it is for the wood agent to do so in selling. The better grown and straighter the timber is the easier it is measured and valued, and as trees in judiciously thinned woods are generally of tolerably even dimensions, it is not difficult for a careful man to find their average bulk. Rough, unshapely trees with large tops and numerous limbs are more difficult to estimate, but take trunk and limbs separately a near approximation to the contents may be soon reached. There is, of course, the quality of the timber to be studied in valuing, but that is a subject that the vendor or his agent will soon master, and the condition of the trees in each wood is generally pretty well known to both buyers and sellers. Valuing top-wood, bark, and underwood are less important matters. Sometimes the two former are valued separately, and it is always safe for the woodman to calculate their value in that way. On some estates both the numbers of the trees and feet are stated, and these having been settled satisfactorily to both sides, the lots are sold by the foot, which is a good plan.

WOOD AGENT.

THINNING LARCH.

SOME authorities recommend plantations to be thinned as soon as the points of the branches of the trees meet at their points, and probably this is a good rule in the case of young plantations which soon get choked, the weakest going to the wall; but it would not do for a long period. The Larch, when in a suitable soil and situation, will produce branches from 20 feet to 30 feet long, which, if room was found for, would be allowing every tree a space of from 40 feet to 60 feet wide. If the diameter of the trunk increased proportionally, it would not matter so much, but it does not do that. Everything must depend on the kind of timber wanted. Larch and Spruce that are never allowed more than what may be called good head room make the straightest trunks of good girth. On the estate here there are some as fine Larch as could probably be found in Yorkshire for their age—about 80 years. They run from 80 feet to 100 feet in height—all being very much alike in that respect, but varying considerably in thickness. A few trees growing in open spaces and still retaining many of their bottom branches, which are very long and thick, are over 3 feet in diameter about a foot from the ground, and taper very gradually to the top; whereas those growing inside the wood are from 6 inches to 1 foot less, branchless, except near the top, but all are more uniform throughout, straighter and handsomer, and comparatively free from knots—a very useful timber and worth more money from a tradesman's point of view. On

another part of the estate the same thing is observable. The place is a deep ravine in which the Larch, rather crowded, have reached the same height as those above mentioned, having been probably planted about the same period, but they have been "drawn" up, few exceeding or reaching 9 inches in girth a few feet up, while some are smaller—such as are used for scaffold poles. From these and other evidences it appears that the best time to thin freely is when the trees are young, after which a good top only of branches is sufficient to carry on growth. Thickness of trunk of a tree, or indeed of any bush or plant, will always be in proportion to the number of branches it carries, because the more leaves the greater the annual deposit of new wood; but there is a point, after allowing for this, at which thinning ceases to be profitable.

On the subject of thinning plantations—like a good many other things—much ignorance exists, and the fact is patent to the most casual observer. Woodmen are in many or most cases extremely ignorant of their business, and do most things by rule of thumb only, sticking to the usual routine year after year, and neglecting much needful work in the way of thinning, removing dead trees and decaying branches, draining, and re-planting.

YORKSHIREMAN.

INTRODUCING THE AMERICAN WHITE OAK.

(QUERCUS ALBA.)

I QUITE agree with your correspondents that the importation of Acorns of this Oak and planting them largely in this country is advisable, seeing that its timber is so good and the tree is more rapid in growth than the British Oak. Our early tree planters seem to have been quite aware of the value of this tree, for Loudon tells us that "A landable anxiety to introduce these species on a large scale has existed in England from the days of Elizabeth to the present time; and during this period hundreds, nay, thousands, of pounds have been expended in the importation of Acorns. Bartram, Michaux, Cobbett, and a host of nurserymen, besides private gentlemen, have all signally failed. Cobbett alone expended many hundred pounds in his efforts to accomplish this object, and every plant he raised, I have no doubt, cost him a crown."

This Oak grows in all the middle States in America; it is found some distance south of Pennsylvania, but I do not know how far. I know it does not grow in the extreme Southern States. It grows north of Boston, but it ceases to grow in Maine; therefore the Oak that comes from New Brunswick, Nova Scotia, &c., is but of little value. White Oak is good for building purposes; and the timbers of the old houses, barns, mills, &c., built with it, which is the case with most of them, are as sound, after standing 150 years, as those in this country that are built of English Oak. White Oak is much used in ship-building, especially for planking. It is excellent for machinery, far surpassing any wood that we have in this country, being so much stronger and so much tougher than our Ash. All the naves and sides of their light waggons and other vehicles are made with it, also the hoops or bows that go over the tops, whether covered with leather or canvas; also the spokes of the wheels, and being so much tougher than our Oak they are made much less; the rims, or felloes, also, are sawed out of white Oak plank, and being so much stronger than our Ash or Elm they are not near the size we have them and will last as long again, as the wood is so much more durable. Shafts of all waggons, carts, &c., are made of it, let them be ever so heavy or ever so light. For coach-poles it is better than Lancelwood, because it is lighter and will not fly; it is better than our Ash, because you can make it less, and it will not snap off like Ash. The frames of their railroad cars are generally constructed of white Oak, and they make them lighter than we do with English Oak, because it is tougher; also staves for casks, vats, &c. The white Oak is the wood generally used there, more than Oak and Ash both put together are here, as it has the qualities of both, and is much superior. This wood enables

the Americans so much to surpass us in carriage and steam-boat building. The large exhibition made at the Edinburgh forestry exhibition last year by one of the large railway waggon building firms in America showed admirably the nature of the timber of the white Oak, and how superior the trucks made of it were to those on our English railways. When the white Oak is small, it is fit for hoops for barrels, &c.; when it is as big as your arm, it is fit for all purposes that our Ash is; and as it gets larger it is fit for all purposes that I have enumerated and many others. I should say a nice warm sandy loam will suit the growth in this country. I do not think it would do in the deep clays, like our Oak. I think a soil adapted for Elms would suit it better. Cannot some means be devised whereby the Acorns of this Oak can be imported in quantity at a reasonable cost?

G. W.

SOWING ASH SEEDS.

MR. J. B. WEBSTER, in an article on the Ash in *Woods and Forests* for February 25, takes notice of an error that occurred in *The Forester* in regard to the propagation of the seeds of that tree. Mr. Webster, in describing the manner of pitting the seeds before being sown, correctly says that they should remain in the pit "during winter and summer and the following winter till February or March," and then goes on to quote from *The Forester* a statement on this subject, which he says "might lead to confusion and disappointment." Mr. Webster must surely have got an old edition of the work from which he quotes, as no such statement now exists in the latest editions of the book. I have only been connected with the production of the latest or fifth edition, but I have copies of the fourth edition, but in neither of these does the statement referred to exist as given by your correspondent. Those who have not the work itself to refer to may infer that the quotation is from the latest edition. Mr. Webster, therefore, shows himself as being somewhat behind the times with his reading. It may be well to quote from *The Forester* what is evidently the paragraph to which Mr. Webster referred, but as it appears in the latest edition:—

"When gathered for the purpose of sowing, the seeds (of the Ash) should be mixed with a quantity of dry sand or light, dry earth, in which they should be kept for eighteen months in order to rot off the outer coat; and in order the more effectually to ensure this, the whole mass of seeds and sand should be turned every three months. This mass of sand and seed should not be much over a foot in depth, as, if more, it will be liable to heat, and in consequence the vitality of the seed would be injured. In the second March after they are gathered, the seeds should be sown in rows rather thinly and upon any moderately well pulverised soil. They are sure to come up thickly, and confine one another, if not sown thinly—say, one seed to every 3 square inches, and the covering of earth should not exceed three-quarters of an inch. In the following spring the plants will be ready for being transplanted into the nursery rows."

G. E. BROWN (Forester).

Larchwood, Lyon Co., Iowa, U.S.A.

Rocky Mountain forests.—To a traveller marching without appliances a Rocky Mountain forest is almost impenetrable. Trees of every age and height stand close together as thick as corn in a field. Their branches are interlocked; the ground is everywhere cumbered with fallen, decayed, or uprooted trees, piled one on another in the utmost confusion. Thick Grasses and brushwood fill up the interstices from below. Whole tracts have been devastated by fires, but the fires have only added to the confusion. They have done nothing but bring down thousands of blackened trunks to strew the ground. The whole of the lower slopes of these mountains are covered with the dense primeval forests described. They also extend up to the steep and precipitous rocky masses which form the summits of the range.

DISPOSAL OF HOME TIMBER.

I FEAR that "D. J." has not followed the correspondence that has hitherto appeared on this question in *Woods and Forests*, which, in my opinion, is the most important of the many questions in connection with forestry in this country. Had "D. J." observed what was passing, he would have seen at page 249, which seems to perplex him, that it is both admixive and critical. If "D. J." will point out where he thinks my statement is illogical, I will further explain and try to mend matters.

So far as I am competent to judge on the question of selling home timber direct to the consumer, up to the present I have not yet seen any cogent reason given why this cannot be well done. It is hardly the work of earnest reformers to create difficulties in the way of reform; it is rather their business to get rid of such. If it were possible to put any of the millions sterling into the British purse which it is said finds its way annually into that of the foreigner in the purchase of timber—that were an object worthy of consummating. There is nothing said in the arguments of recent writers on this question to answer that has not already been answered, for if their words are not the same (as those able writers of prior date), the sum and substance is much the same; therefore, until better reasons are adduced against what is, we will call it a suggested change in the sale of wood, and unless new ideas are infused into the discussion, the question must remain nearly where it is, whether that be satisfactory or not, because the substance of argument is thus far evidently exhausted. Albeit I am sanguine that the collective wisdom of foresters will surmount all difficulty in time. Changes of this sort are not brought about at once, and if the great mass of evidence which I believe foresters have at their disposal were once made public, reform in some shape could not long be delayed. "What to do with our timber" is a fascinating heading for an article which does not explain in the context how this is to be effected.

GLENDYNE.

THE SCOTCH FIR.

AT what period the Scotch Fir first became an inhabitant of these islands is perhaps difficult to fix, but certainly long enough to have acquired the term "native," which term is pertinent and apt. The nature and proclivity of the Scotch Fir to accommodate itself to unlike states of existence is so well known, that anything said in this respect is unnecessary. No tree in the tree culture of our country has fewer faults to disqualify it, and no tree has more merits to recommend it to the timber grower. As a safe and remunerative product of the soil, its utility is established. No tree submits to change, to sudden and often austere change, with less semblance of injury. From the poor soils of the wind-swept moor to the generous alluvium of the plain its constitution fits it to thrive under any conditions, provided the soil be not oversaturated with stagnant water, nor the atmosphere overcharged with smoke. Its productive potency is of the highest order, and its voluntary aptness to disseminate and reproduce itself is alike remarkable, and it is at home anywhere from John O'Groats to Land's End, and from Land's End to the sea-board of Mayo. Hardly any soil is too poor for the tree, save pure sand and quick moss, or crnde peat.

It attains its greatest perfection and value of timber on rather poor moorish soils, with changing subsoils of various strata. That which seems to me to be the most perfect figure of the tree is cylindrical stem, umbrella-like head of branches, hardly so flat; dark, dense, short foliage, bark thin and clean of a reddish hue. Other distinctive shapes and peculiarities of the tree yields equally as good timber, and the many contours the tree depicts are freaks of nature rather than different varieties. But undoubtedly if more care is not used in collecting seed, a degenerate and degenerating progeny will be the result. The offspring of seed gathered from very young stock produces many vile, erratic, and imbecile trees, which is

not so easily seen in the seedling period as a few years after. The cones of old trees are just about one-third of the size of those of young trees, and collectors who are paid for the quantity, and not for the quality, of cones they gather are not likely to climb to the top of old trees 40 feet or 60 feet high when plenty can be gathered at much lower levels, and when these will make up quantity three times as quick. Seedsmen, I think, might, and could check this.

GLENDYNE.

SELECTION OF TIMBER FOR FELLING.

MUCH attention is properly given to and large sums of money spent in the planting of trees, but it is a remarkable fact that very little care is exercised when the question of felling comes to be dealt with. I briefly referred to this a week or two ago. The importance of the matter is my apology for again directing attention to it. I by no means begrudge the space given to the subject of planting and culture; but, at the same time, if the more important one of felling and utilisation is lost sight of, we only begin a good work and leave it incomplete. It has for some years past been my lot to be frequently on estates in various parts of this country; therefore my remarks are not directed to any locality in particular, but rather give my general impression of the practice pursued by considerable numbers of owners of wooded lands. With some exceptions the result of my observations has been that the selection of trees for cutting does not receive the attention it deserves. Why this should be it is difficult to explain. Certainly, apart from the financial question, greater mischief can be done by the injudicious destruction of timber than can be the case by injudicious planting. The remedy in the latter case is obvious; but in the former, so far as replacing is concerned, it is practically irremediable. I am not now referring to estates where competent foresters are employed, but to the more numerous cases where the property is not of sufficient extent to give constant employment to a qualified man. This being so, when it is necessary for timber to be felled for estate work or for the market, a workman who has no occasion to give a moment's thought to the question from one year's end to another is employed for this responsible work—probably an individual who has no appreciation of the beauty of the landscape or care for its preservation, neither has he the requisite knowledge to make a selection of the most suitable trees. What is the result? Anyone who cares to know will not have far to look if he will take a walk through a few miles of average wooded country. It will probably be that the eye of the poet will not be so much offended as that of the practical forester. Whatever liberties are taken with Nature she does her best to repair the injuries; therefore a short lapse of time may be sufficient to partly obliterate the mischief inflicted in this direction; but to the man whose mind is engaged with the more matter-of-fact question of profit and loss, the effect is painful. Suppose the estate carpenter is instructed to select a certain quantity of timber either for use on the estate or for the market. What does he do? Consider what trees are mature and fit for the axe? Whether large trees are preventing the growth of smaller ones? Whether there are scores of small trees growing so closely as to preclude the possibility of their ever having the opportunity to make headway? Observe that certain trees of very moderate dimensions have not increased in size for a long time past, and upon these and many similar facts that would occur to a practical man, decide what trees to cut? In the majority of cases he does not, but merely selects the trees that present least inconvenience in felling and removal. Hence, we often see, instead of a healthy growth of young timber striving to keep pace with the inroads constantly made on our supply, a wilderness of decrepit old trees that should have gone beyond profitable consumption years ago, or masses of young saplings budding together in such a fashion as to suggest that, knowing they will never have sufficient room to don their proper suit of clothes, they retain this position to keep each other warm. This is a great

pity, as by a little care and observation the evil could easily be remedied. It cannot be expected that men who have not sufficient interest in it to devote a moment's study to the art of forestry are capable of deciding which trees should be allowed to remain, or which should be felled. Therefore if the landowner is unable to devote enough of his time to make a personal selection of trees, it would amply repay him to employ some qualified person who has made this art a subject of careful study. D. J. Y.

Best time to cut timber.—Dr. Hartig, who has made numerous experiments to determine the point, states that March and April are the best months in which to cut timber for building purposes, as it then contains its lowest percentage of moisture, which he states to be forty-seven per cent. During the three previous months it has fifty-one per cent., and the three following ones forty-eight. He further states that properly seasoned timber should not contain more than from twenty to twenty-five per cent. of moisture, and never less than ten per cent. If the moisture is removed to a still greater extent, the wood loses strength and becomes brittle. Another authority states that if trees are felled as soon as they are in full leaf, and allowed to remain undisturbed until the leaves dry up and fall off, the timber will be found well seasoned, the leaves having exhausted all the moisture.

Durability of wood affected by position.—The problem has puzzled many why two pieces of wood, sawn from the same section of a tree, should possess very varied characteristics when used in different positions. For example, a gate-post will be found to decay much faster if the butt-end of the tree is uppermost than would be the case if the top was placed in this position. The reason is that the moisture of the atmosphere will permeate the pores of the wood much more rapidly the way the tree grew than it would in the opposite direction. Microscopical examination proves that the pores invite the ascent of moisture, whilst they repel its descent. To make my meaning more clear, I will mention the familiar case of a wooden bucket. Many may have noticed that some of the staves appear to be entirely saturated, whilst others are apparently quite dry. This arises from the same cause, viz., the dry staves are in the position in which the tree grew, whilst the saturated ones are reversed.—D.

Girdling trees.—Monteath, in his "Forester's Guide," strongly recommends the disbarking of trees in the spring before they are to be felled, and the effect in hardening the timber is certainly very great, but in a hot summer the exposed alburnum is apt to split more or less. A better mode has been found to be that of merely cutting out clean a rim about 4 inches in width of the bark close to the ground, which in Larches seems to cause the turpentine to be wholly incorporated in the wood, instead of passing down to the roots; and, in fact, it so totally alters the condition of the trees, that the workmen complain of their being much more difficult to saw. The effect of this process in establishing the straightness of the wood is, moreover, very beneficial. A ladder made from a Larch so treated will be straight, whilst one not so seasoned will twist so as to be quite worthless.

Notch v. pit planting.—I should like to see this subject discussed in your pages, as I am convinced that more depends upon it in the cultivation of timber than foresters, as a rule, are inclined to allow. With regard to the Larch especially, I am of opinion that notching the plants is attended with fatal consequences. In pitting, the plants, being inserted into a space of loosened soil, the roots naturally extend themselves horizontally, as in that direction there is no obstruction such as the hard surface of the slit offers. On the contrary, when a plant is inserted in the earth by the slit or notch and properly fixed by treading the ground, it is so firmly compressed on each side of the root, that the fibres are forced downward, and must find less obstruction

in taking a perpendicular than a horizontal direction. Thus the taproot or its substitutes penetrate into a cold and unproductive subsoil; unproductive, I should observe, only in its being more remotely situated from the influence of the maturing agents. With the Larch plant so situated it need not be at all surprising that it should fail in perfecting its new wood; for so long as the roots find an unlimited supply of moisture (which must at all times be the case while they have this direction), and greater in degree in proportion as they are more remote from the surface, so long will that plant be kept in a growing state, until finally checked by the approach of winter.—PLANTER.

FOREST MACHINERY.

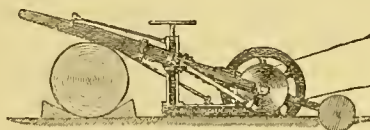
RANSOME'S PATENT TREE-FELLER.

THIS week we go a little out of our regular track of illustrating machines for cutting up wood by giving an appliance intended for use in felling it. The inventors remark that the want of a really efficient machine, effecting a substantial economy over the tedious process of felling and cross-cutting trees by the axe or saw used by hand, has caused



The steam tree-feller at work.

a great many attempts to be made to achieve the result by the employment of steam power; but that all the machines hitherto invented had failed in consequence of being so complicated and troublesome to fix, that the time expended in moving them from tree to tree and preparing them for work has more than counterbalanced any saving which they effected when actually cutting. It is claimed, however, for the tool under notice that it is not open to this objection, as it can be firmly fixed to any tree which it is required to fell on cross-cut in less than two minutes, and as the



Cross-cut sawing by steam.

medium size, which will fell trees up to 4 feet in diameter at the butt, weighs less than 4 hundred-weight, it can be readily carried about by four men. It works very rapidly, sawing down an Oak or Elm tree 3 feet in diameter in less than five minutes, and, attended by a gang of four men, one machine will with ease fell eight trees, of 30 inches average diameter, in an hour, including the time occupied in moving and fixing it. As it will work in any position, it will fell trees growing on slopes, and by simply shifting the working parts into another frame, it becomes a cross-cut saw for cutting trees into lengths as they lie on the ground.

The principal advantages gained by the use of this apparatus are stated to be, that it economises labour, as four men can do the work of thirty; that it saves timber by sawing the tree off close to the ground, this being the best part of the timber, which in the ordinary way would be wasted in chips, and the ground is made level, instead of the stumps being left to form obstructions. The machine consists of a steam cylinder of small diameter, having a long stroke and attached to a light wrought-iron frame, upon which it is arranged to pivot on its centre, the pivoting motion being worked by a hand-wheel turning a worm, which gears into a quadrant cast on the back of the cylinder. The saw is fixed direct to the end of the piston-rod, which is made to travel in a true line by guides, and the teeth of the saw are of

such form as to cut only during the inward stroke. By this simple device saws as long as 9 feet or 10 feet can be worked without any straining apparatus or guide, as its own cut is sufficient to guide the saw in a straight line through the tree; and as the teeth offer no resistance to the outward stroke, all possibility of the saw breaking is avoided. The machine is supplied with steam at a high pressure from a small portable boiler through a strong flexible steam-pipe, and as this may be of considerable length, the boiler can remain in one place until all the trees marked within the radius of the pipe are cut down. When fixed for felling the machine is merely laid on the ground and set fast by a strong screw to a trident-pointed bar, which is driven firmly into the tree with a sledge hammer. When fixed for cross-cutting it is held to the tree by a hinged dog-hook driven into the log close to the saw.

TIMBER SEASONING.

WOOD is simply a mass of vegetable fibres more or less tubular in form, its use being to connect the soaring leaves of the plant with the parent earth. Instead, therefore, of its leaves springing from the level of the earth, as in the case of the common herb, in woody plants we have the leaves climbing aloft, and keeping up their connection with the roots by means of these elongated fibres. These fibres as they become buried in the heart of the tree by the aid of secretory matter become cemented together, gradually closing the channels, and are developed into perfect wood, whilst those on the outside associated with the vital fluids are mere tubes of a delicate and perishable nature. The stems of these woody plants when they grow to large sizes are more commonly and practically known to us as the trunks of trees. A tree in its living state is associated with a great deal of moisture. Its outer face is a sponge through which the moisture of the earth is conveyed to the leaves, a process set in motion and maintained by the action of the sun. The heartwood of the tree which is dead to nature is not so highly associated with this moisture; from this we see that different actions are taking place, which end in the damage of the heartwood and form ring and star shakes. These faults are therefore inherent to the wood before the trees are felled for use. A sponge when drying shrinks in size; so a tree when dead in giving off its moisture is reduced in size. For this reason the seasoning of timber is rarely attempted in the log, as it is well known that it cannot be carried out without the breaking up of the outer face by cracks or shakes. However, when the trunk of a tree is divided into two longitudinal sections, the line of division passing through its centre, no great disruption of its parts will ensue during the process of seasoning; what does take place is a gradual "puckering" up of the corners. We assume that the section of the log when sawn through is a perfect semi-circle, and that the line taken by the saw is a perfect plane. The wood being left in this shape to season, we note what occurs. There are no signs of the outer surface breaking up, as would be the case if the log had been left whole, but the shrinkage at the corners is very considerable, and the plane surface gradually becomes convex. The reason of this is that the wood has closed within itself from its natural centre with a fan-like action. The shrinkage has followed the line of the broad thin band of saturated sap-wood that forms the outer covering, and in this shrinkage the heartwood has likewise taken its part. The drying process may go on to a considerable extent in timber in this shape, but it is almost impossible to season it throughout, as even after the lapse of years when cut into smaller sizes it will alter its shape in giving off its pent-up moisture. SOUTH-WEST.

Wood charred by steam.—A case is recorded where a steam pipe 2½ inches in diameter, carrying from 90 to 100 pounds pressure, was laid underground and cased with boards about an inch thick. After it had been in use about three years the pipe was required to be taken up, when the

whole length of the wooden drain was found to be charred and apparently burned for about three fourths the thickness of the wood. The whole of the inside was burned to charcoal with here and there spots of ashes, showing that ignition had actually taken place. It seems probable that if the casing had not been excluded from the air by the covering of earth, that it would have blazed and been entirely consumed.—M.

TELEGRAPH POLES.

THE 900 miles of additional telegraph lines required outside of London for the cheaper service in August next, says the *Daily News*, have robbed the Norwegian Pine forests of some 20,000 trees. English Larches used to be employed for telegraph posts, but they proved to be sadly wanting in durability. The wood was of too close a grain to permit of its being impregnated with creosote, but yet incapable of resisting the effect of moisture for any great length of time. Larch, therefore, has been discarded, and all our telegraph poles are now imported from Norway. In America they appear to have given the closest attention to this subject, for it has been found that dividends are very largely dependent on the durability of poles. They use various kinds of wood, Cedar by preference, and it is said that the durability of a pole depends to some extent on the time of year in which it is cut down. A sound Cedar post felled in winter, when the sap is low, will last for sixteen years. A Spruce pole will last seven years only under the best of circumstance. The soil in which they grow is said also to have considerable influence on the lasting powers of telegraph poles, and no doubt also much depends on the soil and situation in which they are planted for service. In America it has been found that the whole of their lines want completely renewing every ten or fifteen years at the utmost. The importance of the supports of a telegraph line becomes particularly obvious when it is remembered that the breaking of a pole involves not merely the necessity of renewing it, but also broken wires and interrupted service by throwing the various wires one across the other. It seems probable that by-and-by Norwegian Pines in this country will give place to iron posts, which of course may be made somewhat more ornamental than bare Pine poles, and possibly would prove sufficiently durable to more than counterbalance the extra cost. This is a point, however, which at present seems to be doubtful. An iron post will cost four times as much as a wooden one, and how many times longer it will last there is at present no sufficient evidence to show. A fourfold initial outlay is a matter that is not to be altogether overlooked.

PLANTING RAILROAD EMBANKMENTS.

ATTENTION is again opportunely drawn to this subject by Mr. Yeo (p. 274), who has been hoping to see it discussed in your columns. Some time ago I offered some remarks in THE GARDEN on this subject, and gave a rough draft of a scheme for the conversion of railway embankments, cuttings, and waste lands into fruit and vegetable gardens; this was in August, 1884. In October the fact was announced that the Midland Railway Company was about to take steps to encourage gardening amongst its employés at all stations along its line. So far so good, but the fact remains to-day that if any railway employé takes upon himself, or even obtains permission, to dig up a bit of perfectly waste and useless margin, he is forthwith put under a rent for the same, and it is thereby rendered almost unremunerative to him. It is this kind of policy on the part of the authorities that we need first to combat; for if they are so blind to their own interests as not to see that a considerable source of revenue is ready to their hands in return for a little enterprise and outlay on their part, they need not cripple the efforts of the roadside station-master or signalman, who sees year after year directly around him a nice strip of good land admirable for growing vegetables and fruits and flowers, but

which he is almost forbidden to touch by a prohibitive charge on his all too meagre pay. If we do not ask any return for the sacrifice the nation makes to our railway companies in allowing them to monopolise something like 182 square miles, equal to 116,480 acres of moderately good land, from our very limited area, surely in their own, if not in the public interest they should provide facilities instead of erecting barriers so that their thousands of servants may grow food where food has not been grown, and thus eke out their pay, besides giving themselves a store of health from the recreative exercise of gardening wherewith to enable them the better to discharge their duties. The best plan is undoubtedly the more comprehensive one of undertaking the work themselves by appointing one or two garden inspectors on each line; these men should direct the platelayers and their ganger (who walk over the whole of the lines every day) where and what to plant—Strawberries on sunny slopes, Currants, Gooseberries, &c., on the sides of cuttings and embankments, whilst on level margins and tops of cuttings the larger fruit trees might be grown. The men now employed in hedging and ditching would do this work with a little assistance, for most of them have a few feet of garden at home.

The planting of trees, such as Larch, as suggested by Mr. Yeo, is fraught with considerable difficulty. To cut them at the length of Hop poles would scarcely pay, whilst to allow them to grow into useful sized trees is out of the question, as they would endanger the safety of the trains in cuttings by falling, either through wind or by the axe, across the line, whilst on embankments they would when lopped and trimmed roll to the bottom and destroy the fences. Then, again, there is no ready means of transport thence to a suitable market, for a "pick-up" timber train could not wait on a main line until each tree was separately hauled up and loaded. For fruit gathering, on the other hand, the bogie trucks now used by platelayers would do admirably; these can easily be lifted by a couple of men on or off the line so as to allow a train to pass, and every station has a sufficiency of unclaimed empty hampers and boxes on hand which could be used for transporting fruit or vegetables to the nearest station or market. No mean advantage which would accrue from embankment gardening would be that of the earth being held together much better than at present by the roots of shrubs, small trees, and plants, to say nothing of the amount of water which would be absorbed by the same roots instead of being allowed, as now, to percolate and sap the foundations of the slopes which it taxes all the ingenuity of engineers to keep firm and level. I do not doubt the real difficulty is, who is to begin? and where? Each official, from the general manager down to the lad-porter, considers he has sufficient to do in attending to his specific duties. Viewed as a whole, the question is one of magnitude to a small kingdom reticulated, as ours is, with railways; but no scheme is so grand as to be beyond commencement, and from this first systematic start near the centre of any railway which passes, as most of them do, through fertile land, it would radiate with the greatest ease to its termini. Fruit and vegetables would be had at every little station, disposed of by the station-master to each servant at a little under market rates, and the very large surplus would be sold in the fruit market of the nearest large town by fruit salesmen on commission, as at present; carriage upon it would be no item, and it would bear no rent charge. These advantages would enable it to be sold at a higher profit than is customary. The first outlay in trees and plants would not be considerable, and grafts and cuttings could soon be obtained in such quantity as would supply a whole railway system gratis. Which railway company will begin?

Horsforth, near Leeds.

R. A. II. G.

Alexandra Palace exhibition.—This palace was re-opened on March 31 as an International and Forestry Exhibition. At present there

is very little to be seen of the forestry exhibits. It would be unfair, however, to comment upon it until the exhibits are all in position, as we understand much space has been taken that will not be filled for some weeks. One small exhibit contained in two cases at the entrance to the hall is worthy of mention, viz., samples of wood and Pine cones from Ireland. The sections of wood consist of specimens of Oak, Walnut, Yew, Cherry, Cypress, Elm, Ash, Birch, Larch, Hornbeam, Sycamore, and many other woods collected from various parts of the island.

Planting Redhill Common.—The authorities laying out the old sand pits on the lovely Redhill Common have planted the hot sandy sides with about 100 large poles about 3 inches in diameter and 15 feet high without one vestige of growth on them—like clothes-props. Can anyone record the result of a similar experiment, and why clothes-props have probably been chosen in preference to young trees?—J. R. D.

Cypress as a building wood.—The Cypress, although liable to shake, is spoken well of for many purposes. It is said to be as good as white Pine, but works a little harder into doors and sashes. It does not warp or twist. Roofs made from good heartwood would last thirty or forty years. In America, where it is used for shingles, it will outlast the white Pine. It is also said that it takes paint better than yellow Pine, as from the latter, when the sun is powerful, the pitch exudes and spoils the paint. Another instance is spoken of where a porch was lined with white Pine and Cypress boards. Now the Pine is rotten, but the Cypress is in fair condition.

Taxing income from woods.—I have before me a communication from Somerset House, made without date (about last November), and signed Alfred Hanson, controller, enquiring whether there have been any sales of timber on my property since 1873, and requesting an account thereof to be delivered. No mention is made of any date previous to 1873, though the property has been in my hands some time longer than that. Will any wood proprietor oblige me with an explanation of this mysterious demand? A point that puzzles me is why twelve years should be allowed to elapse without any such application being made. An ordinary creditor cannot recover after three years, but it seems that Government officials can allow any length of time to pass without impairing their claim.—C. M.

Birds killed by telegraph wires.—The other day, when walking along the London and North-Western Railway near Alcer Station, I was surprised to find a number of birds killed by the telegraph wires. In less than half-a-mile I counted no fewer than eight (six thrushes and two blackbirds) that had recently met their death by flying against the wires, which was evident upon examining the birds. In all cases it appeared to me as if the birds had dashed headlong against the wires, and with such force as to entirely dislodge the eyes from their sockets. I have been puzzled to account for the greater number of thrushes than blackbirds killed. Is it that the former fly with greater rapidity, or are they more short-sighted than the blackbird? Certainly it is not because the thrush is more plentiful than the blackbird.—A. D. WEBSTER.

Indian wood-carvers.—The East Indians are naturally free-handed carvers. Long before the Christian era the Hindoos beautified the interiors of their temples and houses with most intricate work. The faculty of carving has not left them, and a block of Teak under their chisels soon becomes the bed of the most beautiful traceries, and reproduces the flora of the East in all its variety of forms. The oriental wood-carvers in one respect are unequalled—they have originality of conception, united with a power of execution which is truly wonderful. They receive simply the suggestions of artists on paper, and acquaint themselves with the idea conveyed. With one or two scoops of the chisel a Lily, a Passion Flower, or a Pomegranate lies embedded in the wood as though it had been waiting simply to be picked and enjoyed.

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"This is an Art
Which does mend Nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare*.

DAFFODIL NAMES.

ALREADY the good results of last year's Daffodil conference are showing themselves. This was apparent at last Tuesday's gathering at South Kensington, where, instead of long strings of Latin names affixed to our modest Daffodils, we had names that everybody could pronounce and remember. Thus, instead of *Narcissus incomparabilis* Leedsi aureo-tinctus we had simply Daffodil Mary Anderson. This exchange of Latin for popular English names was one of the wisest acts the congress has carried out, and infinitely more important to the public at large than the arguments affecting the doubling or singling of Daffodil blooms. It is to be hoped that the byelaws set up by the conference committee will not be transgressed, but we fear that there is already a tendency in that direction. For instance, Mr. Krelage sent over from Haarlem on Tuesday a very fine Daffodil, called simply General Gordon. This name, however, simple as it was, was not allowed to stand by the floral committee, but was exchanged for *N. spurius coronatus*, a name not only cumbersome, but misleading and not strictly correct, inasmuch as to make it so one would have to add to it the name of the species, so that we may expect to see this beautiful Daffodil catalogued as *Narcissus pseudo-Narcissus spurius coronatus*! This is a flagrant case of setting the conference committee at defiance, and that at a time when the Daffodil committee was actually discussing names and rechristening old varieties. If one committee of the Royal Horticultural Society sees fit to nullify the efforts of another, how is progress to be made? It is quite a relief for visitors to the Daffodil shows not to be confronted by such an array of Latin names as formerly. The next step of the Daffodil committee should be to prepare a list of the best sorts, so that growers may not be encumbered with so many kinds from which to make selections. A hundred or more sorts may now be well expunged from the list. What is the good of growing inferior sorts? One large grower intends to pitch half of his hundred sorts to the rubbish heap this season, in order that he may be able to devote more attention to the selected fifty.

BRASS BANDS AT FLOWER SHOWS.
TO THE EDITOR OF "THE GARDEN."

SIR,—Is it not the general opinion that at the shows of the Royal Horticultural Society in the great conservatory at South Kensington the presence of a military band is undesirable? The main part of the visitors are keen flower-lovers; they wish to meet and talk over the flowers before them, and to compare their varied experiences. The mere careful examination of the fine displays of flowers, as at the Daffodil show on Tuesday last, is in itself fatiguing, and the greater the quiet of the place the more the enjoyment, but the deafening explosions of brazen blare recurring at frequent intervals destroy all quiet enjoyment of their loveliness, and all peace of mind in the beholder. So thought a group of friends who went to see Daffodils, and not to hear brass instruments, and who feel sure you will agree with them that at a Daffodil show trumpets should be seen and not heard. Moreover, the place is eminently un-

suited to music; to a sensitive ear it is positive torture to be shut up with a brass band inside a cage of glass and iron full of false echoes and painful metallic reverberations. Not a word is to be said against the fine band of the Royal Horse Guards in itself, or their brilliantly performed selection of popular music, but the thing is a painful incongruity—out of harmony with the feelings and wishes of the worthier part of the visitors. In a large garden it would be otherwise, but in the conservatory there is no escape. If the council of the Royal Horticultural Society decree that a military band is a commercial necessity for the attraction of a certain class of their visitors, might it not be of stringed instruments and the milder "wooden wind" (for the great bands have also their string bands), and not this clashing torture of brass and glass? This would be a mitigated evil, though still an evil to those who want to enjoy the flowers without disturbance or distraction. We cannot help thinking that the loss incurred by the hire of the musicians can be not much more than balanced by the entrance money of those whom the music attracts rather than the flowers. We hope that our protest may reach and be favourably considered by some of the governing members of the society, to the great relief and comfort of many. We compared notes on the 14th inst. with many of the visitors and exhibitors, and all those consulted, both amateurs and professionals, agreed the music was a more or less painful interruption of the pleasure of the day. Your present correspondent is one who thoroughly enjoys good music in its place, but thinks that "there is a time for everything," and that the nodding Daffodil trumpet, noiseless however well blown, in conspicuous and delightful contrast to the brazen articles, are entertainment enough for those who go for their sakes.

J.
* * We have several times protested against this mighty sound in the wrong place.—ED.

ROSE PROSPECTS.

NEVER was forecast more bright and promising. Not only are Roses budding into new life in all directions, but that life is vigorous, healthy, clean. Of course there may be weather troubles ahead, but the Roses will have all the better chance for getting safely through them, if neither handicapped by weakness, disease, nor dirt. The three last kill more Roses than the weather, and that is saying a great deal. No doubt the weather often gives the final blow to Roses already staggering, like one intoxicated, under one or more of these evil maladies, but they were already doomed, and any slight stress of weather sufficed to complete the process of killing. But Roses full of strength and stamina are armour-plated as far as may be against weather severities and other Rose trials—as, for example, insect pests, or a temporary scarcity of food or water. A strong Rose will grow out of the evil effects of insect manipulations and temporary checks of food supplies which would cripple a weakly Rose for life, or kill it outright. It was, in fact, the vigour of our Roses of all sorts that gives us our cheerful forecast of the Rose season of 1885. But it is not merely as a vital safeguard, as it were, against accidents that vigour is so hopeful; it is success already within measurable distance, barring accidents; and as it lessens the risks of accidents, it may be almost accepted as success in embryo, the size and strength of our breaks being the first fruits of the fine fat blossoms of next June. So much for prospects, and the brighter these are the more careful should we be about our duties. The chief of these may be summed up in the words "guard the fort," that is the Rose breaks. That in a word has been the main duty of the true rosarian all through the winter and the early spring, and will remain so until the coming bud is fully expanded, perfect in size, form, colour, and accompanying greenery in the coming June or July. In pursuit of the safety of the coming buds, not a few of the larger and top-heavy branches were beheaded last October and November, to lighten the branch, and so prevent

its being broken off or wrenched out by the wind, and also to force the sap back a little nearer to its base. Still in pursuit of the same object, pruning was deferred till the last fortnight in March, though the terminal buds on the reserved shoots had broken into an inch or two of growth. This pruning in most cases has also been carried rather farther and closer than usual in pursuit of the same object, and with the result, up to this date (April 6), that the promise of a glorious Rose harvest was never more bright and brilliant. But though our surgical duties are almost exhausted for a time, it is far otherwise with watching over the safety and ministering to the wants of our Roses.

Though the March winds and stinging frosts have run boldly into April, they will not check the worms that pursue their work of destruction among the buds, even when one might suppose the winds were cold enough to curdle their breath. But so soon as they get into the buds they are probably warm enough, and, what concerns us more, their wreck and ruin of the buds is already accomplished; therefore no stinging frosts nor biting winds must check our vigilance in the primary duty of grub hunting. For the present it is safest to destroy all insect pests seen excepting the lady-bird. Some of these useful friends of the rosarian were seen here alive and moving about to see what aphides they could find to devour on March 26 this year. There are some other insect friends of the Rose, but none of them are about so early as this, and hence the safety, soundness, as well as the thoroughness of the advice to kill all insect pests that may be visible.

TEA ROSES.—Among these the sphere of duty is considerably enlarged. Those on walls, at least, must be pruned, and those that have been partially protected on beds and borders must also be pruned very soon. If left much longer, the breaks on the heads of the branches will have run so far as to seriously drain the plants of vital force, and either prevent the base buds from breaking at all or force them to break weakly. But in many cases it is safer to restore part of the protection for a time, and few things pay better in Rose culture than a little extra nursing of Tea Roses during April, by the removal of protection during mild weather and its replacement should March severities be suddenly thrust into April or May. Of course the same or even greater care is needful in the hunting and destruction of insect pests among Teas as among other Roses. There is one plan of treating Teas on their own roots that deserves special notice at this season. It is not put forth as a substitute for other and more common methods of treatment, nor to be adopted in a wholesale way, but rather tentatively, and to be run abreast with other methods. This consists in simply cutting the Teas over by the ground line. Presently they shoot forth strongly almost like Willows, and flower superbly throughout the autumnal months.

MULCHING AND WATERING.—It may seem early to write of these as Rose duties in April, but it is really almost too late to mulch with the best effects. Rose mulches should subserve these three purposes: keep the roots warm and moist, and provide them with supplementary supplies of congenial and readily available food. The warmth is most valuable throughout the winter and early spring, perhaps seldom so much so as towards the end of March or all through April. The sun quickens not merely the tops, but the roots of Roses into new life, and the tender rootlets, as well as shootlets, are specially susceptible to injury from cold. Hence the wisdom of winter or early spring mulchings. Root growth also makes most progress in moderately moist root-run soils; when dried into harshness through March winds they are by no means inviting to the young and tender roots. And then it not unfrequently comes to pass that Roses are injured by drought on dry sites and in dry soils before any danger has been anticipated. The same remark applies with even greater force to food. Should the young roots meet with scant dietary at first, no future feasting will ever compensate them for this great loss. A first starving

robs Rose roots of their future ability to feed to their fullest extent or best purpose. Therefore, where Roses are not mulched with rich manure with its constant supplies of food in store for all vital necessities for some months to come, a good soaking of sewage or manure water in April is one of the best preparations for vigorous growth and a perfect display of bloom. Descending from generalities to particulars, Maréchal Niel appears to have passed through the winter superbly on walls, and promises a magnificent harvest of golden beauty towards the end of May. D. T. FISH.

NOTES ON RECENT NUMBERS.

Anemones (p. 303).—These lately have attracted much attention, and very beautiful some of the new, and in many cases old, varieties are. Those who are acquainted only with the Dutch forms have a pleasure in store in getting a set of the French, which are a great improvement, and are likely another season to be forthcoming at a more moderate price and in larger numbers. The stellata or hortensis group does not seem nearly so particular about soil and position as the coronaria, and might flourish where the latter died out. If so, it is worth noting, for there are among them many which are very beautiful, but which, nevertheless, one seldom sees. They embrace a wide range of colour, but as yet have been but little taken up for the purpose of improvement. Fulgens people have gone mad over, though a few years back it would not have been mentioned in any bulb list of the trade. The single form of the Peacock is much scarcer in this country, but is very handsome, and so are some of the paler scarlets with their grey rings in the centre. One of the lilacs with a broad petal is of a good glowing colour, and there is a beautiful silvery pink unlike in shade to any flower I know. Herr Max Leichtlin tells us (p. 277) he has raised an improved white; let us hope someone will make an effort to be successful with some of the others. Of double stellata there are several forms; both fulgens and Pavonina vary greatly in the number of petals, though many of the latter are apt to be green and worthless. This is usually attributed to the want of sun in this country, but it is just the same in its native habitat, where there is always a large number of inferior green ones. There is an old-fashioned double crimson-purple which is nice; a really good double white would make quite a sensation. Will some of the owners of doubling grounds for Daffodils try what effect their soil will have on Anemones?

Seeding of Orchids (p. 304).—Certainly an Orchid is one of the most easy of plants to cross-fertilise artificially, but how about getting the seeds to grow? If there are any who have any real knowledge on this point, they think probably that their secret is far too precious to divulge rashly. Either the conditions under which it is necessary to treat the seed are not understood, or else the majority of seed ripened in this country must be infertile. Crosses seem to be effected so readily between plants of such different appearances, that this seems quite possible, and a good many millions of seeds have no doubt been sown by amateurs and others not only without gaining any novelty from them, but without getting any sort or description of plant at all (Cypripediums are of course to some extent an exception). The recorded experience of M. Bleu does not help us in this, but perhaps some of the collectors in other countries might by observation pick up a few hints. Has anyone been successful in raising any of the hardy sorts from seed? It would be very desirable to be able to get a quantity in this way. Seeds of varieties of Orchids have been offered in a nurseryman's catalogue this year, probably for the first time in England. I wonder whether anyone will be able, or even attempt, to make anything out of them.

Valuing standing timber (p. 327).—"Wood Agent," in his scathing denunciation of "New Forest's" remark, seems to forget that standing timber often has to be valued when the land on which it is growing "changes hands," and

when there is no immediate intention of felling the trees. In this, as well as other cases, most sellers would be ready to trust to the "eye" of an experienced valuer. If "Wood Agent" will go into a cattle market he will probably find there men who will be able to tell the weight of pigs, sheep, &c., to within a few pounds merely by looking at them, and on the strength of this will complete their purchase without going to the trouble of weighing the animals, even when the convenience for so doing is close at hand. This faculty, of course, is not given to everyone, and in any case requires to be developed by long practice, but it is very astonishing sometimes to see how the eye will correct the hand, and to how great an extent it may be trusted to for accurate results, though many people from their own incapacity in this respect would, doubtless, be incredulous of the skill of another, and would require what should be to them a more positive proof.

Scotch Fir (p. 328).—The statement that "no tree has more merits to recommend it to the timber grower" than the Scotch Fir, though no doubt true in some soils, is not so in others. We use up a good deal of timber for various purposes during the course of the year, but have always considered "the Scotch" as the least good of any tree, and, indeed, of little use at all. There are few soils worth the expense of planting which would not grow either Oak, Ash, Chestnut, Larch, or Spruce, and surely, in most cases, any one of these has "more merits to recommend it to the timber grower." I do not wish to condemn the Scotch Fir entirely, for in our gardens there are few trees which are more picturesque than they, with their red stems and dark green foliage, but a word of caution is necessary to those who in some parts of England would expect to get a profitable return as timber from a tree which takes a long time to become "hearty," and which in a young state is more than half sap, and very liable to become worm-eaten. C. R. S. D.

ORCHIDS.

THINNING AND PRUNING ORCHIDS.

I MUST claim indulgence for a further communication on this subject which, as far as the controversy is concerned, has been partly transferred to other hands; but I want to put the subject again before Orchid growers in its original shape with some further particulars. This is needful because of what might happen at the coming "conference," and because, of the manner in which the question has been misrepresented by "T. B." and others in a contemporary. In 1880 (February 28) I sent you a note entitled "Thinning out the bulbs of Orchids," in which I recommended the old or spent-back bulbs of such subjects as *Cœlogynes* and *Dendrobiums* to be thinned—mark the word "thinned"—only not to be all cut away, subsequently pointing out how many specimens of *Dendrobiums* were disfigured by the quantity of old back bulbs left on them. Taking the *Cœlogyne cristata* as an example, I wrote, "One often sees large masses of the plant so crammed with the old pseudo-bulbs that the young ones have not room to grow, and are small in consequence, &c." It was this proposition that "T. B." took up and contested and condemned, and when asked what he would do under the circumstances in the case of *Cœlogynes*, he explained that he would chop his specimens into pieces, which is only another way of thinning, but not so good as thinning the old bulbs out as they stand. The discussion was continued several weeks—I advocating thinning and "T. B." condemning the practice, and advocating the cutting up the specimens into fragments instead. That is how we stand, only that while I have never departed from my original position, "T. B." has completely deserted his, and now implies that the question is one of pruning away the whole of the back bulbs of the subjects operated upon, which is an entirely separate question, introduced by me in relating some successful experiments in that direction, but

not recommended for general practice without trial. When in subsequent years "T. B." found that not only did thinned plants grow and flower well, but that some species grew year after year with the whole of their bulbs removed, he felt, I daresay, that the sooner he took up new ground the better. Since then others besides myself have tried the plan of cutting away the whole of the back bulbs of certain species, and fine examples of these "T. B." has seen and examined—to wit, prize specimens of the highest merit at Manchester last summer that were described in THE GARDEN at the time, and at the York show as well, where, I am informed by those present, he assisted to judge the pruned *Dendrobiums* in the prize collections. In addition to this, he is now confronted in a contemporary with a *bona-fide* grower, who is willing to gratify him with the sight of not one, but many pruned specimens of *D. nobile* of such excellence and dimensions as "T. B." hardly ever saw, and which have the peculiar habit of blooming on the current year's bulbs like *Wardianum*.

The worst feature of "T. B.'s" defence throughout has been the fact that whenever he has been offered any satisfactory proof or been confuted in any way he has constantly shifted his target further off instead of standing to his post, and now he asserts that nothing can be satisfactory that is not demonstrated at some exhibition. Although, in my own case, I could and may exhibit pruned Orchids fully proving everything I have written on the subject, I repudiate the plea that such a course is necessary in the case of any new useful practice that may be recommended, and in saying this I have every authority on my side. Exhibitions are well enough in their way, and many exhibits reflect great credit on the exhibitors; but there are many things connected with plant growth of the utmost value to cultivators that nevertheless never find their way to exhibitions.

J. S. W.

PLANTS IN FLOWER:

Guernsey Anemones.—A bunch of single French Anemones from Messrs. Hubert and Mauger's nursery at Guernsey shows every variation in colour that can possibly, one would think, be found in *A. coronaria*. The flowers are large, beautifully cup-shaped, and range from deep crimson and purple to pink and white, while some have the colours arranged in zones and stripes. The Guernsey Nurseries, where these flowers are grown, must now be a grand sight.

Hardy white Passion-flower.—Some blooms of the new white variety of *Passiflora cœrulea* have been sent to us by Messrs. Lucombe and Pince, of Exeter, having been produced on small plants under glass. The flowers sent are not so large as what might be expected on strong plants outside. Still, they are very pretty and distinct from the familiar blue Passion-flower, inasmuch as there is scarcely a trace of blue in them, the corolla fringe being of ivory whiteness. It is a welcome addition to hardy climbers, and as it is doubtless as hardy as the original, its value is increased. It is named *Constance Elliott*.

Senecio macroglossus.—In addition to the graceful beauty of the flowers of this Cape Groundsel, to which we have already frequently called attention, it has the useful character of being an almost perpetual flowerer when large and established in favourable conditions. In the illustrated account of it which appeared in THE GARDEN last August, it was stated that at Kew this plant had been in flower from the previous November till that time, and from then to the present it has continued to bear large numbers of yellow star-like blossoms. At this rate it appears that the Kew specimen has not ceased flowering during the last eighteen months, and now in April it bears scores of bright flowers with plenty of buds to follow. Planted out in the cool end of the succulent house and kept supplied with water, this *Senecio* has grown to a large size, extending along the roof and festooning from one rafter to another for many feet. The cool treat-

ment is apparently much more favourable to its welfare than that of a warm house. A plant which grows rapidly, remains always in good health, and yields an unceasing supply of beautiful pale yellow star-shaped flowers, more beautiful than those of even the yellow Paris Daisy, requires but little recommendation.

Arabis blepharophylla.—Of this charming spring flower Messrs. Backhouse, of York, send us a bunch of a variety called *superba*, in which the colour is much more intensified than that of the original. The colour, a glowing purple-crimson, has a fine effect in masses, as Messrs. Backhouse have it just now. It has somewhat the habit of growth of *A. albidula*, and is quite as floriferous, though perhaps not so vigorous in constitution.

Acacia dealbata out-of-doors.—I send you a spray of an *Acacia dealbata* which has stood out two winters in my garden here. When planted it was not 2 feet high, and now it is nearly, if not quite, 10 feet. The flower is poor, but it is worth growing for its foliage. It has been entirely unprotected.—N. BAKER, *Butts Hill, Kingswear, Dartmouth.*

. It is interesting to know that this Australian shrub is sufficiently hardy to thrive in the open even in the warmest parts of our islands.—ED.

Double blue Hepatica.—I send you four double blue *Hepaticas* from a cottage garden in my village where they grow vigorously. On the other hand, I send you two blooms from a double blue which I bought from a London nursery some three or four years ago. The cottager's grow with long stems and plenty of leaves. The other hardly protrudes from the ground, and the leaves do not come up till the blooming is nearly over. It is evident that they are distinct varieties, and I think the cottager's the more valuable.—R. HOOPER, *Upton Rectory, Didcot.*

. Decidedly superior to the ordinary double blue *Hepatica*, and one that we hope Mr. Hooper will take care to propagate. The flowers are fully a third larger than the ordinary size and of a glowing deep purple.—ED.

Cineraria Snowflake.—A series of varieties of white *Cinerarias* has been sent us by Messrs. Carter, of High Holborn, and among them a new one called *Snowflake*, which quite surpasses the rest as regards size, form, and purity. In striking contrast with the snow-white florets is the rich purple centre, powdered sparsely with yellow pollen. A plant in full flower of this *Cineraria* must, we imagine, be very beautiful. In the series there is another almost as pure white, but it lacks size and form. The rest of the sorts are ivory-white, and therefore not so attractive as *Snowflake*, the superiority of which can be seen at a glance when contrasted with other so-called whites.

Flowering shrubs.—From the Coombe Wood Nurseries Messrs. Veitch send us specimens of a few shrubs now in bloom there. Foremost among them may be mentioned *Magnolia stellata*, otherwise *M. Halleana*. This is a very beautiful shrub, with large, pure white flowers borne along the leafless branches. There are two handsome evergreen *Berberis*—one the common *Berberis fascicularis*, the other *B. Aquifolium undulata*. The last is not only handsome in leaf, but bears large clusters of yellow flowers. It is a most desirable April-flowering shrub. A variety of *Ribes sanguineum*, named *atro-rubrum*, is the deepest coloured variety of this familiar flowering Currant that we have ever seen. *Prunus tomentosa*, though not showy, is an interesting shrub and extremely floriferous.

Hyacinths in the open air.—A short time ago I stated that I was not in the habit of throwing away *Hyacinths* that had bloomed in pots, but that I put them into the borders, where they bloomed year after year and with the most satisfactory result. In confirmation thereof I send you a few blooms, taken at random, which you may see are by no means to be despised. Nothing is done with them; they are planted in clumps, are not thinned out, and yet I think

you will agree that some of those now sent would not be a disgrace to a collection of imported bulbs. The clumps increase in size, and, as you will see, the stems are stiff enough to support the blossoms without any artificial help. When they die down in the border where they at present are, the surface of the soil is gently raked over, and in the summer a fine crop of *Mignonette* covers it all over.—DELTA.

. The spikes sent are quite as fine as spikes from plants grown in pots.—ED.

Odontoglossum crispum Dicksoni.—Under this name we have received from Messrs. Dicksons and Co., of Waterloo Place, Edinburgh, a spike of an extremely handsome *Odontoglossum* which was awarded a first-class certificate in Edinburgh last week. In order to describe it intelligibly we must compare it with *O. Andersonianum* rather than with *O. crispum*, for it really is a form of Anderson's variety, as the long pointed sepals and attenuated lip indicate. We should place it midway between a good form of *O. Andersonianum* and *O. hebraicum*, as the flowers exhibit the mosaic markings peculiar to *hebraicum*. The sepals are white, profusely spotted with chestnut-brown, the three outer tinged with purple on their exterior surfaces. The white lip has one heavy blotch of cinnamon-red with yellow on the crest. We consider it one of the best in its way that we have seen, and Messrs. Dicksons are fortunate in having it turn up from an importation of *O. crispum*. The spike is handsome, bearing nine fine blooms.

Crassula pyramidalis.—The genus *Crassula* comprises a large number of species, many of which are remarkable for singularity of habit, either in their leaf arrangement or in other characteristics, and a few of them are equally remarkable for the beauty of their flowers. In *C. pyramidalis* we have one of the most striking of the former group, and of which a pan of little flowering specimens may now be seen in the Cape house at Kew. Each of these is about 2 inches in height, and in outline resembles a little quadrangular tower or prism, gradually widening upwards and rounded to a point near the top. This singular form is owing to the shape and arrangement of the leaves, which are four-ranked and very closely imbricated, in fact packed quite tightly together from base to point, so that the whole plant looks like a solid little mass with zigzag lines running round it, instead of being formed of a number of separate leaves. When about to flower this little prism opens at the top and through it protrudes a crown of white flowers, the whole crown being no larger than a sixpence and not much thicker. This rare little species has been introduced to Kew from South Africa, the native country of over a hundred species of *Crassula*.

Echium callithyrsum.—The *Echiums* are represented in the English flora by the beautiful blue species *E. vulgare*, the Viper's Bugloss, but in the regions of the Mediterranean they are large herbs, and in the Canary Islands the *Echiums* assume very large proportions and are shrubby perennials. Such are the species *E. giganteum*, *E. fastuosum*, *E. candicans*, and the plant known in gardens as *E. arboreum*, but which has not yet been properly baptised by botanists. Most probably, however, it is *E. callithyrsum*, which forms a large shrub as much as 10 feet through in the Canary Islands, and which is represented at Kew by a large specimen that flowered in the temperate house last year, and by a smaller one now in flower in the conservatory (No. 4). There is but one spike of bloom on this latter plant, but it is both beautiful enough and sufficiently representative of the flower characters of the species to deserve noting. The inflorescence is terminal, a stout erect spike rising from the top of the growth, and upon its upper 6 inches a densely packed cluster of bell-shaped sky-blue flowers is borne, the long stiff, rose-tinted stamens projecting beyond the flowers in a bottle-brush fashion. For large conservatories these tree-like Buglosses are well adapted, but it is only rarely that one meets with them in cultivation.

Begonia scandens.—A climbing *Begonia* is to most people a novelty, but there are several species of distinctly climbing habit, that is if the habit of the Ivy may be considered such, for the above, and also one or two other kinds, are grown against pillars and walls at Kew, to which they cling by means of their sucker-like stem-roots exactly as Ivy does. *B. scandens* (known also as *B. lucida*) is the most useful amongst them in a garden sense, its leaves being large, shining green, and not unlike those of *B. nitida*, and it grows so rapidly that a large pillar may be clothed by it in a single year. It is also grown at Kew as a basket plant, a large basket enveloped by the long shoots, which afterwards grow downwards, being quite ornamental even when not in flower. Some of the Kew plants are now in bloom, and although the individual flowers are small, yet when borne in great numbers upon a wide branching raceme they are not unattractive. Most of the flowers are females. The capsule, which is an important character in *Begonias* for botanical distinctions, is in *B. scandens* three-winged, one of the wings being much larger than the others; the whole flower is pure white.

Thunbergia Harrisii.—This is one of the best of cultivated *Thunbergias*, some of which rank among the most beautiful of stove climbing plants. *T. Harrisii* and its near relation, *T. laurifolia*, are very quick growing kinds, extending many yards in a season and flowering very freely, the former at the present time and the latter late in summer. At Kew in the T range *T. Harrisii* is now bearing numerous axillary racemes of large bell-shaped flowers, with broad limbs as much as 3 inches across, their colour being bright blue with a shade of purple, whilst the throat of the flowers is tawny yellow. Planted in a border and trained along a rafter this species may be made to form a large curtain of long pendent shoots, with slightly toothed, ovate, pointed leaves. The flowers are produced on the current season's growth, so that pruning, which has to be resorted to if the plant is to be kept within reasonable bounds, ought to be deferred till just after the flowering season. All the *Thunbergias*, including the *Hexacentria*, which is now united with *Thunbergia*, may be grown in the same way as is here suggested for *T. Harrisii*, and the same precaution is necessary in regard to pruning, as carelessness in this may easily result in the absence of flowers. In large houses where a variety of climbers is grown it is sometimes the practice to prune and trim up the climbers at one time, but that such a course is wrong must be apparent if we consider the different times at which such plants flower.

Primula Clusiana.—This Primrose does well on the rockery at Kew. In a little nook and well sheltered from north and east winds, which are so damaging to delicate flowers, it seems quite at home, and though a little past its best, for it is one of the earliest to flower, it still shows an amount of rich colour, reminding one of that of its near allies, *P. calycina* (*P. glaucescens*) and *P. Wulfeniana*, both of which are showing their welcome flower-buds. *P. Clusiana* is a most desirable kind for early blooming, and also on account of its being amenable to pot culture. Being a quick grower, it soon forms tufts of considerable size, which rarely fail to yield a good crop of flowers. It thrives well in a compost consisting of small pieces of tufa or brick and lime rubbish mixed with good stiff loam. It likes plenty of sun, and should receive constant waterings overhead during the growing season. It forms little tufts or rosettes of yellowish green leaves about an inch broad in the middle, with a gradual taper to the base, shiny on the upper surface and occasionally hirsute on the underside. On the flower-scapes, which are about 4 inches high, there are invariably four flowers produced in umbels proceeding from a ring of narrow bracts at their base. The flowers are about as large as a florin; the outer edges of the petals are notched about half way down, and present an uneven appearance. They are bright rosy purple, with a beautiful silvery white eye. It is a native of the Alps, and is easily increased by division of the

tufts. Close beside this Primrose, and with its roots almost in the water, is *P. rosea*, the pretty carmine-pink flowers of which are very striking. It seems to be a fortnight or more earlier than its variety *grandiflora*; *P. denticulata* is also conspicuous. *P. spectabilis*, with fine dark purple flowers, is also showy, and on a dry southern exposed wall, *P. obconica*, *P. floribunda*, *P. marginata* and its variety, and *densiflora* seem to be at home, their success being in a great measure due to copious waterings during winter regardless of frost or cold.—K.

Amorphophallus Rivieri.—Nearly two years ago we noted the flowering of several plants of the wonderful Aroid, *A. campanulatus*, which was successfully grown and flowered at Kew, one of the flowers being amongst the exhibits sent from Kew to the horticultural meetings at the Linnean Rooms in 1883. At the present time several specimens of *A. Rivieri* are now flowering in the Begonia house at Kew, where a large collection of *Arisaemas* and similar Aroids has been a source of much interest for some weeks. If the flowers of *A. Rivieri* are smaller than those of *A. campanulatus*, they are not the less active in emitting a most powerful and intensely disagreeable odour. It is surprising how so foetid a smell could come from plants in vigorous health. The flowers, or what we call flowers, of *A. Rivieri* are borne on a stout stalk about 18 inches high, upon which the large trumpet-shaped Arum-like spathe is fixed, the colour of this spathe being dark chocolate except on the lower outside, where it is whitish and spotted with deep green. In length the spathe is about 9 inches. In the middle of this trumpet a long thick spadix is developed, the portion inside being clothed with the small flowers—males in one series and females in another; the top of the spadix is nearly a foot long and 1 inch in diameter, hollow, wrinkled and puckered, and in colour similar to the spathe. The whole inflorescence lasts about a fortnight and then withers, after which the plant remains dormant for a few weeks and then pushes up a single leaf. In the case of *A. campanulatus* the tubers perish after flowering. *A. Rivieri* is a native of China, from whence it was introduced into England by Mr. Bull and flowered in his nursery about ten years ago. It is sometimes employed for summer bedding, its large spreading umbrella-like leaf being considered ornamental.

Mackaya bella.—Although introduced to Kew from Natal about sixteen years ago, and flowered and figured in the *Botanical Magazine* at that time, this beautiful greenhouse flowering shrub has remained hitherto almost unknown. No doubt this is in a large measure due to the supposed shy-flowering nature of the plant when under cultivation, and unless the treatment adopted for it is of a special character, flowers are scantily, if at all, produced. In Sir G. Macleay's garden, at Pendell Court, a fine specimen of this plant was grown and flowered about six years ago, and from this plant a coloured plate was prepared for THE GARDEN, and will be found in Vol. XVI. Mr. Green, who at that time was gardener at Pendell Court, grew his specimen of the *Mackaya* in a warm greenhouse, where it was planted out in a border of rich loam and watered freely during the summer. As winter approached water was withheld, so that the growth might ripen and flower-buds be formed. In spring water was again applied, and a fine display of bloom was the almost immediate result. By pursuing a somewhat similar method of treatment for the *Mackaya* at Kew, except that the plants were kept in pots instead of being planted out, some well-flowered specimens have been obtained, one of which is now to be seen in the conservatory in those gardens. This plant is in a 9-inch pot, and is nearly 4 feet high. About thirty racemes of flowers are either fully open or fast developing, each raceme bearing from twelve to eighteen flowers, which are somewhat campanulate, in form like *Mignonia speciosa*, and measure 2 inches across; the colour is pale lavender, beautifully veined with purple. The flowers remain in good condition for two or three weeks. After flowering the plants should be

cut back and grown on as above. When well grown this beautiful Acanthaceous plant is strikingly ornamental, and as to grow it well, all that is necessary is liberal treatment in a warm sunny house in the summer, and rest in a dry, rather cool house in winter, there seems no reason against so distinct and handsome a plant becoming more popular.

KITCHEN GARDEN.

POTATOES.

THERE is being planted this season an enormous breadth of Potatoes, and should we get a fairly favourable season with little disease, it seems certain that a wonderful crop will be lifted in the autumn. Potato growers seem to have fallen on adverse times, for stocks of all kinds in commerce have become or are becoming rapidly abundant, and the consumption of the tuber, though enormous, by no means keeps pace with the supply. It is useless to say that stocks sell; that may be so, but at a price so low that remuneration is out of the question. Still, with Wheat at such a low price it is not possible to expect that Potatoes can be dear. Any disruption of our foreign relations which would send up the price of Wheat some 30 per cent. would also help Potatoes, but at the expense of the consumer. It is, however, some comfort to us to know that if cut off to any extent from our outer sources of food supply by sanguinary warfare, we can raise immense quantities of Potatoes, and are a long way better off in that respect than we ever were. A rise of from 30s. to 40s. per ton in the price of Potatoes just now, or ere the planting season has closed, would cause farmers to plant far more than they at present contemplate doing, although, as has been stated, the breadth of ground planted this year is great. With soil working so well, following upon a season that has enabled it to be well cleaned, and low prices having left considerable stock of seed on hand, the temptation to plant is great, especially as for two or three seasons the disease has been light in its operation. We may almost hope that this destructive agent is wearing itself out, but that is perhaps indulging in something which a cold, wet summer may show to be unsubstantial. None the less it is well, having regard to possible contingencies, to find that there is promise of a plentiful supply of Potatoes for us next winter should other foods be scarce and dear. Magnum Bonums, of course, are being planted largely, so also are other and newer kinds, as far as possible, and there is hope that consumers may soon have variety in sorts to select from, as of late they have had Magnum chiefly and little of any other kind. A. D.

Cucumbers and woodlice.—Could you tell me why my Cucumbers turn yellow and fail to swell out? some of them do not open their flowers at all. The varieties are Sutton's Cluster and Telegraph. They have been planted about two months. The house is a span-roofed one running east and west, and has six top pipes and one in the bed. The temperature is kept up to 80° in the day-time by fire-heat, with a rise to 95° under sunshine; at night it is 70°. The bed is kept moist and they are watered every day, the quantity given being according to the fruit they are carrying. The shoots look healthy and clean. We have had good cuttings up to the last fortnight, but since then they have been going off, like the samples sent. I give them air when the weather permits. I am greatly pestered with woodlice; can you tell me the best way to get rid of them?—H. B. C.

* * Judging from the particulars just given and the sample of Cucumbers enclosed, there is little doubt that you have been far too generous in the application of water to the border, which under no circumstances can need watering every day, as you say has been done, and more particularly so during the long period of dull cold weather which we have had. Try keeping the border drier, and reduce your temperature to 65° on cold nights, and

to 70° without sunheat by day, making up the mean temperature by closing the house extra early on bright days, when the thermometer may safely run up to 90°. To destroy woodlice pour boiling water into the cracks round the sides of the bed, or wherever else they lodge. If this be repeated for several consecutive nights—if not entirely exterminated—the colony will be too weak to do much mischief. Of course, care in its application will be necessary in order that no harm may be done to plants that may be growing in or near where the boiling water is poured.—W. H.

Cure for the Potato disease.—Under this heading in THE GARDEN (p. 313) we observe a short statement in which it does not require a strong lens to see that the writer wishes to discredit an announcement made by us about our Vine and plant manure, viz., "that we two years ago grew a house of Tomatoes; one half was manured with farmyard manure, the other with our manure; the former were attacked by the Potato disease, the latter escaped." As your correspondent signs himself a "Potato Grower," he of course knows who Mr. Rintoul, the famous Potato grower of East Lothian, is—he who raised Rintoul's Don and other good varieties. We invited Potato growers to call and see the effects of our manure on Tomatoes as compared with that from the farmyard. Many came, and amongst them Mr. Rintoul, and we give his name as being the most celebrated Potato grower of the number. If your correspondent will write to Mr. Rintoul, farmer, near North Berwick, he will doubtless reply and say what he saw here, and the resolution he came to with regard to manuring Potatoes in future. We could name many others, but none whose opinion is more reliable. Our statement with regard to the Tomatoes was simply one of facts.—W. THOMSON AND SONS, *Tweed Vineyard*.

Peas.—We have said that Carter's Stratagem Pea is the very best intermediate Pea in cultivation. We want our readers to remember it. We have tried every Pea and have no interest whatever in praising the Stratagem beyond others.—*Rural New Yorker*.

NOTES OF THE WEEK.

The Paris flower show.—A botanical and horticultural congress will, we understand, be held in Paris in May next during the time of the International Flower Show. Amateurs and nurserymen wishing to become members of the congress can do so by writing to the President of the National Horticultural Society of France, 84, Rue de Grenelle, Paris.

Railway gardening.—In connection with the discussion on this lately carried on in THE GARDEN it may not be out of place to mention that the Midland Railway Company intend offering prizes to the amount of £100 for the best platform gardening, to encourage their servants and also to beautify the stations along the route. This is a step in the right direction.—R. A. H. G.

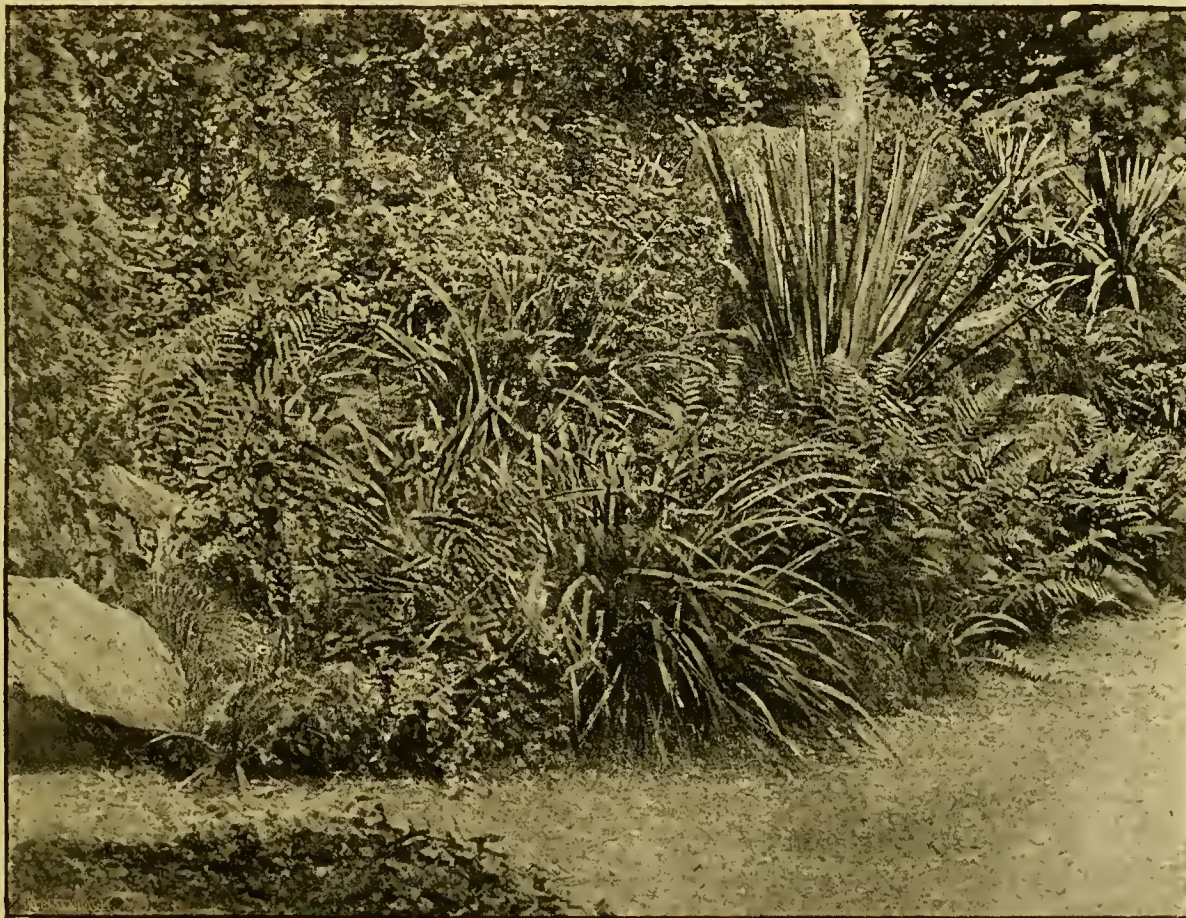
National Auricula Society.—Allow me to remind any of your readers who may be interested in this society that the exhibition of the southern section will be held on April 21 in the conservatory of the Royal Horticultural Society. Entries should be sent at once to Mr. A. F. Barron, South Kensington. Exhibitors who bring their plants out of pots will have pots provided in which to place them, and green Moss with which to cover the surface. It is absolutely necessary that all exhibits be ready for the judges by 11 a.m. Those who intend to exhibit seedlings should take note of Rule X in the schedule, which says, "That all plants submitted for certificates must be staged separately from the collections." It may not be generally known that there is a separate fund for seedlings, the subscribers to it, according to the last published balance sheet, being six persons interested in seedling raising. The balance in hand is £7 4s. It may also be well to state that it is proposed to hold a Primula conference in 1886, the preliminary arrangements for which will be made on April 21. The council of the Royal Horticultural Society have appointed Colonels Clarke and Beddome, the Hon. and Rev. Mr. Boscawen, Messrs. Loder, G. F. Wilson, Llewelyn, and Godman to confer with the society regarding this matter.

TADDYFORDE.

TADDYFORDE, near Exeter, the residence of Mr. Kent Kingdon, is situated almost at the junction of the two north roads leading to the city, having the advantage of being close to the city and yet being entirely in the country, commanding views of the river Exe and the distant Maldon Hills and woods. Originally purchased by Mr. Kingdon's father, about seventy years since, for the seclusion and beauty of the situation, he erected a small cottage on it. This cottage was burnt down in 1816, and the present owner then commenced building the present house and gradually laying out the gardens and grounds. The house is built entirely of red sandstone, the most durable of stones, and affording the best contrast of colour

lawn of some size extends to the pond and plantation beyond. This lawn is devoid entirely of every species of bed—the bedding-out system is entirely discarded at Taddyforde—but the lawn, open in front, is on the sides ornamented by a fine Lebanon Cedar, an English Yew, a Walnut tree covered with Ivy, a Tulip tree, Deodar Cedar, two fine specimens of *Cupressus macrocarpa*, some 50 feet high, a Mulberry tree, two *Araucarias*, two *Cryptomeria japonica*, *Cupressus funebris*, and *Thuja Lobbi*, all of considerable growth, and around all these trees Ivy is allowed to grow. These trees stand out separately, no crowding; all are well grown, and give much interest to the lawn; but the owner felt that discarding bedding out, there yet must be

drons and Azaleas of the best kinds, Phloxes of all colours, Tree Pæonies and herbaceous Pæonies, the large scarlet herbaceous Poppy, Fuchsias of different sorts, Lilies, Primroses, Polyanthus of various kinds, Pernettyas, Everlasting Peas, Roses, *Scabiosa elata*, *Doronicum austriacum*, *Rudbeckia Newmanii*, *Dicentra spectabilis*, herbaceous Sunflowers, Irises, Anemones, Pentstemons, Saxifrages, &c.; the larger trees and shrubs being *Eucalyptus globulus*, Bamboos, *Magnolia* (Exmouth), *Spiræa flagelliformis*, *Laburnums*, *Forsythia viridissima*, and *Colletia spinosa*, &c. This peculiar treatment of the pond, with its plants in it, around it, and on the bed outside, looks well from the terrace—a perfect harmony of colour, and from the nature of the plants never at any time other than a



FINE-LEAVED HARDY PLANTS AND FERNS AT TADDYFORDE.

to the various plants which entirely cover the house, consisting of *Stauntonia latifolia*, *Escallonia macrantha*, the Exmouth *Magnolia*, Roses of all sorts, *Wistaria sinensis*, evergreen Honeysuckle, Ivy, *Clematis Jackmani*, *montana*, and others, *Jasminum nudiflorum*, *Pyrus japonica*, *Ampelopsis Veitchii*, Myrtles, a large Fig tree, *Bignonia radicans*, &c. A wide terrace walk extends along the whole front of the house, separated from the lawn by a dwarf wall of red sandstone, and on the coping of the wall, which is 2 feet wide, are placed, about 12 feet apart, very large clay pots, of good shape and made on purpose for Mr. Kingdon, each containing very large and fine specimens of *Yuccas*. The number of these pots with *Yuccas* on the terrace and steps is twenty-two, and they produce certainly the very best effect. Around the majority of the pots Ivy has been trained, covering the pots entirely. This plan much adds to the effect of this kind of terrace decoration; it is also useful in preventing the roots of the plants being scorched. From the terrace a well-kept sloping

flowers, and he has attempted to supply this want in the treatment of the pond.

PONDS OF WATER, of even considerable size, rarely afford satisfaction; they look too artificial. In this case the sides of the pond are cased with rough stones about 4 feet high from the water, and planted between the stones are Ferns, Butter Bur, Ivy, *Spiræas*, and many other plants that cover the stones, and the plants drop into the water. At the edge of the water on the side seen from the terrace are planted fine clumps of the *Osmunda* Fern interspersed with Marsh Marigold, and the pond itself is covered with Cape Pondweed (*Aponogeton distachyon*), large white Water Lilies, and a beautiful wild plant, *Myriophyllum verticillatum*. The pond is supplied by a natural spring of water, and is also full of gold fish, which breed freely. On a level with the raised stone bank of the pond a large bed is formed all round it, with a wide sunk walk outside edged all round with stone, but quite covered with Ivy. In this bed is a proper flower garden composed of Rhododen-

pleasing sight. The walk round the pond being sunk is scarcely seen from the terrace in front of the house, and walking to the end of this terrace you descend by a flight of seven wide steps to a small formal flower garden, and then descend by another flight of ten wide steps to a long wide walk extending the whole side of the lawn. These steps are all of red sandstone, supported on each side by large blocks of the same stone arranged according to a plan suggested by Mr. Hughes in his work on "Landscape Gardening" (p. 56). Each block of stone supports a large pot with a *Yucca* exactly the same as on the terrace. These steps have been erected for some years; the effect is excellent, and, Mr. Kingdon is satisfied, cannot be improved, and that it is the right plan to be adopted in all terrace steps.

THIS LONG WALK is bordered by Irish Yews of considerable growth, and on either side are some very fine plants of *Bambusa Metake*, *arundinacea* *Simoni*, *Fortunei variegata*, *aurea*, *Ragamouski*, of large growth; *Perberis nepalensis* of large size,

Aucubas of all kinds, Pittosporums, Spiræas, Box, *Arundo conspicua*, *Thamnocalamus Falconeri*, *Rhus Cotinus*, *Phormium tenax*, &c. The end of this walk is terminated by a round bed edged with stone and Ivy; in the centre is a large Irish Yew. It is called the spring bed, being filled entirely with Crocuses, Hyacinths, Primroses, Polyanthes, Columbines, and blue Forget-me-nots, and here around this bed and branching from it commences the rockery. It is a proper rockery; stones of great size covered with Moss, and looking as if they had been there for ages. It is filled with Ferns of all kinds, Sedges, Yuccas, Heaths, *Equisetums*, and a fine group of Flax raised from seed sent from New Zealand some years since. This rockery, it may be mentioned, is continued to the commencement of the pond walk, on the right of which on entering another large raised bed is found, in which are planted all the best new Japanese Maples, most beautiful plants and thriving well; masses of *Lilium auratum* and other Lilies, a good-sized plant of the Umbrella Pine (*Sciadopitys verticillata*), *Desfontainea spinosa*, *Escallonia montevidensis*, *Azara microphylla* and Gilliesii, a large white and red *Rhododendron*; also several dwarf *Rhododendrons*, and at the extreme end, under the shade of some Ferns, a batch of that lovely little plant, *Epigaea repens*. The bed then branches out behind and continues some distance, containing other sorts of herbaceous plants of much interest and beauty, including also *Eryngium pandanifolium*, *Andromedas*, &c. Without going round the pond walk, the walk continues. On the left, in the hollow of the ground, is a fine specimen of *Pinus insignis*, hardy here; also an Austrian Pine covered with Ivy and Honeysuckle, a deciduous Cypress, and an Acacia more than seventy years old, but now covered with Ivy hanging in festoons. On the right the ground rises; the lower part rocks, then masses of Aucuba, and then a mass of Spruce Firs and Austrian Pine, all covered with Ivy and wild Clematis; and just at this point you may imagine yourself in the depths of a wood, miles from any human habitation, instead of being close to a city. Continuing the walk, you come to the lower part of the lawn on the other side of Taddyforde, and here the eye meets two fine Palms, as large as the one at Kew, but in better order; *Taxus adpressa*, *Ailantus glandulosa* covered with Ivy, and a large deciduous Magnolia, small flowered, but the leaves of great size and beauty, with various *Rhododendrons* and a very large Weigela plant. Another bend of the walk, and you are between two large raised beds filled with Bamboos, Heaths, *Rhododendrons*, Azaleas, Roses, and all kinds of herbaceous plants, and at the beginning of two other walks—one wide and straight and planted with Irish Yews, with all kinds of plants and Bamboos on either side, like the walk first entered upon when descending from the terrace steps, and the other a curved walk leading down and through what is termed the wild garden—a long walk full of surprises. You cannot see the walk ten yards in advance, and nothing is visible but trees and shrubs, the ground covered with Ivy and hundreds of Ferns and Sedges and other wild plants, and yet nothing is forced or unnatural. At the end of this walk you come into the open again, with more walks, more new and old plants of much beauty; then comes a terraced fruit garden, with its Yucca decoration, like the terrace in front of the house; and then at the back a good kitchen garden and rookery.

Alpine flowers by post.—I have sent home from Switzerland with great success many Alpine plants in the following way: Shake out most of the soil from the roots when this can be safely done, but be careful not to bruise them. Put a very little slightly damp Moss round them, and wrap them (the roots only) firmly in gutta-percha tissue, tying it sufficiently firm at the neck of the plant to prevent the moisture escaping. The whole must then be wrapped in strong paper or thin cardboard and the ends left open (according to post office regulations). The direction and stamps should be on a tie-on label. The

plants will thus arrive at their destination quite fresh. A large sheet of gutta-percha tissue, sufficient for several parcels, can be had at any chemist's for sixpence, and is much to be preferred to waterproof paper. The size of parcel allowed is best ascertained from the office where you post it.—H. II.

FRUIT GARDEN.

TREE SHELTER FOR ORCHARDS.

THE note with respect to the fitness of Larch for the formation of windbreaks in THE GARDEN (p. 300) comes at an opportune moment. There is nothing which so much injures our fruit prospects in spring as the uninterrupted sweep of bitter keen east and north-east winds, and anything that would break their force would be of inestimable value. This spring is no exception to the rule as regards the biting effect of east winds. We have a magnificent fruit prospect, but the blooms, whether on standard or bush trees, are literally blackened and stagnant, because of the cold gripping winds which play about them by day and the keen white frosts at night. In spite of the powerful action of the sun on the soil it cannot get warm, and nothing seems to feel its influence where the winds have full play. This evil is specially found in such flat districts as Middlesex; here the wind blows over the unbroken surface uninterrupted, causing all who have to brave its keenness almost to shiver and shudder. If this sort of temperature and exposure be continued for several weeks, and Nature whilst striving for expansion is yet fettered and repressed by external cold, it is evident that the bloom even in its yet undeveloped state must suffer. Nay, even the hardy spring flowers wear a miserable aspect where thus exposed to the sweep of the wind, and all Nature seems to cry aloud for protection and shelter. Our innovating methods of farming, good as they may be in their way, yet have beyond all things unhappily tended to the destruction of hedgerows, the lopping of trees, the clearing away of woods, and generally such removal of all natural barriers to the course of the wind, that it has over vast areas now hardly any check, and the less it is checked the fiercer and colder does it become. It is certain that presently we shall have to deal with this question of shelter in a drastic way if we want to obtain fruit crops. We must do for our market orchards just what walls have done for private gardens, that gave them protection and shelter, for if season after season is to roll by and poor crops of fruit to result, it is evident that fruit culture here will soon land the growers into a state of bankruptcy. Capital sunk in providing suitable shelter may, perhaps, in the end turn out to be a sound investment. Then the question arises, In what way can such shelter breaks be the quickest and most permanently formed? Of course, they can only be obtained through the instrumentality of trees, and even then not until several years have elapsed. Larch no doubt makes the quickest growth of all the Fir family, but it is doubtful whether Lombardy Poplar would not rise up more speedily. On the other hand, Larch is the more accommodating, and in the end the more serviceable. But though both of these trees are quick-growing, they fail to give that perfect shelter which evergreen trees afford, and it is a question whether Larch, with Spruce or Scotch Fir mixed in equal quantities, would not prove the most efficient, as combining quickness of growth with endurance and that density of growth which is so desirable. As the belts of trees rose up and became dense, the Larch might be taken out and utilised in many ways. Naturally it would be objected that these breaks or belts would occupy valuable space that might otherwise be profitably employed. That argument would be an excellent one if these belts were not found essential to the securing of fair crops of fruit, and if we could obtain crops without them, of course no one would dream of incurring the expense involved in planting shelter breaks.

If, on the other hand, these belts are found to be essential to hardy fruit culture, then their planting must be regarded as an indispensable outlay, as so much capital soundly invested, with the certainty that it will prove reproductive in time. We have been far too free in destroying trees, and the sooner we replant the sooner shall we reap the benefit. A. D.

PROFITABLE FRUIT CULTURE.*

MR. JOHN WATKINS, Pomona Farm, Withington, read a paper on this subject before the Herefordshire Chamber of Agriculture the other day. He said: I believe that fruit cultivation may even now be made to make a good return for our energy and outlay. But how about foreign competition in regard to fruit? Well, we now import about four million bushels annually from various countries of various kinds of fruit, and from the United States alone we get about one million bushels, principally of Apples, and this importation has more than doubled itself within the last ten years, and is still likely to increase. In Apples they beat us in quality and price; they send a better sample, and thus make a much higher price than we are obliged to sell our fruit for. There is no reason why our fruit should not be of the same superior quality which usually characterises their imports, and later on I will try to explain my views on this part of the question. I have heard, and seen it asserted, that fruit growing does not pay, and I admit that if carelessly or slovenly carried out it will not pay, but I believe it can be made to pay. As a slight proof that it will do so in this country, I may mention two cases which came under my immediate notice last season. In the one a small orchard of about three acres was planted with standard Apples of good sorts of table and kitchen fruit. The trees were properly taken care of, well manured, and some sorts being found to grow too freely without bearing were root-pruned, and the result was a magnificent crop of fruit. These, being carefully harvested, realised about £16 per acre after paying expenses. In the other case an orchard of fruit was placed in my hands for disposal. This orchard is planted with mixed culinary, dessert, and cider Apples with a few inferior sorts, but care being taken in the picking and selection, it made a return of over £15 per acre to the owner clear of all expense; both these orchards were under Grass, and the Grass, therefore, more than paid the rent. I do not say this is anything extraordinary, and doubtless many cases have beaten them in other years when prices were higher, but I ask you what corn land made the same return last season? There are hundreds of acres of orcharding in Herefordshire that barely pay the rent and taxes; but why? They are mostly of inferior sorts, neither fit for cider nor any other purpose, and if there comes a heavy crop of fruit it is nearly all wasted or left to rot on the ground. I believe, whether we plant culinary, dessert, or cider Apples, Plums, Pears, or any of the small fruits, we can still extend our plantations with profit. There is no doubt that the consumption of all kinds of fruit increases with the supply. It is estimated that there is now about 188,000 acres of land under fruit in the United Kingdom, and that we import, as I have said, about four million bushels from other countries, but what is that to supply cooking and dessert fruit, puddings, jam, cider, and perry to our ever-increasing population of over thirty-two millions? We must meet and beat foreign competition by improving our quality, and not only does this apply to table fruit, but to cider and cider Apples, perry and perry Pears. I ask you, Has fruit decreased in value in the same ratio with other produce? I find, however, even in my short experience that you cannot pass off inferior fruit, even if rosy and bright, as easily as you could some ten or fifteen years ago. The public have become educated to the fact that a good-looking or bright red Apple is not always the best. In those olden times colour was everything towards effecting a sale; now you must have both quality and beauty. There is no doubt

* Abridged from the Hereford Journal.

that the country is waking up to the fact of the importance of fruit cultivation, and I am glad to see that Herefordshire heads the list as having the greatest increase of orcharding since 1872, and the popularity and increase of Apple shows point out the fact that this fruit especially is receiving more attention than hitherto. Lord Sudeley has planted between 300 and 400 acres of fruit of various sorts in the parish of Toddington, Gloucestershire, and has set up a jam manufactory in the midst, which is leased to Mr. Beach for ten years, and from the business way in which it has been carried out it deserves and is certain to be successful. In Herefordshire we have a soil highly adapted to the growth of Apples, and it is to the interest of both landlords and tenants to develop its capabilities. Before extending our fruit plantations, and to do so successfully, we must take into consideration the following:—

WHAT SHALL WE PLANT?

And in what form or way will it bring the greatest return? I believe that small fruits, as Gooseberries, Currants, Raspberries, and Strawberries, pay well if proper attention is given to them, and also Plums, Damsons, Pears, and Cherries; but as my paper would be too long if I went into details respecting their cultivation, and as my experience has mostly been with Apples, and with the knowledge that we can grow this fruit to perfection in our Herefordshire soil, I shall confine my remarks chiefly to Apples and their cultivation. I think, too, that Apples, and a smaller proportion of Plums, Damsons, and Pears, are the most likely to have the attention of cultivators. As regards the form of tree, I am a great believer in standards, as I think the bulk of the fruit for market will still continue to be produced from this form of tree, and standards are the most suitable to plant if you wish to grow fruit in conjunction with other matters. Bush trees have been often advocated, and doubtless could be made to pay with care and attention, but unless you have time and money at your disposal, or grow them in conjunction with the small fruits, I think this form is not suitable. Standards are objected to by many for the reason that they are some years coming into bearing, but it is wonderful, if well done, how soon even standard Apple trees begin to bear; and we must bear in mind that the land they occupy is bearing nearly, if not quite, its usual crop while the trees are growing. As regards the selection of sorts, a good sort costs no more money than a bad one, nor does it cost more to rear. There is, therefore, no excuse for planting an inferior sort. With the enormous variety now in cultivation there is no lack of choice. Select and plant a good bulk of those sorts which you know to succeed on your land or in your neighbourhood. There are many good sorts which do well in one part of the country and not in another. When a new sort to your neighbourhood comes under your notice, even if it is reputed to be a good fruit, try it first on a small scale before planting more extensively. Select those which are of good size, weigh well, and are dense in the flesh, as these mostly carry well to market. As a rule, white Apples are tender in the skin and easily bruise, and should, therefore, be discarded except for early work. Growing for profit is a very different matter from growing for your own consumption. In the latter case you want variety in order to have the fruit as long in season as possible; you like the best of quality, even at the expense of quantity, and you do not care whether an Apple has a tender skin, or weighs light, so that it cooks well, is of good flavour, and satisfactory when brought to table, but if you are growing for profit you must have both quality and quantity. In selecting culinary Apples, select those which have size and weight, are of good quality, and preferably of good colour. For a dessert Apple have fair size, good quality, and an attractive appearance, and for a cider Apple select those that are known to make first-class cider, and also have fair size and colour, so that they can be marketed if necessary. For whatever purpose, with all these qualities, you must have a good, regular, and early bearer and a sort with a good constitution, which will grow

freely and make good-sized trees. If you intend growing for profit, you must discard all little Apples, however good the quality. I do not intend giving a long list of the best sorts, as I should occupy too much space, but I may mention that the following, although of the best quality, are too small for market, viz.: Court of Wick, Golden Harvey (or Brandy Apple), Old Golden Russet, Downton Pippin, Pearson's Plate, Sam Young, and many others; and that the following are a few of the varieties which succeed in most soils, and should be planted largely, viz.—Early culinary Apples: Yorkshire Beauty, Keswick Codlin, and Echlinville Seedling. For gardens or dwarfs Lord Suffield cannot be beaten, but I have never had great success with it as a standard, as it grows too straggling and is too tender. I do not consider it is equal to the old Keswick Codlin for orchards. For mid-season and late culinary Apples, I think Beauty of Kent, Warner's King, Mère de Ménage, Hambledon Deux Ans, Blenheim Orange, and Dumelow's Seedling amongst the best; the latter should always be planted largely, as it meets nearly all the requirements of a market Apple, and, under the name of Wellington, makes nearly the highest price in the London markets. The worst fault of the Blenheim is that it bears badly when young, but fully grown trees bear heavy crops. Tom Putt and Summer Quoining are also two very good Apples, and deserve to be widely known. For early dessert Apples the following are good: Devonshire Quarrenden, Duchess of Oldenburg, and Worcester Pearmain; the two latter, though not of the finest flavour, are very attractive in appearance, heavy croppers, and always sell well. For mid-season and late dessert Apples take King of the Pippins (called also Prince's Pippin) and Seek-no-further. Cox's Orange Pippin is of the finest flavour and mostly succeeds, but with me does not crop well. Duke of Devonshire and Mannington's Pearmain are two of the finest late Apples, both good in flavour and good croppers. For cider Apples, I consider Cherry Pearmain, Cowarne Red, Forest Styre, and Kingston Black amongst the best, as they will also do for market. For cider only I can recommend Broad-leaved Norman, Royal Wilding, and Handsome Norman. These are bitter-sweets, make the finest cider, and are especially valuable for mixing, the first named especially being an immense cropper. Do not plant too many sorts. This was one of the greatest errors of our earlier planters. In the great majority of our old orchards you hardly see two trees of the same sort together, and even now I have often seen cultivators select almost as many sorts as they buy trees. You want a bulk of each sort that it may be worth your while to harvest, keep and market them unmixed, and to facilitate this, plant each sort in rows or adjoining rows. Still you want variety, so that you may not have all your crop to market and harvest at the same time.

HOW AND WHEN TO PLANT.

I have seen it advocated lately that you should plant whole orchards of one sort. I should not recommend this unless you go in for fruit growing very extensively, and can afford to have a total failure in some of your orchards occasionally, for often one sort will bear when others fail; many sorts bear in alternate years, and if you have a fair variety you seldom have a total failure, and can pick each sort as it ripens in succession. When you select your stocks have them of good size and healthy, but not too large; a young healthy stock of fair size will often out-grow a large rough one, as it does not feel the check of removal so much. It is a great mistake to think that a stock is the better from being off a poor soil. It is then mostly stunted in growth, and, like all young things if starved when young, seldom fairly recovers. Plant medium sized late Apples in exposed situations, and large ones where more sheltered. I have heard some people advocate wide planting and some the reverse, but I believe a medium distance is the best, varied according to the soil and situation. If you have an exposed situation plant rather thickly, say 18 feet to 20 feet apart, but if you have a sheltered situation, with a good, deep, and generous soil, give the trees

plenty of room, 30 feet or more. A very good plan is to plant Apple or Pear trees alternately with Plums. The Plum is a much shorter-lived tree than the Apple or Pear, and comes into bearing sooner, thus bringing in a return till the other trees get fully grown. Another plan, where you know or can ascertain the relative growth of particular sorts of Apples, is to plant a strong grower alternately each way. You thus give the strong trees more room without overcrowding the others, and still have them sufficiently near to harvest together. Yet another plan is to plant them in hexagonal form instead of square—that is, instead of the trees being exactly opposite each other in adjoining rows, they are midway, thus giving more room to each individual tree without increasing the distance between or in the rows. In filling up old orchards never plant in the old holes; it is better to get the trees planted irregularly than to do this. Autumn planting is mostly the best, although, if carefully done, it will do up to March, and if you have a cold wet soil I should prefer spring planting, not too late. If you plant tillage land, steam cultivate or subsoil it if possible, and if pasture land, plant in large holes not less than 3 feet 6 inches square; move the soil to a depth of not less than 30 inches, and fill up again with the old turf and top soil, placing some fine soil amongst the roots, but by all means do not plant too deeply, but rather err in the other direction. Deep planting is one of the most frequent causes of trees doing badly. As soon as planted stake securely, as the trees root much quicker when not moved about by the wind. Newly-planted trees are much benefited by a thick surface-dressing of manure. Applying the manure in this way is a much better plan than placing it in the holes, as it acts as a mulch, keeping the surface moist, and the trees also get a gradual benefit from the manure. As regards situation and soil, nearly all Herefordshire is adapted for the growth of Apples, and they do well in almost any aspect, but I think that a south-west aspect with a slight inclination to the south is the best. Orchards usually do not bear regularly on the banks of a stream or in low-lying situations, as spring frosts and fogs have then much more power over them; a good belt of trees or a high hedge does much to protect them. Damsons are also frequently planted rather thickly round the outside of the plantations, as they soon form a protection, especially for dwarf trees and small fruits. One of the best nurseries for a young orchard is a hop yard. Trees there have all the benefit of the extra cultivation and want little protecting. Apples like a dry subsoil, and it is no use planting badly-drained land. If on pasture, your next proceeding should be to protect your trees against stock; indeed it is useless planting unless you protect them from injury after they are planted. I have often heard a very old friend of mine say, "A good protector is worth four planters." How often you see young orchards utterly ruined from want of protection. In regard to the after-treatment of young orchards, and also of the older established ones, it is not desirable to manure young orchards very heavily, unless they are bearing very heavy crops of fruit and do not seem to grow freely, as they are apt to make a lot of gross, unripened wood, which the first severe winter kills off, or causes to canker; but manuring the older orchards is a matter which should always receive attention. No land repays you so well for good and liberal treatment as your orchards, and you almost invariably see those used as pig runs bear heavy crops.

PRUNING AND CLEARING OFF MOSS AND LICHEN.

Pruning is a matter, too, that requires close consideration. A young orchard requires a little done to it every year. Cut out all boughs that cross, keeping the centre of the tree pretty open; stop any branches that are growing away from the rest, thus getting an evenly balanced head, but do not prune severely. If this is attended to, you will find little is wanted in the shape of pruning when the tree gets to its full size. In my belief, three parts of the pruning done to the old orchards in this county do much more injury than good. The plan usually followed by the so-called pruners is to commence at the body of the tree,

shred each limb of all the smaller branches, leaving the ends of the boughs a tangled mass. The small wood near the outside of the tree is seldom touched, but larger limbs on the lower part and centre of the tree are often cut off. These places can never properly heal over; on the contrary, they soon decay and form holes for starlings and other birds to nest in. The effect is also to throw all the fruit-bearing on the ends of the boughs, and when a crop of fruit comes, the leverage is so great on the limbs that they often break off. You mostly see an old orchard go down much quicker after being pruned. In my opinion the only pruning you want to give an old orchard, if properly attended to when young, is to cut out the dead and cross boughs, and to thin out the small wood, to let sun and air into the centre. Moss and Lichen are frequently found on trees in cold or damp situations. I have seen a paraffin wash advocated, but besides being too expensive in application, I believe it would be as dangerous to the tree as to the Moss. The best treatment is a lime wash, darkened with a little soot for the body and large limbs, and for the smaller branches freshly-slaked lime thrown on the windward side on a damp day. This will kill all the Moss it settles on, and what falls to the ground will not be wasted. In young orchards you often see trees of some sorts grow freely, make large and fine heads, but bear no fruit. In these cases root-pruning will mostly prove effectual in checking the sap and thus giving the tree time to form fruit buds. Root-pruning is, I think, more applicable to bush or dwarf trees than standards. I should rather plant only the heavy cropping sorts which crop freely naturally. Heading back trees of inferior sorts and regrafting with better ones has been often recommended. If you have young healthy trees of bad sorts, by all means do so, but I have seen so many old trees entirely killed by being beheaded and grafted, that I cannot recommend it. They will start the grafts well for a year or so, but then die. If they could be beheaded gradually perhaps this might assist them to use up the superfluous sap.

HARVESTING AND MARKETING.

I now come to what I think the most important of all, the harvesting and marketing of the fruit, for it is useless growing good crops if we do not make the most of them after they are grown. We are in this matter a long way behind the Americans and Canadians; and when we consider that there was last season up to the end of December about 600,000 barrels of Apples imported from America, not including Canada and Nova Scotia, from which there were about half as many, we can judge that we have no mean opponents to compete with; and not only do they contend against us in quantity, but they beat us in quality and price. And here we have our most hopeful view of the case, for there is no reason why our quality should not be equal or superior to theirs. I have often seen or heard the question asked: Why are American Apples worth more than ours? I will try to answer this question. When a retailer or consumer orders a barrel of Newtown Pippins or other good American dessert Apples, or a barrel of the best American cooking Apples, he can depend upon getting what he orders, and upon having an even, bright, and good sample throughout the barrel; but if he goes into the market and buys English Apples, he most likely gets them of mixed sizes, many bruised, and perhaps of several sorts and qualities; even if they are good on the top, as he gets nearer the bottom he often finds them of much worse quality, or perhaps a different sort altogether. I daresay most people know how prevalent is the custom amongst fruit dealers of what they call "topping them up." The buyer will, therefore, buy where he can depend upon having what he orders, even if he has to pay a higher price, and thus the American and Canadian Apples have gained a reputation for themselves in our markets. Here we have the remedy in our own hands. We must take more care in harvesting our fruit. If the fruit is of culinary or dessert sorts, see that it is carefully hand-picked—not a pretence. Apples should never be thrown or let fall into the bas-

ket; on the contrary, each Apple should be placed in it, not dropped. I often tell my pickers they should be handled as carefully as eggs. Keep the windfall, bruised, and undersized Apples by themselves, to be marketed separately. Grade your Apples in different sorts and sizes, never mix them, a mixed sample being always worth from 25 to 40 per cent. less than if all of one sort. A very frequent mistake is to pick Apples before they are ripe. I would rather have a few injured by falling than pick them too early. It is wonderful what colour a few days' sun will give Apples when nearly ripe. They also keep much better, and do not shrivel, if picked when perfectly ripe. Apples for late keeping are best left on the trees as long as possible without danger from frost, but when perfectly fit to be gathered get them in as fast as possible. Take care they are perfectly dry when picked, or they will not keep. The best means of storing is, too, a matter of importance. I believe that the less an Apple is handled after being picked the better it will keep. The bushel of cooking Apples with which I took a first prize at Reading in July, 1882, was simply placed in a hamper immediately after being picked, put in a cool cellar, and never moved again till a few days before the show. Fruit keeps best when kept from the light and in a low uniform temperature. The store should be well ventilated, but not exposed to draughts. If you have cider Apples, pick each sort by itself, for a cider Apple, like a dessert or cooking Apple, has its season of greatest perfection. If you follow these directions you can market your bruised and most perishable fruits first or turn them to other purposes, and need not force your whole crop of fruits on a glutted market, or have to sell to the first buyer who will take them.

There is much more I could say on fruit cultivation, in regard to the security to the tenant who plants fruit trees, and also the cheapening and facilitating the transit of fruit by rail, and the injustice of the preferential rates given to foreign produce, but I will leave this part of the question to someone more experienced than myself. Before concluding I should recommend you to plant the best cider fruit on your deep lowlands, dessert and cooking Apples, Plums, and Pears on your sunny slopes, and Damsons in your hedgerows. Take care of them, and you will get repaid for the outlay. And, to sum up, the secret of making fruit growing profitable is to plant only sorts of good quality, heavy croppers, and of good size; take care of them when they are planted, do them well, train them up in the way they should go, pick and market them carefully, and I do not think you will then be beaten by American fruit, but having a superior class of fruit to offer, you will get a better class of local buyers than we usually have at the present time, and will have no difficulty in disposing of the fruit at paying prices.

GRAPES CRACKING.

THIS subject comes up periodically, and I do not know that it could be discussed at a better season than now, while it is still time to take preventive measures. No sooner does this matter crop up than the theory of the berries bursting by distension comes up along with it from some source or other, and prevention by boring holes in the canes or cutting the shoots half through to prevent the sap flowing into the berries too abundantly is recommended. I have seen this plan tried over and over again without arresting the splitting or bursting in the smallest degree, and I regard with doubt the assertions that have been made on that head. As I once stated in THE GARDEN before, our Madresfield Court Grape cracked worst when there were bottom-heat pipes under the border, and of course much drainage, which rather parched the roots. The pipes were removed two seasons ago, and since then there has been no cracking, and this is my second experience of that kind. Those who maintain the bursting theory forget the nature of the Vine in regard to the circulation of the sap. Vines bleed only while they are without leaves and when the sap is rising; when leaves push the bleeding ceases immediately, because the leaves

appropriate all the sap which the roots send up. It is the same in the case of the fruit; the leaves appropriate what the berries cannot use, and the berries themselves part with their extra sap by evaporation in the same manner as the leaves do, thus preventing extra expansion from within. Another proof is that if we cut a shoot off below a bunch with cracked berries, not a drop of sap will fall out. How, then, could the sap be propelled into the berry with sufficient force to burst? The bursting-by-distension idea will not stand testing from any point of view. Bursting under the circumstances naturally suggests itself as the cause to unreflecting persons, but cracking may and does arise from quite opposite causes—shrinking, for example, and to this cause, or one like it, I attribute splitting or cracking in Grape berries. Hence it follows that preventive measures may have to be applied without instead of within. To give an idea of the effects of contraction in rendering vegetable tissue let me give an example or two. One might suppose that if you cut all the branches off a tree before the sap began to rise the sap would burst the bark by distension, but that does not happen; on the contrary, if you peel the bark of the tree, the solid wood will often split and crack longitudinally by shrinking just in the same way as a Grape berry does. Hereabouts Oak trees are peeled standing and felled the winter following, and it is drought acting externally on the naked trunks which causes them to crack. In the same way, if unseasoned timber be laid down for flooring, and dove-tailed and wedged together as tightly as hydraulic force can do it, it will in a short time shrink till you can see through between the deals. If we make a slit in the bark of certain trees, like the Peach, the bark will shrink wide in a few hours also, and from the same cause. Now this is not bursting, but shrinking, and resembles in every way the cracking which takes place in the Madresfield Court, Duke of Buccleuch, and other Grapes, and the probable preventive is that kind of treatment which ensures the most healthy texture in the skin of the berries and so resist cracking. When, as in our own case, we find that the evil can be almost wholly prevented by a certain kind of treatment, it is reasonable to suppose that it can be prevented anywhere. One thing which bears out the idea that a good skin on the berry prevents cracking is the fact that in the sorts most liable to crack, autumn-ripened crops crack less than early crops do, and so much is this the case in the Duke of Buccleuch, that that variety, although as early as the Black Hamburgh, is not now recommended for early forcing by its advocates on account of its cracking worst early in the year, which is also my experience of it.

S. W.

Digging amongst Strawberries.—It generally happens at this season that Strawberry beds get dug between the plants, which is about the very worst thing that can be done, as the roots are destroyed wholesale just at the time they are wanted to enable the crowns to send up strong bloom. Instead of the digging, the way to manage Strawberries now is to carefully clear away the old dead foliage, and then with a hoe draw some soil to the plants, so as to earth them up slightly; the tendency with Strawberries, after they have stood a year or two, is to push themselves out of the ground, when they stand with bare stems an inch or two long. If these are buried in the manner referred to, they strike root at once, and the roots soon run into the fresh soil, and greatly strengthen the plants. As soon as the earthing up is done, it is a good plan to mulch or litter down the beds between the rows, which may be effected by using fresh stable manure that is strawy; by the time the Strawberries are ripe it will be washed clean and become sweet, and will not in any way injure the fruit. Another advantage in littering down thus early is, that it may be done in half the time it takes when the plants have made much leaf; and not only that, but all rain that falls is kept in the ground, as it cannot escape by evaporation when the soil is closely shaded, and if beds on

light lands were treated in this manner much better fruit would be obtained than we now get.—S. D.

FLOWER GARDEN.

VIOLET CULTURE.

WE do not profess to maintain a never-ending supply of Violets, but generally manage to have them in greater or lesser quantities during at least nine months of the year. With us they are scarcest during July, August, and September, but as we contrive to have plenty when they are most wanted, viz., during the dull late autumn and winter months, I am inclined to think that the short break in the supply enhances their value.

Violets are deservedly popular, but, unfortunately, not easily grown in all cases, and, according to my experience, it is sometimes impossible to grow them satisfactorily, unless fresh soil is procured from a distance and of a very different character from that in which they have previously so often failed. I find that they succeed admirably in a medium textured loam, and fail conspicuously in a very chalky soil. In some places where a difficulty is experienced in establishing them it is unwise to disturb, say, those of The Czar type for several seasons. In other exposed positions, where the soil is not very rich, they will continue in good flowering condition for two or three years, while on strong loamy soils they must be replanted every season, or they prove unprofitable. Although they grow freely in our soil, we still consider it advisable to take great pains with its preparation, especially for those that are to be lifted in the autumn, and either potted or planted in pits and frames. In addition to the ground being manured and deeply dug early in winter, at planting time we also fork into and well mix with the surface a liberal dressing of leaf-soil and charred garden refuse. This appears to suit Violets well, as they form an abundance of fibrous roots near the surface and make sturdy growth of a most floriferous character. It also renders lifting a simple matter, as we have no difficulty in securing large balls of soil and roots. If our soil was very light I would add, if possible, a considerable quantity of heavy, clayey loam and road trimmings, the latter having been stored for about a year. This, after being exposed for some time to all weathers and become pulverised, would be then well mixed with the surface soil. A dressing of common salt is also beneficial to light soils, but on clayey ground it would do harm. Summer mulching should also be resorted to and occasional waterings given in hot weather, all tending to check the ravages of red spider—the greatest enemy to Violets—and also calculated to greatly improve the plants.

THE FAVOURITE POSITIONS for Violets some think are the fruit borders, especially those at the foot of the walls, and if this is carried out to its fullest extent, a long supply will be maintained. By all means plant in different sites, but the Violets neither require the sheltering influence of walls, nor should they be admitted near choice fruit trees, as the latter rarely get sufficient manure, and Violets are great impoverishers of the ground. Good open spots should be given them,

but whether the borders or plots chosen shall have a south or colder aspect should depend upon circumstances. The aim should be to secure healthy sturdy growth, and if we planted ours in a shady or very sheltered position, they would grow much too strongly. On light soils or where red spider is apt to be very troublesome, I would recommend that the coolest position in the garden be chosen, this usually being a north or north-west border. The best time to plant is at the end of April or early in May. If earlier, they do not start away satisfactorily, the immature leaves flagging badly, and if planting is deferred till near the time when hot and dry weather may reasonably be anticipated, the chances are that the plantation will be a failure. If strong old plants of The Czar are available, these may be divided into single crowns, each



New Zealand Flax in outdoor fernery at Taddyforde (see p. 335).

having a few roots attached to them, and from these all runners should be stripped. They should not lie about exposed for hours, but ought at once to be dibbled out firmly and deeply; the heart, however, must not be buried. On light soils they may be placed 12 inches apart each way, but on our heavy soil we find it advisable to place the rows 15 inches apart, and, as before hinted, they are seldom preserved for a second season, owing to the density of their growth rendering the leaves very susceptible to injury from frosts and rains, and the crowns also become very weak. With us The Czar and other Russian varieties have ceased flowering by the end of March, and to succeed them we consider argenteiflora well worth growing. It is fairly hardy, succeeds well in any position, and with good treatment produces a great quantity of purplish white blooms from April till very hot weather sets in. It comes nearly pure white in frames, and has long foot-stalks, but which unfortunately are not erect.

FRAME CULTURE.—We find the variety gene-

rally known as Marie Louise, but which I believe in our case, and in that of many others, ought to be labelled New York, invaluable for frame culture, and this is not so easily destroyed by frosts as the more delicate and less floriferous Neapolitan. Comte Brazza's or Swanley White will eventually prove an excellent companion for Marie Louise. I say eventually, as I am in hopes it will gradually become equally as robust and floriferous as the Marie Louise. At present it seems very delicate, owing probably to over-propagation consequent upon the great demand for it. At any rate, I have seen plants in six different gardens in this neighbourhood, but none of them were growing satisfactorily, and ours will apparently be some time before they produce such beautiful blooms as Mr. Allan, of Gunton Park, once favoured me with.

The old Neapolitan is also well adapted to frame culture, but we either do not possess the true variety, or the soil does not suit it, as the plants are always much too weakly to be profitable. Young plants of this section of Violets are also preferable to large old plants, as they produce finer blooms, continue blooming much longer, and are less liable to damp off. We commenced increasing our stock by division of the crowns or rooted pieces from strong old plants. These were dibbled out in ground, prepared as above mentioned, in rows 12 inches apart and the plants 9 inches asunder in the rows. This, both then and annually since, was done early in May, and the plants were watered in and occasionally sprinkled overhead in the evenings of sunny days. During summer the ground about them is occasionally lightly hoed, this serving to destroy weeds, and also checking rapid loss of moisture followed by injurious cracking. They were occasionally looked over and all blind runners removed, and those short and with a good plant attached were thinned out to about three in number. Early in September those reserved are generally sufficiently strong to be pegged down, and this being done they soon emit roots and gain in strength. At lifting time or early in October we thus have a number of fine plants, consisting of one extra strong central crown and three fairly strong side crowns, all of which will yield a good deal of bloom. The following planting season every one of those side

plants, or as many as are wanted, are available for replanting, and these experiencing little or no check start at once into active growth. This system of preparing the plants is a good one, and I ought in all fairness to mention first that I saw it practised at Chrichel, in Devonshire, where Violets are annually grown in immense quantities. In the case of choice or rare varieties we naturally peg down as many good runners as we can secure, more regard being paid to the rapid increase of stock than to the preparation of plants for the following flowering season.

WINTER TREATMENT.—Many seem to think Violets cannot be had throughout the late autumn and winter months without the assistance of bottom-heat, but this I hold to be a mistake. If the plants of either section, Russian or Neapolitan, are properly prepared, they will commence to flower freely in October, and will continue to do so with the ordinary protection of frames and pits, with protecting material in the shape of mats and dry litter, whenever severe frosts are threatened.

If there is a great demand for blooms—say, as in our case—during the months of November and December, then it is advisable to force a few in frames, but the plants in this case will soon become exhausted, and in the spring months will be comparatively useless. We usually devote a long, cold pit to the plants that are to produce the principal supply, and to succeed these a number of plants are bedded rather thickly on a cool border, and over these are placed box lights, other protection being given when necessary. At the present time the former are still blooming freely, while the latter are literally aglow with fair-sized blossoms. Those forced in frames have long since been thrown away. The variety in each case was the *Marie Louise*. The pits which we fill with Violets are during the summer occupied with *Bouvardias*. After these are potted up a considerable quantity of fresh loamy soil is added so as to bring up the bed to within a few inches of the glass, the aim being to give the Violets all the light and air possible. Into the surface a dressing of burnt garden refuse and a sprinkling of Beeson's manure are forked, and the plants, carefully lifted with a fairly large ball of soil and roots, are firmly planted so as to just clear each other round. Crowding would be injurious, but at the same time every inch of space may be safely utilised. The plants are watered in and kept rather close for about a week, after which they receive abundance of air, the lights on fine days being drawn clean off them. This must be persisted in, as if the plants are kept close damping-off soon results. Besides, if they are coddled leaf growth commences too early, and the blooming period is materially shortened in consequence. Those forced in frames are also planted close to the glass and receive plenty of air, the bottom-heat being afforded by an ordinary bed of well prepared stable manure and leaves. The Russian varieties are also amenable to the same treatment, but they are not nearly so popular or profitable as the *Marie Louise* and other Neapolitan sorts.

W. I. M.

DAFFODIL SIR WATKIN.

LAST YEAR I gave an account of the origin of this grand Daffodil, brought out by Mr. William Pickstone, after having been cultivated on his estate, Maesmynan, near Caerwys, for many years, until he became possessed of a very large stock of it. No Daffodil has ever before produced such a sensation amongst florists, and its early promise is now being amply fulfilled, as it stands pre-eminently the finest of all the incomparabilis section—a peerless Daffodil. It has been stated that it was an old type of the Giant or Mountain Daffodil, improved in colour and substance under cultivation, and that the same type could be found in many old gardens throughout North Wales, and also in its wild state in at least two counties, and had been known to exist there over forty years, and that this Sir Watkin was an old foundling under a new name. Very soon after this statement was made two of our leading seedsmen offered bulbs of this wild form, which were expected to turn out to be the real Sir Watkin, and they were prepared to supply these bulbs by the thousand at a very moderate price. A few bulbs were presented to me as samples and for trial, but as I had a good stock of the true Sir Watkin, I found on comparing the bulbs that they were much smaller, and I therefore declined to purchase a quantity. The name of the person who was thus offering bulbs was then given to me, and I lost no time in communicating with him. He had the subject well mastered, and gave a very plausible account of the Daffodil as he knew it to occur wild in Wales, and he was quite ready to supply bulbs in any quantity. I took down his narrative, and made a bargain by which he undertook to accompany me to the spot this spring, and I undertook to respect his secret and to see that he benefited if he could really prove the truth of his statement. The time of blooming has arrived, Sir Watkin is in his glory, but his rivals prove to be mere common pseudo-Narcissus as it occurs wild in North Wales. The man himself is not to be found. It may be true for all this, but at pre-

sent the whole affair looks like a cleverly laid scheme for trading profitably upon the fame of this grand new Daffodil, if buyers could be found willing to take the risk. There is, however, a very solid foundation for the statement that Sir Watkin was descended from the Great Mountain or Giant Daffodil, well known in Wales more than forty years ago. In that fine old and now very rare book, Hale's "Eden," published in 1757, is to be found an account of the Nonpareil Daffodil, and a full-sized engraving of it is given in plate 41. This is indisputably like the Sir Watkin Daffodil. Mr. Pickstone lays no claim to having raised Sir Watkin from seed. He states that he found it growing in a garden he became possessed of in a mining district in Merionethshire about seventeen years ago. How it got there he does not know. He found it there, recognised its beauty, and kept it to himself until he had a very large stock, and he deserved the profit he gained by its sale. It is thus clear that we really know nothing of its origin, and it is likely enough that it may be found elsewhere if search is made for it.

WILLIAM BROCKBANK.

Brookhurst, Didsbury.

HEPATICAS AND THEIR CULTURE.

A CORRESPONDENT asks for more information respecting the cultivation of these plants than that lately given in THE GARDEN. I may state that they certainly are somewhat particular as to soil; they like a rather light and fairly rich compost, and then they will make plenty of roots and produce great numbers of flowers, but in strong heavy ground a good many of the roots perish during winter. The old double pink variety is the only one that appears to be indifferent as to soil; it thrives everywhere, but the beautiful single varieties are more delicate; even the charming *H. angulosa*, the latest to flower, is equally particular as to soil. I find that if growing in a staple that does not suit them, they persistently push themselves up and form a mass of roots near the surface, but in a light and fairly dry soil they do not do so. They are certainly not very deep-rooting plants; it is, therefore, important to give them the soil which they like best near the surface and to take them up once in four years just as they go out of flower and replant them. If I were to prepare a compost for them I should select good mellow loam and peat in equal quantities. Where the staple is a strong loam I would add one-third peat and coarse grit. In regard to position, there cannot be a doubt that the full force of the summer sun is hurtful to them; under its influence the leaves become flaccid and brown before the season of growth is over. A position, therefore, where they can be shaded for about six hours during the hottest part of the day is best. Hepaticas are such welcome flowers in early spring, that they deserve a quiet corner to themselves, and should not be overgrown by other plants.

J. C. C.

Lachenalias out-of-doors.—A correspondent in last week's GARDEN asks if anyone has tried these plants out-of-doors. I have a patch of them full of buds just bursting into flower; they are on a warm border near the house, facing south-east. They were planted last autumn at the same time as others which are now in full flower under glass. My border plants are *L. tricolor*, but I shall try *Nelsoni* and others next autumn. As might be expected, the blooms are darker out-of-doors than under glass. On frosty nights an old hamper was placed over them.—T. H. ARCHER-HIND, *South Devon*.

Tecophylæa cyanocrocus.—Some time back a great German horticulturist gave me a few bulbs of this beautiful blue-flowered plant; it has flowered very well this year in our orchard house. Last year, as it had increased, I ventured to plant out two small bulbs of it at Wisley in an open situation; one has just come into bloom. As the blue is the most beautiful I know in flowers, I hope that the plant will be tried out in warmer places. The frost has never continued long enough this winter

to get deep into the ground, but it has lately been hard and trying; both on Friday and Saturday nights the thermometer fell at Wisley to 20°.—GEORGE F. WILSON, *Heatherbank, Weybridge Heath*.

Gilbert's Harbinger Primrose.—Perhaps no finer variety of white Primrose has yet been raised than this. It has two remarkable characteristics, viz., its earliness and continuity as regards flowering. The blooms are first produced in the true Primrose form on single stems, followed by Polyanthus stems and large bold trusses. The flowers are large, flat, pure white, and thrum-eyed; in them the florist will find all that he requires in the way of form and smoothness, and it is particularly adapted for flowering in pots for house decoration.—R. D.

Lateness of Snowdrops.—Those who grow the Crimean Snowdrop are aware that it is a fortnight or three weeks later than the common English Snowdrop, but I hardly remember the Crimean Snowdrop lasting so long as this year. A few tufts of it here and there continued right through March, and even graced the 1st of April. Another thing I have noted about Snowdrops is that the small single is later than the double. Once more, is not the single becoming far more rare, the double more common, and can anyone suggest any means of reversing this tendency? Fortunately, so far as I have seen as yet, the Crimean species and its near allies adhere to the single type, and it is to be hoped they always will, as to many of us a double Snowdrop is the true flower more than half spoilt.—D. T. F.

Bedding Calceolarias.—These are quite half-hardy, and may now at once be planted out in the beds or borders for the summer, or, in cases where the beds or borders are already occupied, the Calceolarias may be plunged with good balls in light soil placed on the hard ground; here they will soon root afresh, and when wanted later on, may be lifted and transferred to their summer quarters without feeling a check. As Calceolarias are moisture-loving plants, the only way to grow them well is to give them a good depth of soil, which may be done by trenching the bed they are to be planted in, and it is a good plan when doing this, if the land is light, to work in a little fine clay and some rotten manure, keeping the two well down, that the roots may be encouraged to follow. When the plants are planted, a good way of keeping them from suffering from drought is to mulch the ground between them, as then what watering is given tells, for it has time to soak in, and is not, as it would be without the mulching, drawn out again by the atmosphere. One of the best things to mulch with is the spent manure from an old Mushroom bed, and another is Cocoa-nut fibre, but the latter should never be allowed to get mixed up with the soil, as it is very slow in decaying, and generally breeds fungus, which is inimical to plant growth.—S. D.

Daffodil Telamonius plenus.—During the past week I have examined hundreds of flowers of *Telamonius plenus* that have become naturalised in this district, but can detect little or no difference either in their formation or appearance, much of a muchness pervading the majority. What to the casual observer appears a double flower is, however, in many cases not so, stamens and pistil being present generally; indeed, in not a few flowers I counted the full complement of stamens (six) and the pistil all perfectly developed. In support of Mr. Brockbank's statement that *Telamonius plenus* produces seeds, and that in some cases pretty freely, I have, at the request of Mr. Barr, sent to several fellow-members of the Narcissus committee a few seedlings collected from woods in which the plant has become naturalised in plenty. That these are seedlings and not off-sets is beyond dispute, and which has been admitted by several who at one time were disbelievers in Mr. Brockbank's statement. Not, however, until ripe capsules of this Daffodil have been sent to the Narcissus committee, and seedlings raised and flowered under their supervision, will the conversion of some sceptics be attained.

On one occasion I found a flower of *Telamonius* as nearly single as possible, only one of the filaments inside the tube having petal-like wings attached. This was the only flower of its kind in the wood; at least a careful and extended search was unsuccessful in the finding of a second.—A. D. WEBSTER, *Bangor*.

Aubrietia violacea.—A carpet of this early and remarkably free-flowering *Aubrietia* from out of which rise dots of the golden *Valerian* is a combination of colouring and beauty that summer bedders fail to give. This *Aubrietia* is not only of a hue of which we find too little in the summer, but it is singularly dense in habit, forming a carpet of purplish violet, that reflects with striking effect the rich golden *Valerian* leafage. The *Aubrietia* will propagate freely by division, also far more rapidly by means of cuttings, and, still farther, it is the only reliable seeding kind that in that way comes true. Seed sown now or even a few weeks later will give an abundance of strong plants to go out next autumn. A *violacea* is much earlier than any other kind, always keeps dense and compact, and now is one mass of bloom, a perfect carpet of colour. Even in hardy plants nothing can come near it in its colour for effect at this time of the year.—A. D.

Mimuluses.—These are rather cool-loving plants; they will thrive in a frame or greenhouse all winter and spring admirably, but they do badly in heat or under our summer sunshine, unless the summer prove more than usually cool. I raise a big stock every year from seed, which I sow in pans in November, but do not place them in heat. The seed germinates freely enough in a cool house, and as a result I have myriads of plants that need dibbling out thinly in February, and want planting out in the open ground in April. By giving this cool treatment the plants do not suffer from moderate late frosts, and if out of the reach of biting easterly winds thrive well, soon get strong, and bloom finely in the month of May; indeed, they would if so treated give grand beds of flowers during the months of May and June, and might then be well followed by Stocks, Asters, Balsams, and similar late summer and autumn-blooming annuals. Few plants are more easily raised than are the *Mimuluses*, few give more gorgeous colours and markings, and few can be produced more cheaply.—BEDFORD.

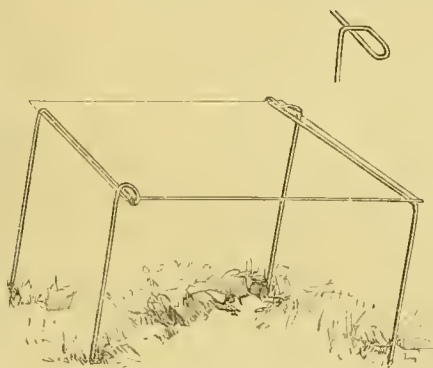
Carnations.—At p. 320 it is stated that there is little distinction between winter-flowering Carnations and the common border kinds, and that if the latter are grown in cold frames during the winter months "the buds will continue to expand during April and May." This statement is certainly erroneous. I have grown the ordinary forms of Carnations by the hundred in frames during winter for many years, and never had any flower before the end of June unless they were forced by artificial heat. The writer says plants layered in July are best for the purpose. This would lead people to believe that July was not the usual month in which Carnations are layered. Layering them in July will not cause them to bloom in April and May in cold frames. The same writer, evidently alluding to *Phlox pyramidalis*, says that they will bloom in frames in April and May, the roots being lifted from the open ground so late as March. They would in that case have to be in bloom in a month from the time they were potted. Can any of the readers of THE GARDEN confirm this writer's (to me) singular experience with Carnations and *Phloxes*?—J. DOUGLAS.

The golden Valerian.—A remarkably effective plant in gardens at this time of the year is the golden *Valerian*. Would that it carried the intense golden hue which now so strongly characterises it all through the winter. Practically a herbaceous plant, the young growth of the early winter comes pale green, and turns to a rich yellow as the spring comes on, and good clumps are marvellously effective now. The plant increases rapidly, dividing easily, and rooting almost like *Watercresses*. The plants run off to bloom in the summer, and in that state are not

very striking, but the stems may be cut away, and nothing is gained by blooming. The merits of this *Valerian* are chiefly seen in the spring, and good clumps at this time of the year light up borders with wondrous effect. Where spring bedding is indulged in nothing will give a belt of gold more effectively than will clumps of this plant, and it is so amenable to transplanting that it may be removed in the month of May to other quarters with ease and certainty.—A. D.

ALPINE PLANT PROTECTORS.

IOWE one of the best devices that has come into my hands for a long time to Dr. Appleton, of Beverley, Yorkshire. He has invented a simple method of holding a piece of glass over the head of an alpine or other plant, and its uses are manifold. Two pieces of galvanised wire are twisted in a way from which the glass cannot escape, and if the thing be properly done the glass remains as firmly in its place during the most violent storm as though it were held in a vice. This may sound of very small account to some of your readers, but I can only say that till I saw Dr. Appleton's method last year I never came across anything of the sort half so good before, or which could be compared to it. Of course there are ways of fixing



Glass protector for Alpine Plants.

a piece of glass over a plant which stands in need of protection; plugs may be used which are driven into the ground, and the glass may be tied with string or loaded with stones, but the operation for the most part is so troublesome and so ineffective that it is not very frequently practised. At any rate, one never sees scores upon scores of plants in a garden which are protected by flat pieces of glass. It would take a great deal too much time and trouble to manage it, and so the idea (except in a very few instances) is given up. The device I am writing about enabled me to cover more than a hundred plants with a minimum of trouble and expense. I got through the whole business for less than a pound, whereas a frame would have cost quite a large sum, and would not have answered at all. A ten-shilling box of glass from Wainwright, of Leeds, and seven or eight shillings' worth of galvanised wire from Messrs. Thomas, of London, sufficed to protect every plant in my garden which needed special assistance, and quite set me up for the winter. And now for results. I am certain that, next only to the right sort of sand for their rootlets to penetrate, protection from winter rains is a thing of the greatest importance for many alpine plants. They must never be "sogged," if I may use an expressive word of my gardener; there must, in fact, not even be a suspicion of damp.

All this is hit off to a nicety by the glasses I have described, and since they can be handled with ease, they are of the greatest possible service. I have scarcely had a single loss among my alpine plants this winter and the names, which I take almost at random, will show that some very typical alpine plants were experimented upon. The following have lived to tell the tale of their welfare, and are now in good form in my garden: *Androsace*

carnea, *A. Laggeri*, *A. villosa*, *A. obtusifolia*, *A. helvetica*, *A. sarmentosa*, *A. lanuginosa*, *A. lactea*, *A. Chamæjasme*, *Phyteuma comosum*, *P. humile*, *P. Sieberi*, *Edraianthus serpyllifolius*, *E. Pumilio*, *E. pumiliorum*, *E. dalmaticus*, *Omphalodes Lucilæ*, *Alsine Rosani*, *Acantholimon venustum*, *Pulmonaria dahurica*, *Silene Elizabethæ*, *S. acaulis*, *Saxifraga Vandelli*, *S. Tombeana*, *S. calyciflora*, *S. cæsia*, *Polemonium confertum*, *P. nanum*, *Arenaria juniperifolia*, *Campanula Zoysi*, *C. Scheuchzeri*, *C. modesta*, *Lychnis pyrenaica*, many *Primulas*, *Anemone vernalis*, *Petrocallis pyrenaica*, *Campanula Raineri*, *Umbilicus spinosus*, and others far too numerous for all their names to be given. This is a far better method than that of taking the plants quite out of the ground and keeping them in frames, for there is no root disturbance at all, and they like to be left alone. To a certain extent the glasses have been discoloured by the winter rains and dirt, and I think that has been a good thing. I am inclined to believe that many alpine plants like to be in the dark during their season of rest, and they make a sudden start onwards when their coverings are removed at the advent of spring. Mr. Wolley Dod is a little sceptical about this, if I may judge from a sentence in one of his letters, but if he had watched the whole proceeding as I have done this winter he might perhaps have thought differently. The behaviour, for instance, of *Androsace Chamæjasme* has been interesting in the extreme. I covered it with a sheet of glass, which was pinned down so close to the ground that the plant was well nigh in danger of being squashed. This was done by way of experiment, and to see what would happen. The ground, the plant, and the glass were sandwich-wise, as near to each other as could possibly be the case, and it was left in this way from October to the beginning of March. When the glass was eventually removed it was very difficult to say if the plant was dead or alive; it looked like a little dusty patch lying on the ground; but two or three days soon removed all doubts about the matter, and life rather than death was proclaimed. At first there were some little green edges visible on the leaves; then the outline of the rosettes was declared, and I am surprised now by the far advanced state of the buds and the unmistakeable blossom there will very soon be. Is there no hint to be gathered from this about a good way of growing some alpine plants? Hundreds will get on by themselves, and require no more attention than a Wallflower or Cabbage Rose, but there are others which do need some attention, and I venture to think they would ask more than anything else for perfect quiet during the winter months and for a sudden outburst in spring. Is not this exactly what they meet with in their own native habitats? The delightful little book which M. Correvon has lately published (and which should be in the hands of all lovers of alpine plants) has some very interesting remarks on the causes which lead to the sudden revival in spring, and he shows how his favourites go at a bound from absolute quiescence to an outspread of vivid colour and beauty.

JUST TO LIE DORMANT and to hold its own, to have no excitement of any sort or kind, to exist and only to exist during their season of rest, is what many difficult alpine plants ask for, as it seems to me, and the reason why they go off in this country in winter often is that one day they are reminded of midsummer and they become agitated at once, and the next day they are driven back by some very cruel rebuff, and they find out their mistake, but a piece of glass overhead, especially if it be opaque or semi-opaque, helps to steady them very much; the sun is forgotten, they know nothing at all about the rain, and so no abortive efforts are made, which only end in disaster. Is there no similarity between the condition of an alpine plant under a darkened glass and that of its brethren who are buried beneath superincumbent snow for so many months together? At any rate, they are shut out from all exterior influences, and this is precisely the very thing which is most suited to them during their time of repose. I have a hope now, which I had well-nigh given up, that

some day even *Eritrichium nanum* itself may consent to live on friendly terms with me; up to this time it never has done so. Some strong patches which my brother got for me from the high mountains of Switzerland last year cheated me for a little time with a very delusive appearance, and then they suddenly went off. I could scarcely say what was the cause of offence to them, but I feel certain that, on the one hand, *Eritrichium nanum* cannot bear any wet on its rather woolly leaves, and, on the other hand, its roots must never lack moisture. I note that M. Fröbel has a word of warning about this plant when he says in his catalogue it must be cultivated in pots, and I expect this means that it must be sheltered from too much rain. It remains to be seen whether *Eritrichium nanum* can be properly protected by pieces of glass overhead, though I confess to not being very sanguine about it. During the summer months it is the *crux* of all growers of alpine plants, and to have it under command would consequently be a most pleasant achievement. The beneficial use of pieces of glass in a garden is by no means confined to alpine plants. I believe Dr. Appleton's holders will give assistance in several ways. I put a great many sheets of glass over Cape and other bulbs, and I stuffed them with a lining of 2 inches or 3 inches of shoddy. In this way such comparatively tender things as *Zephyranthes Treatiae*, *Tecophylaea cyanocrocus*, *Spatalanthus speciosus*, *Bessera elegans*, *Cooperia Drummondii*, &c., have suffered no harm and are now doing well. Lilies also can be wonderfully protected by this method. I venture to think that most Lily bulbs which come to grief in our gardens are doomed in the early winter before root action has set in, and they are comparatively safe after that, but by covering them over with a bit of glass they are saved from any inordinate amount of wet, and the glass is removed long before the stem wishes to rise. I have treated *Lilium Parryi* and *L. Kramerii* in this way and I hope they are all right. Irises could be dried off in the summer without any difficulty by the plan I am advocating, and Professor Foster will be rewarded with blossom according to his own ideas by adopting this method. I also think that the fixing of these glasses may be of much use in the way of ripening seed, and *Chionodoxa Luciliae* is already with me *in situ* for this purpose, and I think will respond to it.

Such things as *Leontice altaica* and *Leontice Alberti*, which like to lie on the very surface of the ground, and which yet cannot stand overmuch rain, are happier now by far than they have ever been before in my hands, and I am quite sure I shall hit upon other applications of a very good idea. I put together these notes for THE GARDEN, because I think there is a much wider use for Dr. Appleton's glass-holders than even he seemed to attribute to them.

HENRY EW BANK.

St. John's, Ryde.

PRODUCTION OF DOUBLE FLOWERS.

It is possible that most of our decorative plants which produce double flowers, such as the Rose and the Camellia, may have originally been single. We know that the Dahlia when first introduced to this country was single. As regards the Dahlia, indeed, single-flowered varieties have of late been even more popular than double-flowered sorts. But that does not detract from the merit due to the florist or cross-breeder who has brought such flowers as the double Dahlia, the Rose, the Camellia, and the Ranunculus, &c., to the degree of perfection which they have attained; yet, strange as it may appear, there is no method or course of treatment known to us by which single-flowered plants can be induced to produce double blooms. How, then, it may be asked, has double flowers been produced? Before endeavouring to answer this question it may be necessary to say that there are at least two kinds of double flowers each very distinct from the other. The doubling of the flowers of such plants as the Dahlia, as well as those of all composite plants, is caused by disc florets becoming ray florets, each being a distinct and perfect bloom. Therefore such flowers as the so-called

double Dahlia and double Sunflower, &c., may be regarded more as accumulations of single blooms than as double flowers, and they differ materially from flowers of other species of plants, which become double by the changing of stamens into petals. Therefore plants whose flowers have the greatest number of stamens are the most likely to become double. I may mention that the single Snowdrop will frequently become double when transplanted into rich ground, and I have also known the same thing to occur when it has been transplanted into very poor light soil. However, as regards the generality of flowering plants, I believe that nothing in the way of high culture, or the use of stimulating soils, has ever been known to have the effect of inducing plants to produce double flowers. Many may be inclined to say that double flowers are no improvement upon single ones, and in many instances that may be admitted to be the case, but at the same time the preference for single or for double flowers may be set down as a matter of taste or opinion. Few will be found to object to the doubling of the Rose, the Camellia, and the Ranunculus, &c., and even in the case of the zonal Pelargonium it will be admitted that many very beautiful, as well as useful, varieties of double-flowered sorts have been secured. They are useful, inasmuch as they remain longer in good condition after being cut than single-flowered varieties do. Only a few years ago double-flowered Pelargoniums, Petunias, Cinerarias, and tuberous Begonias were unknown; they are all now common enough, and they have all, I believe, been obtained by carefully fertilising such blooms as show a tendency to become double with their own pollen, or, what is better, with pollen from another plant of the same species which may have been found to show a similar disposition towards duplicity. When fertilisation is effectually performed, it is generally found that the doubling is more pronounced or intensified in a portion, at least, of the progeny. It is true that when flowers become perfectly double they can seldom be induced to produce seed, but at the same time it seldom happens that blooms are produced so double that a few stamens may not be found among the petals, and the pollen of these if applied to semi-double blooms in which the stigma and ovary are in their normal condition will mostly be found to furnish a considerable percentage of plants with flowers more or less double.

P. GRIEVE.

Treatment of Primroses.—Referring to the remarks on these at page 307, it is, I think, the general belief that clay soils when properly cultivated are best for Primroses. "A. D." says they suffer from two causes in his stiff clay. One is the baking hard and heating of the soil in summer, the other cause is really the same—viz., the tendency of the soil to run together on the surface, which prevents the free passage of water. None of the evils "A. D." alludes to will occur if the soil is made porous by leaf-mould or decayed stable manure being dug into it, and a very slight dressing of decayed manure should be laid on the surface of the ground. This prevents "baking" or "running together," and in well cultivated ground there are few weeds, and any that may appear can be removed by hand. Never use a hoe amongst Primroses. The plants flower strongest the second year from the seeds. I sow a pinch of seeds every year in April. They vegetate most freely in a gentle hotbed, but this is not necessary, as they will do well in a cold frame or on a shelf in the greenhouse. When the plants are large enough they are pricked out, to be afterwards planted where they are to flower. All the Primroses and Polyanthes that have been exhibited by me in London have been grown in this way, and have all been seedlings flowered for the first time. They grow and flower year after year, but never so strong as they do the first time.—J. DOUGLAS.

Harpallium rigidum.—Would Mr. Wood, who writes so ably upon hardy plants, tell me what I am to do with the shoots of this Harpallium? They are coming up literally all over the border yards away from the plant, which I believe has vanished.—L. L. B.

GARDEN FLORA.

PLATE 488.

THE TUBE-FLOWERED LILIES.

(WITH A PLATE OF *LILIUM NEILGHERRENSE*.)

THE tube-flowered Lilies belong to Mr. Baker's Eulirion group, and comprise some of the finest as well as a few of the most tender in the whole genus. White and yellow are their prevailing colours, the exceptions being *L. Kramerii* and *L. rubescens*, the blooms of which are pink in the one case, in the other light purple.

THE NEILGHERRY LILY (*L. neilgherrense*)—well represented in the accompanying plate—was a few years ago one of the rarest of Lilies, but lately it has been imported in greater quantities and is now pretty well known. The flower-stem varies in height from 1 foot to 4 feet, and is clothed with scattered dark green leaves of a stout firm texture, but somewhat variable as to size, though,



Lilium longiflorum formosanum.

generally speaking, from 3 inches to 4 inches is their utmost length, and in most cases they are shorter than that. The flowers vary from one to three on a stem, though single blooms only are most common, but so massive and imposing as to more than compensate for lack of numbers. They vary considerably in shape and tint, some being shorter in the tube than others and more open, while, on the other hand, examples may often be met with in which the tube is longer and narrower than that here depicted. This latter form is the *L. tubiflorum* of Wight, but as all gradations between this and the ordinary form of the Neilgherry Lily may be met with, it must clearly be referred to that species. From almost pure white to deep primrose is the range of colour, and in some few examples the exterior of the bloom is tinged with purple. A peculiarity belonging to this Lily is the fact that frequently the flower-stem will proceed underground in a horizontal direction for some distance before coming to the surface, while at other times it will at once break through the ground and continue to grow upwards. When a portion of the stem is buried, small bulbs are produced at intervals throughout the underground part, and increase rapidly in size while attached to

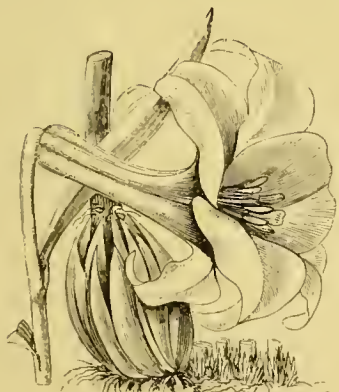
* Drawn in Mr. Bull's nursery at Chelsea in November last.



LILYUM NELSONIENSE

the parent plant. Imported stems have often reached a yard in length before breaking through the soil, and even when grown in pots they are sometimes as long as that. In this latter case the flower-stem frequently fails to make its appearance above ground, and if the ball of earth be turned out to discover the cause, in general the stem will be found wound around the interior of the pot and bearing numerous bulbs throughout its length. Sometimes the stem will appear late in the season, probably from the side of the ball of earth, in which case it usually flowers when not more than a foot high, and in that case we have the rather uncommon spectacle of an unimposing flower-stem being crowned by a magnificent blossom. This Lily requires greenhouse treatment, otherwise it will perish during cold wet winters, and its blossoms being produced in the open ground in autumn and winter, sometimes even so late as Christmas, would soon be destroyed by frost. A mixture of peat, loam, and sand (this latter in abundance) suits this Lily perfectly, but however treated the bulbs flower in greater perfection the first season after being imported than afterwards.

L. WALLICHIANUM.—This Himalayan Lily, though somewhat like *L. neilgherrense*, is, nevertheless, easily distinguished from it, even when dormant, for the bulbs of the two vary in a marked manner; those of *L. neilgherrense*, are globose in shape and composed of large scales, while *L. Wallichianum* has longer and more pointed serrated scales closely adpressed, so as to form a firm, solid, somewhat pointed bulb. The leaves, as in *L. neilgherrense*, are scattered on the stem, but they are longer than in that species and more numerous, while the flower-tube is narrower



Lilium Wallichianum.

and reflexes more suddenly. In *Wallichianum* the blooms are generally solitary, but unusually strong bulbs sometimes bear two or three together; they are white, with in some cases a greenish tinge outside. This Lily requires about the same treatment as the *L. neilgherrense*. I have never been successful with it out-of-doors, though the late Mr. Niven states that it had grown in the open ground at Hull for sixteen years and flowered every season. It, however, produced very few offsets during that time. Perhaps seedlings raised in this country would thrive better than imported bulbs.

L. LONGIFLORUM.—This is the best known of the group to which it belongs, being one of the kinds grown in quantity in Dutch bulb farms, and imported in great numbers into England, where they are largely purchased by those who supply Covent Garden Market with flowering plants. It was introduced to this country early in the present century, and has been figured in the *Botanical Register* and also in Loddiges' "Botanical Cabinet." It is widely distributed throughout Japan, and is often sold to unsuspecting Europeans as one of the rarest productions of that country. It is hardy if planted in well-drained situations, and when in a thriving condition its rate of increase is rapid. In deep, light, sandy soil the increase has been 800 per cent. in a single

season, the individual bulbs varying in size from that of a Walnut to that of a Pea. In this case the buried portions of the stems were quite studded with young bulbs. Of *L. longiflorum* there are several varieties, among which mention must be made of *eximium* or *Wilsoni*, two so-called kinds between which I can trace no distinction. In this variety the leaves are longer and more scattered than in the ordinary kind, while the tube is narrower, the segments more reflexed, and the whole blossom of greater length than that of the type. It is altogether a handsomer flower than that of the ordinary *L. longiflorum*. Then we have the American *L. Harrisii*, regarding which there has been a good deal of controversy, the question raised being whether it really differs in any way from *eximium* or not. The spikes of flowers occasionally exhibited of *L. Harrisii* are certainly vastly superior to those of *eximium* which we have been accustomed to see, but then it must be borne in mind that they are the produce of bulbs unusually well developed. In the case of smaller bulbs there is no perceptible difference between flowers of *L. Harrisii* and those of *eximium*. It is, if I am not mistaken, the opinion of Mr. Baker that the two are identical. In *THE GARDEN* last year Mr. Hovey alluded to *L. Harrisii* as differing in all respects from *L. longiflorum*, but his remarks applied to the ordinary form, and not to the variety *eximium*. There is certainly one point of difference between the two, and that is the scale of *L. Harrisii* (as imported from America) will, when separated from the parent plant, produce a far greater number of bulbs and in quicker time than will those of *L. eximium* from Japan. Another variety of the long-flowered Lily is *Takesima*. This principally differs from the type in having the outside of the bloom more or less purplish in its earlier stages, a tint, however, which is scarcely visible by the time the flower becomes fully expanded. In *L. longiflorum albo-marginatum* the leaves are edged with white, but the flower in no way differs from that of the ordinary kind. A distinct form of *L. longiflorum* is the variety *formosanum*, from the island of Formosa, whence it was introduced by Mr. Maries; it flowered in Messrs. Veitch's nursery in the autumn of 1880, and was awarded a first-class certificate by the Royal Horticultural Society. It is a slender-habited plant, with narrow foliage, reminding one of *L. philippinense*, but the flowers, instead of being unusually long, as in that kind, are shorter and rather more widely expanded at the mouth than in other varieties of *L. longiflorum*. The blooms are clear white in the inside, but tinged on the outside with brownish purple after the manner of, but to a lesser extent than, *L. Browni*. This is a beautiful and distinct Lily, and one that proved itself to be hardy at Chelsea, but it is yet very rare.

L. PHILIPPINENSE.—The distinguishing feature of this Lily during its earlier stages is the narrow,



Lilium philippinense.

Grass-like foliage with which the flower-stem is somewhat thickly clothed, and when in blossom

its exceptionally long flower-tubes. It was collected by Gustave Wallis in 1871, and sent out by Messrs. Veitch, but though imported from time to time since then, it rapidly seems to die out. There were some good examples of it in flower in Mr. Ball's nursery, at Chelsea, two or three seasons ago, and last year a few specimens of it were very fine at Kew. It flowers at the same time as the ordinary *L. longiflorum*, that is, about July, and in appearance the bulbs much resemble each other, though those of *L. philippinense* are more pointed and looser in character than bulbs of the commoner sort. The flowers are satiny-white in tint, and on strong specimens nearly a foot long. It is essentially a greenhouse Lily; indeed, a temperature rather above that of an ordinary greenhouse suits it best.

L. BROWNII.—This fine Lily grows to a height of 2 feet or 3 feet; the lower part of the stem is tinged with purple, and is frequently leafless



Lilium Brownii.

for some little distance up. The foliage is rather long and somewhat drooping, while the solitary flower that crowns the stem is one of the most striking amongst Lilies. Its interior is pure white, while the exterior is heavily tinged with purplish brown. It is, indeed, a grand Lily, and one that succeeds fairly well on thoroughly drained soils, especially those containing a good deal of peat. This Lily has been long known in gardens, but is yet far from being common. It has one fault, and that is it is rather liable to decay just at the base of the bulb; especial care must, therefore, be taken to have the site on which it is planted thoroughly well drained. It is generally considered to be Japanese, but its native country is somewhat uncertain.

L. ODORUM.—This resembles the last named, but its leaves are broader and the flowers are shorter and opener in character. Their interior is of a creamy tint; the outside is more or less suffused with purple, but never so much as in *L. Browni*. Its fragrance is so pronounced as to suggest the specific name. It is a native of Japan, and was introduced to this country early in this century, but has always been among the rarest of Lilies. It is occasionally met with under the name of *L. japonicum Colchesteri*. The bulb of *L. odorum* is something like that of *L. Browni*, but is broader at the base and always whitish, as in *longiflorum*, while that of *L. Browni* is tinged with red. *L. odorum* is even more impatient of stagnant moisture than *L. Browni*, the bulbs being very liable to decay just at the base.

L. NEPALENSE.—This should be a desirable Lily, but I am not sure that it is in cultivation, though introduced into England in 1855. Its flowers, which are broadly funnel-shaped, are of a yellow colour, marked more or less with purple in the inside. Its bulbs appear to be delicate in constitution; having a few small ones sent me

from Nepaul, I tried in vain to get them to grow, though in good condition when received, and



Lilium nepalense.

treated as those of *L. Wallichianum* and *L. neilgherrense*.

L. KRAMERI.—This Lily, when it first appears above ground, might easily be mistaken for a weak shoot of *L. auratum*, from which, however, its flowers differ widely. Its stems, which are smooth and slender, are furnished with scattered foliage, and crowned by a flower or flowers much larger than might have been reasonably expected from so slender a stem. The blooms, which are open, funnel-shaped, vary in colour from white to a sort of purplish pink. It is a native of Japan, whence it was introduced about a dozen years ago. Its bulb is small and delicate in character; though great numbers are imported every year, few survive after once flowering. Whether



Lilium krameri.

in the open ground or in pots, good drainage is essential to its success.

L. CANDIDUM.—This is generally spoken of as the old white Lily, a favourite cottage garden plant. The dazzling whiteness of its blossoms and their delicious perfume are unsurpassed by any species in the whole genus, and it is, moreover, perfectly hardy. It succeeds best in a thoroughly good loam well drained, but yet not too dry, and after it is planted all after-disturbance should be avoided; but if it be desirable to transplant any, it should be done as soon as possible after flowering, otherwise growth will have again commenced. Besides the common form there are some distinct varieties. *Variegatum* is one in which the leaves are marked with bright yellow, and very pretty they are in autumn and winter if not cut down by frost. In *striatum* the flowers are marked with purple, but though singular, it is not so showy as the ordinary kind. The greatest curiosity in this class is the variety *spicatum* or *monstrosum*, a sort on which the flowers are abortive and replaced by white petaloid bracts. It is,

however, by no means ornamental. *Peregrinum* was by early writers considered to be a distinct species, but Mr. Baker has classed it as a variety of *L. candidum*, from which it differs in being



Lilium candidum

more slender in growth, in having purplish stems and narrower flower segments.

L. WASHINGTONIANUM.—This and *L. rubescens* were figured in *THE GARDEN* (Vol. XX.). *Washingtonianum* differs in all respects from any of



Lilium Washingtonianum.

the preceding; its bulb is of a curiously long oblique shape, the leaves are arranged in whorls

around the stem, as in *L. Martagon*, and the flowers are borne several together in a horizontal manner or nearly so on the upper part of the stem. They are white, tinged more or less with purple, and, as a rule, widely expanded. This Lily frequently fails to thrive in a satisfactory manner, probably owing to insufficient drainage. Dr. Kellogg, who has studied the plant in its native habitats, recommends planting it from 8 inches to 12 inches deep in a loose, somewhat gravelly, well-drained soil. A depth of a foot would seem at the first glance too much for such a bulb, but from my own observation I am convinced that more bulbs of Lilies are lost through shallow than through deep planting.

L. RUBESCENS.—Under the name of *L. Washingtonianum purpureum* this Lily has been known for some years, but Mr. Sereno Watson in his "Botany of California" has made it a distinct species. It is, as a rule, smaller in growth than *L. Washingtonianum*; the leaves are more glaucous, and the arrangement of the flowers quite different. In *L. rubescens* the blooms are erect or ascending, instead of horizontal, as in *L. Washingtonianum*. They are mostly purple dotted with brown, but in this respect there is a good deal of variation. The bulb is smaller and less elongated than in *Washington's* Lily.

L. PARRYI.—In Vol. XVIII. of *THE GARDEN* there will be found a charming illustration of this beautiful and distinct Lily. It pushes up a flower-stem when well established 4 feet or 5 feet in height, clothed with narrow scattered foliage and surmounted by delicately poised funnel-shaped blossoms. In colour they are bright yellow freely dotted with chocolate, with which the brown hue of the anthers contrasts in a striking manner. This Lily does well in a mixture of loam, sand, and peat (the latter predominating), and though well drained it should be liberally treated during the growing season as regards water. The bulbs are rhizomatous, somewhat like those of the Panther Lily (*L. pardalinum*), which also does well under the same treatment. Though a native of Southern California, *L. Parryi* was not discovered till 1876, and it was two or three years before it flowered in this country. In 1881 it was awarded a first-class certificate by the Royal Horticultural Society. T.

OLD SEEDS.

THESE are being somewhat severely tested this year, for whilst the dry condition of the weather and also of the soil has tempted people to sow early, the temperature has by no means favoured quick germination; hence old seeds have failed largely, and plants are coming up thinly. A market grower the other day called my attention to a large breadth of Yorkshire Hero Peas sown about the middle of March—rather early perhaps for wrinkled Marrows, yet the soil was dry and in better condition for seeding than it often is a month later in the spring. Here and there a Pea plant was coming through, whilst in the bulk the seed unearthed was found to be pasty and rotten. It was too evident that old seed had been sent, and as it came from a first-class house naturally the result is disappointing. It may be pleaded that Peas of this kind were sown too soon, but market growers invariably sow early, especially when, as this year, the thoroughly pulverised condition of the soil favours early sowing. It is evident that if preceding seed seasons have not been favourable to the production of fully matured seed, that seedsmen should give their customers special warning against too early sowing, lest by so doing they court failure. This year, for instance, even with the soil so dry and friable, we find all vegetation singularly slow to move. It is more backward than it has been at this season for many years. That is a contingency which could not be provided for, as no one could tell what sort of temperature would follow the winter. To many growers early sowing is of the first importance, and in dry districts they must sow early if they are to secure profitable summer crops. To them it is productive of much loss if they get old seeds when they look and pay for good new sam-

ples. It is hoped that no considerations will induce seedsmen to hold over stocks of any kinds for more than two years, and even a year-old seed should not be sent out until it has been fairly tested, not in heat, but under the conditions of temperature to which it will be subjected in the open ground in the spring season. A. D.

INDOOR GARDEN.

EARLY CINERARIAS.

I do not know anything that will take the place of Cinerarias as cut flowers during autumn and winter; the bright rose and crimson varieties are particularly useful in this respect, being very attractive under artificial light. Cinerarias vary very much in habit of growth; some grow very compact, producing moppy heads of bloom; these are unsuitable for early flowering; others of a branching habit throw their flowering-shoots out freely; these are the varieties to grow for cutting. There are also some very tardy in opening their blooms in dull weather, while others do so freely; cultivators should, therefore, select and save seed from sorts best adapted for the particular purpose for which they require them. In order to have plenty of bloom before Christmas we sow in the beginning of April in heat; when sufficiently strong the seedlings are pricked off into shallow boxes (Australian meat boxes cut down are very useful for this purpose), and when they begin to get crowded they are planted out-of-doors in prepared soil in a sheltered place, and protected a little with any old lights which may be at hand till the young plants get established. Afterwards they are allowed to grow as they like till they are in danger of being injured by frost, when they are taken up with balls of earth and potted. They are then placed on a bed of ashes out-of-doors, but receive no protection unless the nights are likely to be frosty, the object being to keep them as hardy as possible. Grown in this way, insects do not trouble them much, and the plants have a hard, robust appearance not obtainable under glass. When it is no longer safe to keep them out-of-doors or in frames they are removed to a cool greenhouse, and as soon as any of them show a tendency to flower they are removed to a house a few degrees warmer in order to assist them to develop their flowers more rapidly. There are many things that may be grown in a similar way, and which will do much better under such treatment than under any other. Where plants are required in quantity, and where there is only a limited area of glass, this kind of treatment must be followed to a considerable extent if the supply is to be well kept up. R. LLOYD.

Brookwood.

LATE-FLOWERING CHRYSANTHEMUMS.

THE special prizes offered for these by Mr. Cullingford through the National Chrysanthemum Society, to be competed for at the Royal Aquarium on January 13, are naturally exciting some interest, and any information respecting the best varieties to be grown for exhibiting at that season of the year can scarcely fail to be acceptable. There are certain varieties that are later in flowering than others, but a good deal will depend upon the way in which they are treated and grown. One experienced cultivator is found recommending that the varieties to be grown for flowering so as to have exhibition blooms at that season of the year should not be potted into their flowering pots until the second week in July, and then be kept in the open air so long as it is considered safe to do so, removing them under cover when frost threatens. Furthermore, it is suggested that instead of the cultivator taking out the crown buds, they should be allowed to break, and then the terminal buds removed. When the plants are housed they should be kept as cool as possible, as that will help to delay flowering. All the protection necessary will be to exclude frost.

As to suitable varieties, the following among the incurred section will no doubt be found of

service, being in the main backward in flowering: Angelica, amber, shaded with orange; Barbara, rich amber, shaded with bronzy yellow; Cherub, golden amber; Eve, pale primrose; Lady Slade, pinkish lilac; Mrs. Haliburton, pale sulphur or ivory white; Mabel Ward, buff-yellow; Princess Teck, white delicately tinted with lavender; Venus, peach, or soft pink; White Venus; and Yellow Perfection, pale bright yellow. Of the Japanese section, the following varieties: Boule d'Or, yellow, tipped with bronze; Ceres, delicate flesh colour changing to white; Jackson's Duchess of Albany, orange-buff; Ethel, paper-white; Meg Merrilies, sulphur-white; Thunberg, clear pale yellow; and Yellow Dragon, bright yellow. Of the large Anemone-flowered section, Fleur de Marie and Virginale are both pure white. A few late-flowering Pompon varieties will be found among the following: Mdle. Marthé, white; Golden Mdle. Marthé; Rosinante, blush rose; Souvenir de Jersey, yellow; and Snowdrop, white.

As a matter of course, the National Chrysanthemum Society has wisely refrained from in any way designating what are and what are not late-flowering varieties. If one of the earliest flowering types can be so managed as to be had in flower by the second week in January, it will be to all intents and purposes a late-flowering Chrysanthemum. One advantage likely to arise from offering these prizes is that it may lead cultivators to experiment with varieties in order to induce late blooming, and some happy suggestions may be gained in consequence. It will be almost, if not quite as much, a question of management as of varieties. The exhibition will be looked forward to with some interest, and it is to be hoped that the best anticipations of the generous donor of the prizes will be realised. R. D.

DEUTZIA GRACILIS FOR FORCING.

THIS plant is useful in spring for many purposes. The flowers, as is well known, are pure white, produced on long graceful racemes, and may be had in fine condition from January until plants of it bloom naturally out-of-doors in May. It is especially useful about Easter for church decoration, and all who have a demand for cut flowers in spring should grow it in quantity. We grow and force it in batches and are never without it during the spring months. It is easily propagated by means of cuttings made of the young shoots when from 2 inches to 3 inches long, and to each cutting should be attached little pieces of the old wood, generally termed a "heel," as they root quicker and more certainly with this attached than without it. About four cuttings should be put round the edge of a 3-inch pot in light sandy soil. If plunged at once in a close place, with a bottom heat of 70° or 75°, they will root in three weeks, when they should have no more bottom heat, but they should be kept for a time in a warm place and then potted off singly into 3-inch pots. A mixture of equal parts loam, leaf soil, and sand will cause them to root and grow freely, and after being kept in a close house or frame for a short time, they may be gradually hardened off, until by the middle of May they can be placed in a cool frame. When accustomed for a short time to this they may be treated in two ways successfully—one is to grow them on in pots, the other to plant them out for the summer. When grown in pots they should be transferred from the 3-inch ones to 6-inch ones about the end of May or in June, and in these they should remain for the first year. Manure should be substituted for leaf-soil in potting, and the loam should be used in small lumps. Until they begin to root in this they should be kept rather close, but when in full growth in July the lights may be wholly removed from the frame, thus exposing them fully to the sun and supplying them with abundance of water. The main point is to secure plenty of finely developed, long, young shoots, as it is these which bloom the following season, and they cannot be too strong, long, or numerous. When it is seen that there is only to be one or two main stems, nip their points off, and this will induce many more to push forth. Young plants treated fairly well the first year

will produce from eight to a dozen flowering shoots, and when in bloom will be found of much value. One important point in connection with this *Deutzia* is that it is never injured by insects. A sunny, rich spot in the kitchen garden is a capital place in which to plant them out. They should be placed about 15 inches apart each way, and after being planted they require but little attention during the season, unless the soil becomes very dry, when they should be watered freely. By the end of September or early in October they should be taken up and potted. Most of them will go into 6-inch pots the first year, and they should all be placed in a cool frame until wanted for forcing. In beginning to force them, the strongest and best ripened plants should be put into heat first. A temperature of 65° will bring them into bloom in four or five weeks in December, January, or February, and just now they grow and flower even quicker than that. At present our latest plants are in cold frames; they are coming into leaf fast, and would bloom in a fortnight if placed in a little extra heat. By putting from six to a dozen into heat every fortnight during the spring months, a constant succession of bloom is kept up. Plants one year old and more may all be treated in the manner recommended for younger ones. When old and scraggy, they may be cut down to the bottom, and encouraged to produce fresh wood; but young, robust plants are the best for spring blooming, and old ones can always be turned out into the shrubberies, where they will flower freely and be much valued in the early part of every summer. CAMBRIAN.

Gardenia shoots dying.—I have some *Gardenia florida* some of the young shoots of which are dying off. It appears as though it was a kind of canker. The plants are kept in a temperature of about 60°, and are syringed on fine mornings about 7 a.m. They have been carefully watered, and are kept in a nice moist atmosphere. I should like to know the cause of the shoots dying off, and whether it is prevalent in that variety.—J. W.

* * The shoots of this plant are not liable to die off except when badly treated. A night temperature of 60° is sufficient to keep this *Gardenia* in health, but I would not recommend the use of the syringe much in the winter, unless there is more growth going on than there is likely to be under the temperature just named. Syringing stove plants in the morning is simply doing the work at the wrong end of the day; early in the afternoon, so as to let the foliage get moderately dry before dark, is much the best plan.—T. B.

Arum Lilies.—These are everywhere in demand about Christmas and Easter, and great numbers of them are brought into the market during these two periods. By some they are grown in pots throughout the whole year, while others, to economise labour, plant them in the open ground. Apart from the labour question (generally an important one), they form much stronger plants, and are therefore more likely to flower when planted out than when confined to pots throughout the season. Being semi-aquatic, we plant ours out in a low-lying, but sunny spot, where plenty of water is at hand throughout the summer. Towards the end of May we turn them out of pots, shake the soil from them as far as possible without injuring their roots, and divide them into three or four sizes preparatory to planting out. After all are planted, a good watering is given to settle the soil about their roots, and should the weather be favourable they soon commence to grow away freely. The only attention bestowed during summer is keeping them clear of weeds, and giving a thorough watering whenever required. Thus treated, most of them form good, sturdy plants by the end of the summer or beginning of autumn; they are then carefully lifted, potted in some good, open, loamy soil, and kept close in a frame till root action recommences. At all times water must be liberally supplied, and when the pots are filled with roots a little liquid manure may be advantageously given them.—T.

Cape Heaths.—Would you kindly tell me whether both summer and winter-flowering Cape Heaths require pruning back? if so, how far and the proper time to do it? also the time for repotting?—J. W.

* The extent to which either summer or winter-flowering kinds of Heaths require pruning back altogether depends upon the character of the individual varieties to be dealt with. Soft-wooded winter-flowering kinds, such as *Erica hyemalis*, should have their main shoots cut back immediately after flowering to the extent of one-half or one-third the growth made the preceding season. Free-growing soft-wooded spring or summer flowerers, like *E. propendens*, ought to be similarly treated, but in their case the main shoots should be somewhat less reduced. Moderate growers, such as *Cavendishi*, if in very free growth may have the strongest shoots shortened one-fourth, otherwise they soon get too tall in proportion to their breadth. Free growers of the hard-wooded section, of which *Lindleyana*, *Irbyana*, *Austiniana*, and *obobata* may be instanced, should have the preceding season's shoots shortened about one-third their length. Very slow-growing kinds, like *depressa*, *remula*, and *aristata*, require no cutting in at all; simply pick off the flowers. The best time for repotting Heaths is spring about the end of March or April, or autumn about September. Which of these two seasons is the most advisable depends upon the condition of the plants. The treatment generally required by different varieties, differing so much as they do in habit and requirements, to be successful needs to be much varied. Nothing but long and patient study of the habits and wants of the various sections can enable anyone to grow Heaths as they should be.—T. B.

WORK DONE IN WEEK ENDING APRIL 14.

APRIL 8.

THE weather continues dry, but cold and dull, which, till there is a decided change to more spring-like weather, is all the better, as the fruit blossoms will thereby be retarded till weather conditions are more favourable. We have provided protection for all fruit trees on walls, but all others have to take their chance, the labour being too great for the very small amount of good received. Apricots and Peaches have set well, and the latter are being disbudded a first time over. The coverings are let down every night, and remain down on very cold days and during very bright sunshine, say from 10 to 12 o'clock. Planted out first batch of Brussels Sprouts, variety Reading Exhibition, the best strain I have yet come across, the sprouts being large and firm as bullets. Large sprouts are deprecated by some people, and to such I would say plant later, and from the self-same strain the sprouts will be smaller. We plant twice—now and a month hence; the plants for the last batch are now being pricked out at the foot of a south wall. Brussels Sprouts, to pay for the high cultivation they require, should, when full grown, be at least 4 feet in height, then, if furnished from ground line to tip with sprouts, no matter how extravagantly liberal the preparation may have been, the produce will bulk sufficiently to pay good interest. They are planted in deep drills in which was sown soot and a little artificial manure (Beeson's). Slugs will thus be kept off, and when the drills are filled in the surface roots will revel in the manure. Ground that was lately occupied with Celery is now being trenched for Peas. Planting out hardy plants in flower beds and marked out designs of other beds. We never attempt fantastic designing, for such are never effective; circles, ovals, and straight lines are the full extent of the geometry we practise, and that it has been ample, the satisfaction expressed as to the arrangements by friends and foes (the latter do not *in person* make themselves known) for many years now is sufficient proof and encouragement to continue in the same old course. In the houses this has been a very busy day amongst plants. Repotted Azaleas that had done flowering and shifted into larger pots. Palms that are used for furnishing baskets

and vases in the mansion; potted Caladiums and the remainder of tuberous Begonias and Gloxinias. All these are struck in an intermediate vinery, the temperature of which is at present kept at 60° by night with a rise of 10° or 12° by sun-heat. Top dressed the Ferns that are planted out in orangery and replanted border with *Lycopodium denticulatum*, a plant that we find invaluable for mossing over plants used for table decoration and other decorative purposes.

APRIL 9.

Continued the planting out of hardy plants in flower beds. *Sedum glaucum*, *acre elegans* variegatum, and *coriscum*, *Herniaria glabra*, *Veronica repens* and *Veronica incana*, *Violas*, and a few *Retinosporas* are the kinds that are now being planted. The weather has been so fine that we are about worked out of a kitchen garden job, except the trenching of a plot of ground for late Peas and the making of another plantation of Seakale, which is now in hand, cuttings being made from the best of the old roots that have been forced, and which are cut into lengths of from 4 inches to 6 inches, being planted with a dibber in rows 2 feet apart and 18 inches apart in the row, the top of the cutting being an inch under the soil. Supplies of Seakale are now being had from the open ground, the crowns having been covered with coal ashes, and which are cleared away, and the ground forked over as the Kale is cut. Of course such old crowns make several small breaks or shoots, which, with the exception of one or two at most, it is necessary to rub off as soon as they become prominent. Began to thin Muscat Grapes; the surplus bunches were first cut off, and, of course, the worst—smallest and badly-formed bunches—were selected for destruction. They have all set wonderfully well, and as a proof that plenty of fire-heat is of first importance, the bunches nearest to and immediately over the pipes have set by far the best; indeed, every flower seems to have set. The laterals have all been stopped back and the shoots tied out as evenly as possible, and each bunch has also been made to show itself to the best advantage by tying aside or up or down, a leaf here and a shoot there. I find that appearance counts for a good deal, and the difference in cost in producing a good or bad effect is simply *nil* if the will be present. Tied down shoots and stopped laterals and sub-laterals in second Peach house, and gave the inside border a soaking with tepid manure water, and the border being thickly mulched with long litter, little or no more water will be required till the fruit begins to swell after stoning, and meanwhile the border will be utilised for standing bedding plants on, for just now we are driven to great straits for space and warmth for these. Shifted Tomatoes into fruiting pots, and tied to strong stakes as they are intended to fruit without any training to walls or trellis. Tomatoes are very accommodating subjects, as they will either do with little heat or much; at any rate they thrive in a temperature of 50°, and only do the same in one of 70° or 80°.

APRIL 10.

It has been a little milder to-day, and rain is falling this evening, which is very acceptable, and for kitchen garden crops it is particularly so. Usually by this date we have been able to cut abundance of Asparagus from the open plots, but this season there is no appearance of any as yet, though a mild rain would, no doubt, enable us to cut in a very few days; and, meantime, the supplies in frames must be eked out. Made a general sowing of Broccoli and Kales, and also sowed another pinch of Autumn Giant Cauliflower to succeed that sown a month ago, and which will turn in before the earliest Broccoli. I repeat that it is quite useless to sow seeds of any of the Cabbage tribe, or of Turnips and Radishes, without protection from birds is immediately applied, and our plan of prevention is netting fixed to stout sticks a couple of feet long, and the netting drawn tightly over the tops of sticks. Transferred frames and lights containing Potatoes to other parts of framing ground, in order to protect bedding plants, and also to prick out in them seedling Pyrethrums, Perillas, Chilean Beet, Petunias, Sun-

flowers, Scabious, annual Chrysanthemums, &c. The Potatoes are being protected from frost by strong stakes fixed in the lieings, to which long sticks are tied in horizontal form, on which rest other sticks, over which mats, felt shutters, or frigi domo is laid whenever there is appearance of frost. Put in several thousand cuttings of *Alternantheras*; we never trouble to make them, as the term is, but simply pinch them off the plants with thumb and finger and in they go, small sticks being used as dibbles. A good watering, the lights kept closed, and, if sunny, a light shading for a few days, and the bed having a temperature of 80° or 85°, they will be rooted in about a week, when a little air will be given and increased as the plants gain strength. Put in cuttings of Tea Roses; they were taken from plants that had been forced, and with due attention throughout the summer it is hoped to have such cuttings in the form of plants for forcing next year. They are plunged in a bottom heat of 70° and a top heat a little lower, but the bell-glasses under which they are placed will cause the top heat to be at least on an equality with the bottom. Thinned Muscat Grapes and planted out a third succession lot of Melons, the variety being Hero of Lockinge. We only grow one variety in a division, and by this means our stock is kept true to name.

APRIL 11.

The rain has not come to much, only 0.9 inch; however, it is very acceptable to our recently planted Brussels Sprouts, Cauliflowers, Lettuces, and hardy plants in the flower beds and mixed borders. It has also made spring flowers look brighter and the Hyacinths top-heavy, so that we had to give them a tie to their sticks. Dean's strain of hybrid Primroses now makes a grand show. Intermixed with Hyacinths and Tulips, they not only heighten the floral effect by their profuse flowering habit, but they furnish a groundwork of foliage that Hyacinths and Tulips seem to require to set them off to the best advantage. Daisies and Forget-me-nots serve the same purpose, but they are not nearly so telling. Continued the planting and pricking out seedlings in frames, as yesterday. Swept up all walks and rolled those that required it. Work in the houses has for the most part been of a cleaning-up description, but time was also found to continue the thinning of Muscat Grapes, and also to pinch and tie down the remainder of the shoots. The thinning out of the fruit of Strawberries, and shifting them from one house to another, and putting others in heat has also taken up much time, as also did the preparation of manure and soot water for these and other fruits, Pines amongst them, and which were well watered to-day, fruiters being given liquid manure at every watering, and plants in full growth are given it at alternate waterings. If the weather had not been so cold, the heating material—stable litter and leaves—would have been renewed in the fruiting pits. The manure is ready, and the first warm day the work will be done, as the maintenance of a bottom-heat of at least 75°—I prefer 80°—is of the utmost importance during the whole period from the showing of fruit to ripening. Grapes in bottles—Lady Downes—keep first-rate; they are looked over every Saturday to remove any decayed berries there may be and to fill up the bottles with water. Whilst this is being done the ventilators and door remain wide open and the heat is turned on, and thus the room gets a thorough airing. Given a dry atmosphere and an equable temperature of 45°, well ripened Grapes are bound to keep.

APRIL 13.

The wind has veered back to the old quarter, but frost keeps off, so we must be thankful for small mercies, and hope the weather will get no worse, or else that the fruit blossoms may remain in their present backward state till the worst is over; meanwhile the protectors must be kept over the trees, and every tree that can be protected should be. Morello Cherries are always the last to unfold and the worst for blight, and preventive measures as regards the latter have been taken to-day in the form of a good swill of both walls and trees with soap-suds and Gishurst.

Plums and Sweet Cherries had a similar wash a fortnight since. In our light peaty soil Rhododendrons sow themselves in every direction, and to-day quantities have been collected and are being planted out in a piece of ground in one of the copses where Rhododendrons grow like weeds. A couple of years hence they will make sturdy bushes and help to fill our flower beds in winter, and the worst plants will be used for game covert. Trenching Broccoli ground, and the same kind of planting continued as for several days past.

bedding out in masses are put three in a pot the same size.

APRIL 14.

Fine, but cold as ever. Still planting out seedling Rhododendrons and hardy bedding plants. Potatoes on south borders are again showing through the soil, and have had more soil drawn over them to protect them from frost. Being so dry, we have again started hoeing amongst all kitchen garden crops, and an application of soot has been given to autumn-sown Onions, which is both a

when with plenty of moisture we shall not mind if the thermometer registers 90° or 95°. Other work has been mainly of a routine character, such as watering, cleaning of plants, propagating, pricking out, and potting bedding plants.

PLANTS.

FRUITS HARDY AND UNDER GLASS.

EARLY PEACH HOUSES.—The final disbudding and tying down should be kept well in hand, so as to have every part of the trellis fairly covered



CLIMBERS ON HOUSE AT TADDYFORDE (SEE PAGE 335).

Finished thinning Muscat Grapes and gave the border—entirely inside—a good watering, a small quantity of liquid manure being added to the water, which was not colder than 90°, and a little fresh stable litter was spread over the border as soon as the watering was done. Early Peach house border was also given another watering and the mulching renewed. Tied up Melons and stopped the laterals that were showing fruit at two points beyond the shows. Did more propagating and potted single Dahlias out of 2½-inch pots into 4-inch pots. A few Chrysanthemums also were shifted into larger pots, and plants of *Agathæa cœlestis* that are required large have been potted singly in 4-inch pots, but those for

good manure and a remedy for the maggot that sometimes attacks them. Bullfinches and tomtits have apparently suddenly entered into a league to destroy the whole of our Apple buds in a large orchard; therefore the gun has had to be put into use, and a lad purposely engaged to scare them away. I do not know whether their sudden thirst for Apple buds may be only local or not, but those interested would do well to be on the alert in the matter. Completed disbudding Vines in late houses—Lady Downes and Alicante. The temperature is now increased to 60° on the coldest nights and 5° higher when mild, and the day temperature ranges between 65° and 70°; on sunny days the house will be closed up by 2 p.m.,

with young growths by the time the stoning process sets in, but beyond the pinching of any shoots that may show a tendency to grossness, a free and abandoned growth during this trying period will lead to the most satisfactory results. The stoning period extends over about four weeks, and during that time the Peaches do not increase in size, but an important change is going on nevertheless, and to enable the trees to sustain the strain, good syringing and steady day and night temperatures, with as much air as can be admitted, must receive most careful attention. As soon as the process is finished the fruit will begin to swell away rapidly, tying down may be proceeded with, and more heat by day may be given if time is an

object, otherwise 60° through the night and 70° to 75° by day will be quite high enough where size and quality are, as they always ought to be, of paramount importance. If the trees were well watered before the fruit came to a stand, another supply may be given as soon as they begin to move on, and as this will speedily tell upon all the perfect fruit, the final thinning should be deferred until those which do not show signs of moving can be detected. We sometimes hear of trees setting thousands of fruit, and sympathise with those who have to undergo the painful and tedious operation of thinning off ninety per cent. after they have produced an unnecessary strain upon the trees. When trees set such an abundance of fruit it generally happens that they are weak, if not short-lived, and as no one likes to lose a good friend, it is a good plan to thin the blossoms before they open by drawing the finger down the underside of every shoot and carrying away all that interferes with its progress. Those left then open vigorously, and being on the sunny side of the tree they set the finest fruit, which invariably colour to the apex. Ordinary Peach growers who are often glad of pendent fruit should always make an effort to get them turned up to the sun before they begin to colour. Every Peach cannot be elevated, but, provided with short lengths of lath that will cross two of the wires, a little practice will enable a skilful operator to raise all that are not found growing on strong leaders. When the Peaches commence the last swelling, the points should be pinched out of all fruit-bearing shoots that will be removed after the crop is taken, and those intended for succession should be allowed to have plenty of room for the full development of their foliage and flower-buds, without which present or future crops cannot be brought to maturity. When tying down the young shoots in old trees, every strong branch should be carefully protected by a covering of foliage from growths secured to their upper sides, otherwise they will be liable to injury from sunstroke during unusually hot weather. Young beginners will do well to pay particular attention to this item of advice, as many fine trees are often ruined by a fierce sun playing full upon the old wood when the sap is in active operation.

Late houses which have been retarded or allowed to come on under a free circulation of air will now be setting if the fruit is not already formed. Although unseasonably cold, the weather has been dry and favourable to fertilisation without the aid of fire-heat, but where this element is at command the gentle warming of the pipes every morning and again on cold nights will greatly assist the trees by ripening up the pollen and producing climatic conditions favourable to ventilation, when houses void of fire-heat must be kept close. Artificial fertilisation in these structures is not imperative, but one thing is certain: it often prevents a shy setter from becoming barren if it does not, as many people assert, and not without reason, increase the weight of the fruit and prevent certain kinds from producing split stones. When bees appear in late houses they speedily produce the desired effect; but during their absence an occasional run over the blossoms with a bunch of soft feathers is but the work of a few minutes. Another advantage which attends the command of fire-heat in late houses is the facility for damping the floors and syringing the bare stems and branches without incurring the risk of injury from sharp morning frosts which invariably follow bright days, when atmospheric moisture is most beneficial to the trees and flowers. As soon as the fruit in late houses is set, all triples should be reduced to the best, which will be found in the centre, and disbudding may be carried on conjointly with the general thinning. Good syringing and early closing, with a fair amount of sun-heat combined with a good supply of tepid water to the roots, by quickening the flow of sap, will then start the young fruit into immediate growth. When this desirable point has been secured and the Peaches have attained the size of Hazel Nuts, the retarding process may be resumed and continued throughout the remainder of the season,

that is, on the assumption that house Peaches will be valuable in proportion to their lateness. But size and quality being the first consideration, daily closing when the sun is declining, to secure a temperature most congenial to this eastern fruit, will be followed by the best result. It not unfrequently happens that we find orchard and late Peach houses retarded to an extent that places the fruit in succession to kindred kinds on open walls, but the temperature of a glasshouse in our varying climate that falls below the mean of a country in which the Peach can be grown as a standard, places the cultivator under two difficulties—his fruit is rapid and deficient in flavour, and his wood is soft, pithy, and imperfectly ripened—two evils which exceptional circumstances or requirements alone can justify.

HARDY FRUITS.—Under the impression that an unusually late spring is the one thing needful to a bountiful crop of fruit, we are too apt to rejoice over conditions that retard the opening of the blossoms beyond their usual period; but how rarely it happens that an unseasonable spring, notwithstanding the absence of a killing frost, is crowned with a golden harvest. Never perhaps have fruit trees been later than they are this year, and yet the winter has been dry and mild; flower-buds of all kinds, with the exception of those of the Plum, were abundant, but the Apricot, which is the first to open, has cast thousands of its buds, and the show of expanded blossoms is thin. Peaches, which follow on the heels of the Apricot, are neither so finely nor so freely blossomed as we have seen them after less favourable winters. There may, and will no doubt, be enough and to spare if we have a favourable change to milder weather, but a continuance of this unusually low temperature will, it is to be feared, do mischief, by stagnating the sap at a time when it ought to be in free circulation. The cause of the present drowsiness of Nature has been by some attributed to the perfect formation and maturation of the past season's growth and the exceptionally dry state of the subsoil, but with the exception of a short period, when the weather was intensely hot, the season was not particularly favourable from the beginning to the end. Indeed, where fruit trees were not well mulched and freely watered it is questionable if premature ripening before buds and blossoms were perfectly formed is not the primary cause of this unusual lateness. What we want is a return to the genial April showers and mild gleamy weather, of which fruit trees and vegetables now stand so much in need, and unless these come quickly all-round crops may not be so abundant as we at one time anticipated.

Mulching newly planted trees.—While patiently waiting for Nature to throw off her lethargy, there is one important operation, which, if hitherto neglected, will well repay the most careful attention, and that is mulching. The winter having been unusually dry, we may assume that every newly planted tree was at once secured, by means of stakes or otherwise, from wind-waving, and that the soil placed about the roots was thoroughly watered home, for, after all that has been said in favour of ramming or treading, water is the best consolidator of the soil, as the roots are perfectly protected from the action of the air, and the most delicate fibres can be washed home free from injury from undue or unequal pressure. So far all will be satisfactory, but with returning vitality and the prospect of another dry season, the moisture contained in the soil should now be secured by liberal mulching of some kind. Large trees in poor soils which require stimulants may be mulched with good rotten manure, whilst others in compost, which will eventually prove rich enough, will only require a covering of a lighter and poorer character that will keep in moisture and preserve an even temperature about the roots. Stone fruit trees against walls are, as a rule, planted in sound friable soils that force a free fruitful growth without the aid of manure, but in exceptional seasons they suffer more from lack of moisture than the absence of food. All of them, including the Peach, Apricot, Plum, and Cherry, delight in calcareous matter and require a plentiful supply during the time they are stoning. This,

then, is one of the best materials that can be used for covering the 3-foot pathway in front of the walls, as it forms a clean foothold in all weathers, and if applied as soon as the trees are nailed in March, gets well washed in by the time the fruit requires assistance. If old lime rubble or plaster can be obtained free from decaying wood, it should be well pounded, bank screened, and applied an inch or more in thickness. Independently of its fertilising properties, lime rubble is a good absorbent of heat, and it keeps in moisture during long periods of drought.

Grafting.—Owing to the unusual lateness of the season the grafting of fruit trees in this part of the country is greatly in arrear. At the present time we have a dozen Apple trees of thirty years' growth that were headed back in February, but as yet there is no sign of the sap moving to an extent that will justify our Herefordshire grafters in pushing on operations. The scions, consisting of two-year-old wood, have been laid in, and when the change to genial weather comes the work will be taken in hand and finished off with as little delay as possible. The grafts are let in with the saw and knife, tightly driven home, clayed, and left to take care of themselves for the remainder of the season. Younger trees, also Pears which started earlier, have been operated upon, but the stocks being much smaller, the usual method of whip-grafting and tying in has been adopted. Unlike old orchard trees, which do not require tying in, these require looking to when they get into free growth, otherwise the ligatures will prevent the scions from swelling, and sticks or supports will be needed to prevent them from being blown off by rough winds. The points of the most vigorous growths will also require pinching out to equalise the flow of sap, and to force it into side and horizontal scions which will otherwise be left in arrear, and eventually die out altogether. By the young beginner, a few vigorous shoots from prominent grafts may be looked upon as the acme of success, but when it is borne in mind that the main object is the restoration of the tree to an evenly balanced, fruitful head in the shortest possible period, it at once becomes evident that timely attention to stopping, tying, and training forms one of the main features in successful grafting. W. COLEMAN.

Eastnor Castle, Ledbury.

The Walnut.—This is comparatively but little planted, a singular fact when the beauty and value of its wood are taken into account. For gunstocks and much of our finer sorts of furniture, Walnut timber is invaluable. Walnut trees, moreover, are free growing on almost all kinds of soil, and the crops of nuts which they produce would pay at least the rent of the land on which they grow, while freeholds might be purchased with trees of fourscore years of age. Walnuts in a landscape, also, are trees of mark, their magnificent heads of fine foliage in parks or paddocks rendering them especially adapted for such situations. They associate well with Oak, Beech, Elm, Sweet and Horse Chestnut, as well as with various other trees, and they do not rob the land more than their companions do. Their smooth glossy leaves are washed clean by every shower, and the foliage is not so thick as to throw the rain off the Grass or to keep air currents from circulating freely among the branches. There are, therefore, no trees either in park or pasture under which herbage grows better than it does under Walnuts. Besides, Walnuts come into leaf late, make their growth quickly, and lose their foliage nearly all at once after the first autumn frost. Thus a chance is given to take the leaves out of the way, so as not to injure the Grass, while the shining dark young wood, with the greyish mature limbs, are left full in view. As to any tree that will grow more quickly into a size to be useful, I do not know where to look for it. I have seen old Walnut trees that measured from 60 feet to 90 feet high; diameter of branches from 60 feet to 96 feet; and of bole or trunk, from 3 feet to 5 feet diameter; and, no doubt, larger trees are elsewhere to be found.—J. B.

TREES AND SHRUBS.

THE AMERICAN LARCH.

(LARIX MICROCARPA.)

THE Larch that grows wild in the swamps of the Eastern United States is a good deal like its European relative, but is scarcely so ornamental, although as regards its timber it is quite as useful. It is a quaint-looking tree, and has a singular way

The sterile flowers are in solitary, erect catkins, which take the place of the fascicles of leaves towards the ends of the branches; they are nearly round, one-fourth of an inch long, and composed of rounded, yellow anthers, closely arranged. The fertile flowers are in erect, solitary catkins about the middle of the branches, half an inch long, and made up of a few floral leaves or scales. Around the base of the catkins are other scales, resembling leaves half transformed by a

On account of the very valuable qualities of the wood the Hachmatack would deserve to be extensively cultivated, and there are thousands of acres of cold and swampy land where it was found naturally which are now unproductive, and which might be clothed with it. It has, however, been found to be far inferior in rapidity of growth to the European Larch, which very nearly resembles it in appearance and in the excellent qualities of its wood. This, therefore, should be preferred, as likely to produce, in the same time, a larger quantity of timber.

This Larch is not an uncommon tree in English nurseries, but it is only grown and sold for ornamental planting, and even for that purpose it is not much in demand. The name *L. pendula*, by which this American Larch is known, is misleading, many thinking that it stands for the weeping variety of the European Larch. Among the American Larches to be found in nurseries bearing varietal names, such as *pendula*, *rubra*, and others, we have never been able to discover any material difference between them and the typical form. *L. americana* is a synonym of *L. microcarpa*.

The white Oak.—It is opportune to raise the enquiry (p. 247) whether this Oak (*Quercus alba*) could not be profitably planted in this country; but will it not be important first to gather all available particulars of trees already growing? During the time that has elapsed since the early part of last century I should imagine it must have been planted on many estates in this country. Will any readers who have specimens under their notice tell us all they can about them? If it is the tree I consider it to be, they grow to a great height in North America. It somewhat resembles the British species (*Q. Robur*), but the leaves are larger, the bark is of a whiter colour than the common British Oak, and from this

Larix microcarpa. Flowering and coning branches. Male (m), female (f), flowers. Cone (full sized) with scales and seeds.

of pushing out its branches in a horizontal direction, which adds to its picturesqueness, if not to its elegance. This awkward kind of growth, though perceptible even in the young trees, is most pronounced in old trees, and the illustration we give of a large specimen is quite characteristic. Emerson in his "Trees and Shrubs of the Massachusetts Plantations" gives a good deal of information respecting this Larch, and to him we are chiefly indebted for the following account:—

The American Larch, known very generally in New England by the aboriginal name of Hachmatack, is not often in Massachusetts a tall tree. In deep forests it sometimes attains the elevation of 70 feet, but does not usually exceed half that height. It is distinguished from all others of the family by its crowded tufts of deciduous leaves; from the European Larch, by the smallness of its cones and the shortness of its leaves.

It has a straight, erect, rapidly-tapering trunk, clothed with a bluish grey bark, rather rough, with small roundish scales. The branches are numerous, very irregular, and horizontal, or nearly so. The recent shoots, which are very slender, have a greyish red bark, which on older branches becomes brown, and, finally, as on the trunk, blue-grey.

dilated wing on each side into fertile scales. The true scales have a projecting point when in flower, but afterwards become nearly circular, slightly bent in at the edge, and have within each two seeds with a scaly wing; the scales and wings are of a pleasant crimson-red. The flowering season is May.

The range of the Hachmatack is from the mountains of Virginia to Hudson's Bay. At Point Lake, in latitude 65°, it attains, according to Dr. Richardson, to the height of only 6 feet to 8 feet. It is found in cold swamps in most parts of this State, but attains its greatest perfection in a region considerably further to the north.

The wood of the Larch is very close-grained and compact, of a reddish or grey colour, and remarkable for its weight and great strength and durability. In these respects it is superior to all the other Pines, and is surpassed only by the Oak. Its durability is even superior to the Oak itself; and in old vessels the timbers made of Hachmatack have been found entirely sound when those of white Oak were completely decayed. On these accounts it is preferred before all other woods for knees, for beams, and for top timbers. The shipbuilders make two varieties of the wood, the grey and the red, of which

the latter is considered best. Its great hardness makes it valuable for steps in exposed situations, and its compactness gives it great power of resisting the action of fire, and renders it nearly incombustible except when splintered. It would be better than any other wood in buildings intended to be fire-proof.



A young American Larch.



Spray of American Larch.

The leaves are an inch long in circular tufts round a central bud, except on the growing shoots, where they are alternate. They are linear, flattened, obscurely four-sided, sessile, and obtusely pointed at the end, of an agreeable light bluish green, and differ from those of all the other cone-bearing trees by the delicacy of their texture. Late in autumn they turn to a soft, leather yellow colour and in the first days of November fall.

feature it no doubt derived its name. In Canada it is not unusual to find this tree growing with a stem clear of branches to the height of 60 feet or 70 feet, their extreme height being considerably

over 100 feet. If it can be proved that it thrives well in this country, and the timber is of good quality, I see no reason why it should not receive a fair trial.—D. J. Y.

PROPAGATING DOUBLE GORSE.

THE double Gorse, regarding which an enquiry was recently made, will strike readily enough from cuttings that may be put in at any time except just when the young growth is soft and fleshy, provided they can be sheltered by a frame, but if put in the open ground early autumn is the best season. If put in a frame at the present time the cuttings should consist of the preceding year's growth and be left at a length of 6 inches or 8 inches. They may be dibbled pretty thickly and firmly in light sandy soil placed within the frame, or pots may be used for the cuttings. Both plans have their advantages and disadvantages, for if put in the frame without pots space is economised and there is not so much water required, while those in pots strike rather more readily, and if a few are struck and it is desired to remove them in to more airy quarters this cannot be done without exposing the whole when they are bedded out, while if in pots one or more can be readily removed at any time. The cuttings should be inserted in the soil for about one-half of their length. When a frame is filled with cuttings it must be kept close and shaded during bright sunshine till they root, when the plants must be exposed by degrees. Those put in the open ground may often with advantage be made longer, as they have more vicissitudes to contend against in the shape of harsh, drying winds, sharp frosts, and great fluctuations of temperature, all of which tell against cuttings put in the open. Again, the length of a cutting will depend upon its character; for instance, one of the current year's growth, with just the base of firmer wood attached, if no more than 6 inches long, is preferable, even as an outdoor cutting, to one of twice that length with a large proportion of old hard wood. The place for propagating Gorse should, if possible, be somewhat sheltered, especially from drying winds, and the cuttings must be put in firmly, or they are liable to be loosened during sharp frosts. T.

Forsythia viridissima.—Than this plant few are more attractive at the present time. The abundance of drooping yellow flowers, springing solitary from the axils of the previous year's leaves, are rendered particularly attractive by the slender swaying nature of the branches. For effect a good sized clump, of say half a dozen plants, looks best, more especially when backed up by dark-foliaged Evergreens. Do not plant close to the verges of drives or walks this is a growing evil in the formation of most shrubberies.—A. D. WEBSTER.

The Snowdrop tree (*Halesia tetraptera*).—Few shrubs are during the months of April and May more attractive than the above. The flowers, which somewhat resemble in size and outward appearance the common Snowdrop, are produced in great quantity and before the leaves have attained their full development. The difference between the light green of the young foliage and pure white flowers on slender drooping pedicels is both pleasing and impressive, and seldom fails to induce those who have not already done so to add a plant to their collection. I have found it to thrive best in peaty soil and partial shade.—A. D. WEBSTER.

The Murthly Conifers.—It may be interesting to your correspondent "M. C." to know that a great portion of the Douglas Firs were produced by layers from the oldest tree at Murthly growing in the avenue in a line with the old Lime avenue. Under my father's directions, I layered hundreds of them and assisted to plant a great many of the rooted layers before I left home in the early part of 1852. I had a doubt then as to whether they would make good specimens, as they continued to keep their normal form, flattened and slightly bent. Since leaving home I had

not seen them till I paid a visit to Murthly in June last, and was struck with admiration with the fine specimens which the layers had made—I think, in some cases, finer and taller specimens than the parent plants. We, at that time, propagated hundreds of *Deodara*, *Cryptomeria*, *Cupressus*, *Taxodium* (or *Sequoia*), *Thujaopsis*, *Thuja*, &c. These are now the admiration of all lovers of Conifers who have had the pleasure of visiting the pleasure grounds at Murthly.—A. R. O.

5342.—**White Indian Azalea.**—There is planted out in what is termed the Old Rosery at Bagshot Park a plant of this Azalea. I cannot say how long it has been planted there, but to all appearance it cannot be less than eight or ten years, possibly more. It is sheltered by surrounding shrubs from cold winds, otherwise nothing has been done to protect it. It is planted as a single specimen, so there is nothing in close proximity to shelter it from frost. Yet during the past three years it has grown and flowered freely, and no shrub in the pleasure grounds is more effective than this white Azalea when in flower.—J. HINTON.

Goat Willow for hedges.—This Willow is a quick grower, and delights in moist land, and forms an excellent fence. The best and cheapest

cheap planting, that is, merely loosening the earth and sticking the plants in holes barely large enough to receive their roots. Trenching and properly preparing the ground before planting is, in the end, true economy.

The Deodar.—This Conifer was so belauded on its first introduction, that many planted it extensively, and in warm localities and sheltered situations it is all very well, but where exposed to much wind it gets sadly cut about and greatly disfigured by spring frosts, which affect the tender growth and frequently cripple the young shoots. If planted at all it should be in positions where it is surrounded or backed by other trees, such as groups of Scotch Firs or other Conifers having dark foliage, against which the silvery grey of the Deodar shows up in pleasing contrast. As a park tree, except in flavoured districts, the Deodar is worthless, but *Cedrus atlantica* is so hardy as to stand any amount of cold, and so



The American Larch, showing its spreading habit of growth when standing alone.

way to form a fence of this Willow is to procure a number of straight shoots, two or three years old, about 6 feet in length, and insert them in the soil to the depth of 15 inches and at the distance of 18 inches from each other, crossing the rods at right angles. This will form a pretty good hedge even the first year, and by trimming it with the hedge-bill, it will be strong enough at the end of the second season to be left unprotected as a fence.—J. R.

Ornamental planting.—The principal thing to bear in mind in forming an ornamental plantation is, always to allow sufficient space for each of the permanent plants to develop its natural character. Therefore, instead of planting indiscriminately, as is so frequently done, plant upon a regular plan, and fill in with plants which can afterwards be cut back or removed as the permanent ones increase in size. Half the plantations formed for ornamental purposes are planted too thickly at first, and afterwards allowed to remain without thinning, until they are rendered comparatively useless. Large and small-growing trees and shrubs are intermixed without regard to proper position. Inexperienced planters should be cautioned against what is misnamed

stiff in branch and limb as to be unaffected by gales. In planting this, or any other of the Conifere, they should have high ground, as there they may be seen to the greatest advantage. I do not mean simply on mounds, but on naturally elevated spots, with the land sweeping down from them in a bold, irregular manner; these are the sites for trees, where they look at home and give character and depth to the other surroundings.—S.

The Balsam Poplar (*Populus balsamifera*).—Surely there is no tree that anticipates the beauty of the "woods and forests green" equal to this. For upwards of six weeks (or from the beginning of March) this precocious leafing tree, fringing the margin of our woods here and there, bestows on them a charm of cheerfulness at a dreary season which I think no other deciduous tree can give. When, in an early stage, the leaves are of a decided golden-yellow colour, so decidedly telling that people frequently go out of their way to ascertain whether they are leaves or flowers; and seen across a lawn at a distance, ere the winter can be said to have gone, it has a fine appearance among other apparently lifeless masses. Whilst the common Poplar is about the last tree to leaf, this appears to be the first. It is com-

paratively little known, and being moderate in size, hardy, deliciously fragrant, is especially adapted for cemeteries and town or villa gardening; and while in many instances for immediate effect the Lombardy Poplar is liberally planted about the gardens and grounds of town and villa gardens, rendering (through contrast) all surroundings almost invisible, the Balsam Poplar is forgotten.—T. W.

SOME WEeping CONIFERS.

THERE is now quite a crowd of so-called Weeping Conifers to be seen in nurseries at the present day. Some of these are elegant in growth and really desirable, and in the hands of a skilful planter are capable of producing some uncommonly pretty effects in the garden landscape. On the other hand, some of the weeping Conifers are decidedly ugly—monstrosities, in fact, which the tasteful planter would do well to shun. In any case weeping trees require to be dealt with carefully in ornamental planting. In some positions, such as when jutting out from the edge of a shrubbery or main group, they have a pleasing appearance; but when stuck isolated about a lawn, with no regard to picturesque effect, their elegance is destroyed. The following are some of those to be most recommended:—

ABIES EXCELSA INVERTA, one of the many varieties of the Norway Spruce, has a remarkable pendulous growth. The main stem is generally erect, while the branches droop in a graceful manner. It is the best of the weeping Spruces, as in that known as pendula the drooping character is principally confined to the minor branchlets.

BIOTA PENDULA.—Some say that this is a variety of the Chinese Arbor-vitæ (*Biota orientalis*). Whether this is so or not matters but little so long as it is practically distinct from the commoner kind. Its growth is dense, but is often bare of foliage for a little distance at the bottom; this, however, tends to show off the long thread-like pendulous branchlets. These branchlets are but sparsely divided, thus differing greatly from the flat frond-like ones of the Chinese Arbor-vitæ.

CEDRUS DEODARA ROBUSTA.—Though all the Cedars are decidedly pendulous, this is the most weeping variety. It is much stouter than the common kind, while the branches are fewer in number and altogether more pendulous, the weeping character not being limited to the young branchlets, as in that usually seen. It forms a distinct and graceful specimen.

CUPRESSUS LAWSONIANA INTERTEXTA is one of the most pendulous varieties of Lawson's Cypress, the branchlets being coarser in texture and more open than the type, besides their strongly marked pendulous tendency. Another variety (*filifera*) has the branches elongated thread-like, after the style of the weeping Arbor-vitæ; a third variety is *gracilis pendula*, of a light graceful habit of growth, forming under favourable conditions a handsome specimen.

C. NUTKAENSIS PENDULA.—A form of the Nootka Sound Cypress in which the young branchlets are of a more drooping character than is usually seen, though in all specimens they are to a certain extent pendulous.

JUNIPERUS OBLONGA PENDULA.—This has somewhat the character of the common Juniper, with sharp-pointed leaves and very long, slender pendulous branchlets. There are two weeping varieties of the red Cedar (*J. virginiana*), the first (*pendula*) a drooping form of the common kind, while in *pendula viridis* the foliage is of a bright cheerful green. The female plant of *Juniperus recurva* has the young branchlets much drooping, but unless in an unusually cool and moist situation its beauty is apt to be spoilt by attacks of red spider. The spiny-leaved Japanese *J. rigida* has the branchlets pendulous, and forms a pretty graceful specimen.

LARIX EUROPEA PENDULA.—This is a strictly weeping Larch and needs to be grafted standard high, in order to display the long pendulous branches to their fullest extent, while the American Larch (*Larix microcarpa*) is of a loose open habit, with long pendulous branchlets, which has

gained for individuals with that character much developed the name of the Weeping American Larch.

RETINOSPORA FILIFERA.—This bears the same relation to the Retinosporas as *Biota pendula* does to the other Arbor-vitæ, for the branches are long and thread-like, while the plant is of rather a dense habit of growth. It forms a handsome single specimen.

TAXUS BACCATA DOVASTONI is a striking variety of the common Yew, in which the leaves are longer, while the branches grow in a horizontal direction, and the branchlets are strictly pendulous. It forms a most uncommon looking subject when grafted on a clean stem and allowed to grow at will.

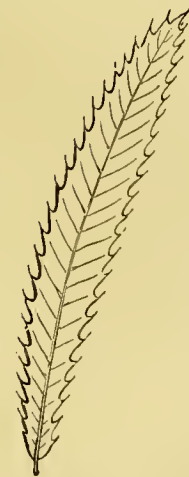
THUJA OCCIDENTALIS PENDULA.—The Weeping American Arbor-vitæ, if grafted standard high, pushes out a few long pendulous branches, towards the tips of which the foliage is clustered thickly together. It has a quaint and uncommon appearance, for the branches are often devoid of foliage, except the dense tufts just at the ends.

WELLINGTONIA GIGANTEA PENDULA.—The branches of this droop from the main stem in a very graceful manner, and a good specimen is very distinct from the normal form. A. T.

NEW JAPANESE OAK.

(*QUERCUS SERRATA*)

THIS is a highly ornamental species with foliage exhibiting a decided resemblance to that of the Sweet Chestnut of Southern Europe. It is quite hardy in this country, and from its handsome appearance and distinct habit is thoroughly worthy of more general cultivation. In Japan it is widely distributed, and forms one of the most useful timber trees. Sections of the wood, both longitudinal and transverse, are published in a Japanese work, "Mokuzai Shoran," or "Handbook of Useful Woods." The young foliage is always more or less silky, but in the mature leaves the hairiness is sometimes confined to the axils of the principal veins on the under surface of the leaf. Full-grown leaves measure from 4 inches to 8 inches in length, and from little more than half-an-inch to 1½ inches across, the stalks being from a third of an inch to an inch long. As before stated, the leaves are like those of the Sweet Chestnut in miniature; in colour they are deep green above and lighter—sometimes almost ashy grey below—parallel veins produced beyond the edge of the leaf into slender spring-like teeth. *Q. serrata* is also found in China, the Himalayan region, and Persia. Oaks which have received different specific names, but which seem to differ from *Q. serrata* no more than many different individuals of the British Oak from a single wood do from each other, exist in the Caucasus, Eastern Europe, and Asia Minor. Of these latter may be mentioned *Q. Libani* (Kotschy) and *Q. castaneæfolia* (C. A. Meyer). *Q. serrata* is easily recognised from the Turkey Oak (*Q. Cerris*) by the larger and more rigid scales of the Acorn cups. The leaf of this Oak represented by the above woodcut is one quarter the natural size, and was drawn in Messrs. Lee's Isleworth arboretum. G. NICHOLSON.



Leaf of *Quercus serrata*.

containing 81½ feet, valued at 1s. 4d. per foot, the total value of the two trees being £23 9s. 8d. The garden was established about the year 1673. The Cedar of Lebanon was introduced to Britain about the year 1683. Should the two trees cut down in 1771 have been among some of the first introduced, the progress they made and the price realised were even remarkable.

Conifers for chalky soil.—The following Conifers succeed well in a chalky soil: *Pinus austriaca*, *P. pyrenaica*, *Laricio*, and *romana*, *Cupressus Lawsoniana* and *nutkaensis*, *Juniperus virginiana* and *chinensis*, *Thuja Lobbi* and common Yew. All these will thrive and grow with fine dark colour on fresh trenched and pulverised chalk. Cedar of Lebanon and *Cedrus atlantica*, *Wellingtonia gigantea*, *Picea cephalonica* and *P. Pinosapo* also flourish on chalk, though in a less degree than the preceding.—G.

New plantations.—The past week or two of cold, dry weather, having been a trying time for recently planted trees and shrubs of large size, attention should be paid to these by applying a liberal supply of water and having the surface of the roots covered with a thick layer of litter. All planting operations should be finished by this time, with the exception of Hollies and evergreen Oaks, which can be safely removed and started into growth at once, but their roots must not be exposed to the air for any length of time, watering freely head and roots when planting.

Seedling Deodars.—I should advise everyone to have seedling Deodars, as they grow faster and make much more handsome trees than those produced either from grafts or cuttings. Trees from grafts or cuttings seldom make good well-branched trees, and only assume the character of a branch. Most of the Coniferæ can be propagated in this way, but the plants are generally disfigured; and to give them a tree-like appearance they require great attention in pruning and tying their branches, and often then without effect. Therefore, if good, fast-growing, well-branched trees are the object, by all means have seedlings.—J. T.

Spring v. autumn planting.—From long and extensive experience in planting in different situations and soils, I am in favour of autumn planting of forest trees and also evergreen shrubs, unless in cold, bleak situations, when the latter are best deferred till spring or early summer. There may be situations where the soil is too wet to admit of early planting, but such is unfit for planting at any season till drained. There is an old saying, which in practice I find to be correct, viz., "Plant a tree in autumn and command it to grow, but in spring you must coax it." Some are of opinion that severe frost will injure early planted trees; this I have proved to be a fallacy. In order to test it I left young trees with their roots uncovered during severe frost, and planted them when thawed, and I found that they sustained no injury. There is more risk from drought in spring planting than from frost in autumn or winter planting.—J.

Trees for smoky localities.—The Plane tree thrives best in towns because it endures the smoke and other deleterious substances discharged from dwellings and factories, and so in the country does the Sycamore appear to thrive better than almost any other tree, unless it be the Spanish Chestnut, the Firs and Pines doing worst. Power in trees to withstand smoke and gases seems to depend entirely upon their vigour of constitution, and in this respect the Sycamore and Chestnut seem to have few equals. In some of the worst localities in the colliery and manufacturing districts both do wonderfully well, showing no ill-effects in any way. The Sycamore is the best because it seeds so freely, seedlings coming up everywhere in the neighbourhood of old trees, in some places superseding the Oaks and other species that have succumbed to the climate. The Beech and the Lime also do fairly well. I know of no place where trees are so unfortunately placed as the few Canadian Poplars—which I think they are—that have been growing for some

Cedars of Lebanon at Chelsea.—It is recorded in the "Memoirs of the Chelsea Botanic Garden" that of two Cedar trees which were cut down in the year 1771, the contents of the trunks was 133½ feet, valued at 2s. 8d. per foot, the boughs

years in the old parish churchyard in the very centre of Sheffield, where they are all but smothered with the sooty particles continually being deposited in that town. The bark is quite black, and after a shower, when the leaves get cleaned a little, their green aspect has a curiously artificial-looking effect. It says much for the tree that it has been able to live there at all, and he must have been a sanguine man who planted them there after looking upon the gaunt spectres of other trees near the town on the smoky side and which now only denote where trees once grew and flourished.—S.

Sowing Conifer seed.—The Scotch Fir and other hardy Conifers should now be sown on well-prepared soil, in beds of 4 feet or 5 feet wide, in open quarters. The more tender kinds, of which one only has small portions of seed, I have always sown on nicely prepared borders in sheltered situations. Very small portions of seed of such as are considered difficult to raise I have sown in boxes or in pans, and have placed them under a cold frame or pit lights; and great rarities I sow always in pots, plunged in sand or cinder ashes, close to the glass in a northern aspect, or placed so as to face north in summer, pricking the young plants off as soon as up into pans an inch asunder each way, or one plant into a 3-inch pot. Such has been my practice, which for many years has been very successful. Common and abundant kinds sow in beds and quarters patted or beaten down gently with the back of a clean spade to firm the seed, covering it according to its size from half an inch to 1 inch in depth with open, healthy, sandy soil. Those in pots, pans, and boxes I cover with charcoal dust intermixed with the soil, using it also on the borders and beds.—J. B.

A plea for preserving old trees.—A feeling prevails that when trees are old and going to decay, it is needless to try and preserve them. Of late years all our old ruined palaces, abbeys, and ecclesiastical buildings are receiving much attention in order to prevent them falling into decay, or being carried away piecemeal for dykes and farm-buildings, as used to be the case. These ruins are now rigidly protected, and sums of money are annually voted for their preservation. It would be desirable to see all our old trees, wherever they exist, equally well cared for by root-feeding and stem-protecting, as well as sheltering from inclement weather the decaying stumps of remarkable specimens. This is a subject of much importance, and well worthy of the attention of all who have a regard for fine old trees. When the bark and inner portion of the wood are alive, it is quite possible, by the aid of feeding and fencio, to throw increased vigour into some of these old specimens, and thus render them objects of interest for many years to come. If they are dead and reduced to stumps, they are even then interesting, as showing something of what the trees really were. I have always very great pleasure in looking at such remarkable remains of old trees, and I am sure many others must have the same feeling.—J. M.

North American wild Cherry.—This tree (*Prunus serotina*) attains its greatest perfection on the fertile banks of the Ohio and other rivers of the West, where it forms a fine forest tree from 60 feet to 80 feet in height, the stem dividing into a number of branches and forming a widely spreading umbrageous mass. On the lowlands of the States, however, it only reaches to about half the height of the mountain form, which is placed in very different circumstances. It grows in the depths of the gaps and ravines of the Alleghany range, closely surrounded by other tall trees, and as its lower limbs become shaded and atrophied, they dry up and drop off; the trunk or stem thus struggles up into a naked symmetrical shaft, the terminal branches forming a leafy summit or canopy, which continues to rise higher and higher as the mass of the forest rises in the air. A stem, often 5 feet in diameter, without a branch for 90 feet, and as straight as a gun barrel, is a common form of the plant in these

woods, the height of the entire tree averaging about 125 feet. This is the Cherry timber so much valued for cabinet work. Wild Cherry bark ranks very high among the articles of the *materia medica*. The ripe fruit is a favourite food of birds, and is much used in the preparation of Cherry brandy.—S.

IMPERISHABLE PLANT HOUSES.

THE flower trade in London has of late years increased so fast, that growers for market surrounded by buildings cannot find room for their stock. This is the position in which Messrs. Beckwith have found themselves placed with their Tottenham Nursery, every available yard of which has for some time been covered with glass. Of late years London has grown rapidly in this direction, precluding the possibility of additional land adjacent being obtained. To remedy this they have purchased some eight acres near Rye House in an open position adapted in every way for the purpose required, and to which it is being rapidly converted. Last summer five span-roofed houses, each 250 feet long by 20 feet wide, were completed and at once filled. Five more similar in every way are now being added, to be followed by others at no distant time. They stand north and south with a space of several feet between each so as to admit of the requisite side light. They are constructed on what may correctly be described as the non-perishable principle, and are of a like character to some that Messrs. Beckwith have built at their Tottenham Nursery. They have concrete walls and iron roofs; the walls are 9 inches thick and 3 feet 9 inches high; the side light is admitted by a run of single panes of glass 1 foot 8 inches deep, with their lower edges resting on the wall. Wall-plates, that so soon perish in houses where moist heat is kept up, are altogether dispensed with. A single piece of T iron of the particular make which Messrs. Beckwith use forms each roof bar, bent to the required angle at the ridge and at the eaves, with the ends left long enough to admit of their being deeply embedded in the concrete walls, which thus hold them as firmly as if let into stone. The way in which the work is proceeded with is this: the walls are brought up to within a foot of the required height; then three rows of posts, running the length of the house, are fixed erect in the ground, one row immediately under the ridge and one row on each side a little above the eaves. To the top of each of these series of posts, boards, perfectly true in their edges, are fixed; on these are hung the bars at the exact distance apart required to admit the glass, which is 2 feet wide; the walls are then carried up to the required height, imbedding the ends of the bars, as already described. A sufficient amount of time is allowed for the concrete to harden before the glass is put in.

IN GLAZING houses of this kind, the topmost sheets of glass on one side of the roof are put in so as to slightly overlap the upper ends of those opposite, thus dispensing with ridge timber or capping. Neither are there any longitudinal purlines to support or steady the bars in the way often employed in houses built of wood in the ordinary way. Nor is there anything fixed longitudinally at the eaves; the tie rods usually employed to keep the roof tight and in position are also dispensed with, being found unnecessary, the iron and glass giving all the stability needful. No gutters for carrying off the roof water are required; the lowermost panes of roof glass at the eaves rest on the upper edge of the sides and overlap them a little just enough to throw off the water, to receive which the top of the wall is hollowed out gutter-shape so as to carry it away. A slight descent from the ends of each house to the middle is given to the gutters, at which point the water is carried down into tanks 12 feet wide by 4 feet deep, and 125 feet long, running right across the blocks of houses; these are covered in, except the openings left in each house for drawing the water, which is got at by dipping, thus avoiding the labour of pumping. A well has been sunk close at hand,

where, at a depth of some 30 feet, there is an inexhaustible supply of water; a pump in this connected with the tanks serves to make good any deficiency that occurs in that collected from the roofs of the houses. The internal arrangements are equally such that there is nothing used of a perishable nature; the raised centre bed and the side beds abutting the walls on which are placed the plants are held up by concrete walls, the space between being used as a path in the usual way. It will be thus seen that there is little of a perishable nature employed in the construction of these houses except the doors and posts, which when decayed can easily be replaced. There is no attempt at ornamentation; everything is plain, substantial, and as straight and true as possible. Standing on ground where there is not so much as a single tree or anything to interfere with the light, these houses, devoid of rafters, ridge capping, and eave gutters, and with the least possible obstruction by the roof-bars placed as they are so far apart, are necessarily well suited for the growth of plants which are under the influence of as much light as if in the open air. In fact, on going into them there seems to be more light than there is outside. There are no wall shutters or any means of giving air at the sides of such houses. On each side of the ridge, 6 feet apart, there is a series of hinged ventilators, each 4 feet wide by 22 inches deep. These, in the absence of a ridge piece, are as a matter of course hinged at the bottom in place of the top, as ordinarily fixed.

THE HEATING is equally well done, with in some of the houses eight, and in others six rows of 4-inch pipes. One of Mr. Beckwith's gigantic boilers heats the houses already at work, and another is to be put down for those now being constructed. Each of these boilers will, without being unduly pushed, heat 10,000 feet of 4-inch piping. They are 16 feet long and composed of 4-inch pipes; the fire space is $4\frac{1}{2}$ feet long, $2\frac{1}{2}$ feet wide, and 2 feet deep. Four rows of 4-inch pipes form each side, enclosing the fire space; there are five of these pipes immediately over the fire. The boiler beyond the furnace consists of seven pipes in width side by side and eight deep; in fact, it may be described as a stack of pipes, seven in width and eight deep, 16 feet long, deducting the fire space. The pipes are all made extra strength. Messrs. Beckwith, after having had something like a twenty years' test of these boilers, find nothing to approach them where such lengths of piping have to be heated. The Rochford boilers and others similar in character, if slightly different, are evidently an application of the Beckwith principle, which is manifestly the right one in every essential, including first cost, power, durability, and economy in fuel, to which should be added the comparatively little cost of setting. Where a big boiler has to be used, draining the hole in which it is to be fixed is sometimes found a difficult, as well as a costly, matter. Those who think that a drain in such cases is a necessity would have their illusions dispelled by a sight of Messrs. Beckwith's boiler setting. In this valley deep draining would be a difficult business, so no drains are used; the stoke-holes, including room for the boilers, are simply water-tight tanks made of concrete, and are perfectly dry. The chimney shaft, 36 feet high, is also composed entirely of concrete; it is carried up to this height to ensure a sufficient draught for the hard coal which, with coke, is used.

The portion of these houses first built, and which have been at work during the winter, are occupied by various kinds of plants, including Roses and early-flowering Pelargoniums; the last-named at the middle of March were a sight worth going a long way to see—they were as short in the wood and as profusely flowered as plants usually are two months later. When the sunless character of the first two months of this year is taken into account, these Pelargoniums show what can be done by fire-heat even in the depth of winter, when a maximum amount of light is present. As regards flowers and buds, backed by grand foliage, the Roses looked like huge beds in the open air at midsummer. T. B.

SOCIETIES.

ROYAL HORTICULTURAL.

APRIL 14.

THIS was essentially a Daffodil show, other plants being comparatively few. The conservatory glowed with yellow, as it did at the Daffodil congress last year, and in many respects the present show was the finer of the two. A few choice Orchids and other plants were shown, and among them the following were awarded first-class certificates:—

LÆLIA BELLA.—A very fine new hybrid Orchid which seems to eclipse all others in regard to beauty. It is the result of crossing the autumn-flowering *Cattleya labiata* and *Lælia purpurata*. The growth partakes strongly of the *Cattleya*, but the features of the *Lælia* are distinctly seen in the flower, which measures over 6 inches across. The broad firm-textured sepals are of a deep lilac-purple, and the lip, which is some 2 inches across, is of the richest crimson-amethyst imaginable, which colour runs up into the throat, while there is a delicate frilling of pale mauve on the margins. This superb hybrid was raised about a dozen years ago in Messrs. Veitch's nursery, and its present possessor is Baron Schröder, of The Dell, Egham, who exhibited a fine specimen of it on this occasion.

EPIPHYLLUM RUSSELLIANUM GÄRTNERI.—This is quite distinct from the numerous varieties of *Epiphyllum* commonly seen in gardens, the flowers being not only different in shape, but of a vivid red, like some of the finest *Phyllocacti*. The flowers, indeed, much resemble those of *P. multiflorum* in miniature, being of much the same colour and with similar pointed sepals. A well-flowered plant would be a beautiful sight. A good specimen of it came from M. Henrich, of Altona, Hamburg.

DENDROBIUM MACROPHYLLUM BURKEI.—A variety of the old Rhubarb-scented *Dendrobie*, having flowers about twice the ordinary size, and instead of purple are almost pure white, there being only a faint suggestion of purple in the lips. It is a lovely Orchid, and a real treasure in any collection. Mr. Ballantine exhibited a plant of it from Baron Schröder's garden with a long, stout growth densely wreathed on its upper half with bloom.

AMARYLLIS LADY HOWARD DE WALDEN.—A distinct and chastely beautiful variety, inasmuch as its large and handsomely formed flowers are white without even a trace of colour. It is unquestionably the best white *Amaryllis* that Messrs. Veitch, of Chelsea, have raised.

CARNATIONS S. W. GIRDLESTONE AND A. H. KENNEDY.—Two perpetual flowering varieties, both uncommonly fine, having large, full, and finely shaped flowers. The colour of the first is lemon-yellow, heavily edged and streaked with scarlet, while A. H. Kennedy is a glowing scarlet all over. Both were shown among a series of seedlings raised by Mr. Turner, Slough.

AZALEA ELISE LIEBER.—A very fine variety of *A. indica*, having large open flowers, pure white, with streaks and spots of purple. Being a profuse flowerer, it is highly attractive. From Mr. C. Turner, Slough.

ODONTOGLOSSUM ANDERSONIANUM PICTUM.—A variety remarkable for its richly spotted flowers. It is distinct from the ordinary run of *Andersonianum* forms both in the shape of the flowers and their heavy markings. It is very handsome, and well deserved the certificate. Shown by Mr. J. O'Briene, Harrow-on-the-Hill.

AURICULA MRS. MOORE.—A green-edged variety, and the perfection of what a first-rate show Auricula should be as regards the size, form of the flowers, and the arrangement of the colours. Shown by the raiser, Mr. Douglas, gardener at Great Gearies, Ilford.

NARCISSUS SPURIUS CORONATUS.—An exceedingly fine variety belonging to the long trumpet section. The flowers are remarkable for the large size of the trumpet, which also expands much more than usual, and the sepals are of a bright golden yellow. A fine bunch of blooms of it

was sent from Haarlem by Messrs. Krelage & Sons under the name of General Gordon, but the committee altered the name to that by which the same variety is known in England.

Among other noteworthy new plants shown were the following: The most interesting plant in the whole show to many was *Placea Arzæ*, a bulbous plant belonging to the *Amaryllidaceæ*. Its flowers remind one of a striped *Amaryllis* in miniature, but it is not botanically allied to that genus, but to *Eucrosia*. The flowers are about 2 inches across, with reflexing sepals, white lined with red, while the short tube-like corona is reddish purple. It is a native of Chili; therefore a greenhouse or frame plant. It was exhibited among a lot of interesting bulbs by Messrs. Barr, Covent Garden. Another rarity was *Vanda cœrulescens Lowiana*, shown by Mr. Day, of Tottenham. Its flowers seem to differ in no way from the type except in colour, which, instead of being blue, are a delicate rosy pink with a magenta-tinted lip. Mr. Day showed a very fine spike of it, which was greatly admired by connoisseurs. It is not a new variety, but extremely rare. Flowers of *Fritillaria pudica, armena*, and *tristis*, in Messrs. Barr's collection, attracted a good deal of notice, not for their showiness so much as their rarity. *F. pudica* is a Californian species with bell-shaped flowers of a bright golden yellow. *Armena*, also yellow, and *tristis*, a deep vinous purple, are both European species, and among the most interesting of hardy bulbs. A new *Ornithogalum* was shown by Sir William Marriott, Mr. Ware, and others, under the name of *O. gracile*, but which is correctly *O. lacteum*. It has crowded spikes of milk-white flowers as large as a shilling. It is not so attractive as the black-centred *O. thyrsoides*, though a desirable greenhouse bulb for spring flowering. Messrs. Paul, of Cheshunt, provided a rare treat to lovers of single Roses, as they showed the beautiful and rare *Rosa berberifolia Hardyi*. The flowers are like the Dog Rose in size and shape, but the petals are caucary-yellow with a beautiful eye of crimson-red. The foliage too is distinct from that of most other Roses. It is a great pity that such a charming plant should be so rare and so difficult to grow and flower successfully. Messrs. Paul contributed a rare display of alpine plants besides, such as large masses of *Gentiana verna*, which they seem to be particularly successful in flowering, *Saxifraga valdensis*, *aretoides*, *primulina* in large cushion-like tufts thickly studded with flowers. Another pretty alpine plant in Messrs. Paul's collection was *Polygala Chamæbuxus* and its variety *purpurea*, the latter being particularly attractive on account of its tiny rose-purple blossoms. The new white Rose, *Gloire Lyonnaise*, a Hybrid Perpetual, was shown admirably by Mr. Turner and Messrs. Paul. It is, indeed, a beautiful sort, having large, handsomely shaped flowers of good texture and of ivory whiteness.

Among interesting Orchids shown besides Mr. Day's *Vanda*, was a white form of *Odontoglossum constrictum*, the lips of the flowers being pure white. It was shown by Mr. Dorman, of Sydenham, who also sent *Galeandra dives*, a miniature of *G. Devoniana*, but not nearly so attractive, and *Dendrobium Dominii*, an old hybrid variety similar to *D. moniliforme*. Mr. Pollett showed his handsome *Odontoglossum Pollettianum* with a branched spike. This may be distinct from a good form of *O. Ruckerianum*, but we could not detect much difference. It certainly ought to stand as a variety of *O. Andersonianum*. Mr. Measures showed a fine form of *O. crispum* having heavily spotted flowers; it was named *O. Measuresianum*. Where is the line going to be drawn in naming these mere varieties as if they were species? A fine *Andersonianum* from Baron Schröder's collection and an equally fine *Cattleya Trianae* were much admired.

There were some very fine seedling *Amaryllises* from Messrs. Veitch and Mr. B. S. Williams. The best in the Chelsea collection were named *Serapias*, pink; *Altridis*, a near remove from *A. Leopoldi*, having deep crimson sepals tipped with greenish white; *Archiduc*, brilliant crimson;

Ecclatanta, a robust and free-flowering sort with large striped flowers; Mrs. Whitbourne, white striped with crimson. These were all quite up to Messrs. Veitch's standard of excellence, and certainly some were finer than others previously certificated this season, but the committee apparently thought otherwise. The finest in Mr. B. S. Williams' collection were named *Desdemona*, a splendid sort of a glowing scarlet, and of a fine form; Dr. Masters, well known to be one of the finest of *Amaryllises*; *Magniflora*, *Guiding Star*, J. Brown, and *Lady Egerton*. These were for the most part remarkable for the brilliant colours which Mr. Williams is endeavouring to infuse into his strain. Two very fine *Imantophyllums*, *Marie Reimers* and *splendens*, were shown by Mr. Williams, also the singular *Ochna multiflora* and some noteworthy Orchids, including *Odontoglossum Andersonianum grandiflorum*, having large and finely spotted flowers; *O. radiatum*, the true *O. nævium majus*, and a new Beet called *Unique*. It has smallish leaves of a deep bronzy crimson.

The Carnations from Mr. Turner are always admired, and those shown on this occasion seemed to be brighter than ever. Besides the two selected by the committee for certificates were others equally desirable. They were named *Snowball*, white; Mrs. Oldacre, a rose bizarre; and *Heroine*, deep rose. These all had fine large and full blooms. Messrs. Veitch also had two pretty Carnations, named respectively *Sir Charles Wilson*, with large scarlet flowers, and *Niobe*, a deep crimson. Some sorts of *Azalea indica*, from Messrs. Cutbush, included some very fine sorts, such as those named *Queen of Whites*, *King of Whites*, and *Flambeau*. Besides these, Messrs. Cutbush showed some bushes of *Viburnum Tinus lucidum*, even more profusely flowered than those shown at the previous meeting. Mr. Clarke, of Twickenham, again sent a fine group of *Cyclamens*, including a monstrosity which attracted a good deal of attention. Every petal had upon it rows of white papillæ, and the leaves also showed the proliferous tendency. A bronze medal was awarded to Mr. Clarke.

THE DAFFODILS, as before stated, constituted the bulk of the exhibits, the stages on one side of the conservatory being densely packed with the various collections. The largest exhibitors were Mr. Walker, of Twickenham, who had no fewer than 200 sorts; Messrs. Barr, Mr. Ware, Messrs. Veitch, and Messrs. Collins and Gabriel, while there were numerous exhibitors of smaller collections. For instance, Captain Nelson sent from his garden at Godalming about two dozen kinds, including some fine sorts of the tridymus section, notably one called *Dr. Masters*. Mr. Wolley Dod contributed a most interesting series of forms of the common English Daffodil, varying from some as pure white as cernuus to others as yellow as major, and these had all been gathered in native woods. This collection proved beyond doubt that the Daffodil, even in its wild state, assumes a diversity of forms and shades; how, then, can we be surprised at the infinite variety which cultivation, hybridisation, and selection bring about? Mr. Wolley Dod's series formed quite a Daffodil study in itself, and, as may be imagined, drew much attention from Narcissi experts. A small and interesting collection of blooms was shown by Mrs. Lloyd Wynne, of Eaton Place. These had apparently been grown in her town house garden. They exemplified that fairly good Daffodils may be grown even in a London garden. Messrs. Dickson, of Chester, sent a few sorts, including the large *Sir Watkin*, which may be said to be the lion of the day in the Daffodil way. Its large, handsome flowers stood out prominently from all the rest. Other Daffodil exhibitors were the New Plant and Bulb Company and Dr. Browne, of Hull, who showed an interesting double form of *N. minor* having the tube of the flower quite filled with petals. This formidable array of Daffodils, containing as it did such a bewildering number of varieties, required three or four days instead of a few hours to examine properly; and as the collections were arranged with no regard to the relationship of the varieties or even grouped in sections, the task of inspection was all the

more difficult. Speaking generally, there did not appear to be many new sorts shown beyond those which were at the congress last season. Of course the new popular names which have been given to the old sorts originally bearing cumbrous Latin names gave the collections a rather different complexion. Among the sorts that attracted most attention in the various collections were the following: Mary Anderson, one of the incomparabilis section, with delicate sepals and a bright orange cup. This beautiful kind was particularly conspicuous in Mr. Walker's collection. It is the same as that known previously as *incomparabilis aurantius*. Aglaia, in Messrs. Barr's collection, was another fine sort. It also belongs to the *incomparabilis* group. The sepals are white and the cup most delicately tinged with reddish yellow. Messrs. Barr also had another lovely kind named Leeds Queen of England, having white sepals and lemon cup. In Messrs. Barr's group were also spurius Henry Irving, one of the finest of the class, and tridymus Duke of Albany, one of the three-flowered varieties. Messrs. Veitch's collection contained a rich assortment of the best sorts. In Mr. Walker's collection the following were prominent. Among the best of trumpet sorts were J. G. Baker and Shirley Hibberd, both difficult to surpass. Among the *incomparabilis* section were Sir Watkin and Dr. Gorman, the latter being a strong rival to Sir Watkin in point of size, and even better in form. Among the white section the most beautiful were Mrs. F. W. Burbidge, William Goldring, B. M. Camm, and Dr. Hogg, while among the Nelsoni section none were finer than *aurantius*, which has large flowers with a bright orange cup. In Mr. Ware's fine collection the poeticus group were admirably represented, particularly *grandiflorus* and *ornatus*, unquestionably the finest two sorts in the section. The *Horsefieldi* and *Empress* varieties were uncommonly fine from Mr. Ware. Messrs. Collins showed a fine new sort in the way of Sir Watkin, but smaller and interesting, in having a longer tube than usual, thus showing it to be a connecting link between the *incomparabilis* section and the *pseudo-Narcissus*. Silver-gilt medals were awarded to Messrs. Barr, Mr. Ware, and Messrs. Veitch; silver medals to Mr. Walker and Messrs. Collins and Gabriel.

The most uncommon feature of the show was a charming arrangement of hardy flowers by Miss Jekyll, of Munstead, Godalming. With a few simple materials, Miss Jekyll showed how a beautiful flower group could be made. She had graceful tufts of Solomon's Seal and *Alexandrian Laurel* as her largest plants. Then dotted about irregularly on the sloping bank of Moss were little gatherings of Daffodils, each tint kept to itself; Algerian Irises and *Primula cashmeriana* blended harmoniously with the creamy white Daffodils, while further on were groups of yellow and cream Polyanthus intermingling with coloured kinds. Terminating the group was a little colony of *Primula rosea*, whose rosy flowers and carmine buds had a most pleasing effect. It was a happy arrangement altogether, and, as may be imagined, was the centre of attraction. If Miss Jekyll has initiated a better style of exhibiting flowers, she has done good service.

Scientific committee.—The following were the chief subjects of interest discussed:—

Cankered Hawthorn.—Mr. Plowright forwarded a specimen of young branches attacked by *Ræstelia lacerata* through artificial impregnation by *Podisoma juniperi*. He observes: "Two years ago I drew attention to the fact that a form of canker attacked the Hawthorn trees, and a case of serious injury thereby had come under my notice. A specimen of the cankered Hawthorn was sent to the scientific committee, and I pointed out the peculiar honeycomb-like appearance presented by the bark. Mr. McLachlan examined this for insect remains or indications, but found none. Subsequently it occurred to me that the injury in question might be due to *Ræstelia lacerata* occurring on the bark of the young branches. Subsequent observations confirmed this view. However, in order to be sure, I infected some young Hawthorns

last year with *Podisoma juniperi*, taking care to apply the fungus especially to the young branches as well as to the leaves (of course it is only this year's branch which will become affected by the parasite). In due course the *Ræstelia* appeared, not only on the leaves, but also on the young shoots. I left the plants in my garden till now in order to show that the mycelium of the *Ræstelia* having done its work dies in the autumn."

Chimonanthus grandiflorus.—Mr. Noble sent a seedling, together with fruits and seeds of this plant, grown at Bagshot. The large dark green cotyledons somewhat resemble those of the Beech and Coffee plant, being about 1½ inches broad, with auricles at the base, and a strongly pronounced venation.

Diseased Narcissus bulbs.—Mr. Murray reported on the Daffodil bulbs sent to the last meeting, and said that he was inclined to agree with Mr. Plowright that the fungus was a species of *Pleospora*, for such attack Hyacinth bulbs and Onion stems, and perhaps the bulbs of the latter as well.

Semi-double Cypripedium.—Dr. Masters said that the specimen sent to the last meeting had five additional petals in the place of four of the normally suppressed five stamens, and an additional petal in place of the rostellum or modified stigma, one of them being slipper-shaped like the normal labellum.

Lentils attacked by Bruchus.—Mr. McLachlan exhibited Lentils bored by this beetle, which has the habit of laying its eggs in the unripened seeds. He did not know from what country they had been imported, but they had not been attacked here. The caterpillars live in the cotyledons. As a rule, it does not affect the germinating power. Mr. Pascoe observed that it sometimes happens that the beetle cannot escape through the testa of the seed, and so perishes within it. Colonel Beddome remarked that *Crotolaria* in India are attacked in the same way.

Excrescences on Cryptomeria japonica.—Dr. Masters exhibited cone-like woody structures developed on this tree. They appeared to be arrested branches which had thickened without elongating, similar to "embryo buds" so common in Beeches, Cedars, &c. He also showed a blossom of a *Narcissus* having the style protruding beyond the uppermost stamens, and therefore exerted from the orifice, a unique instance of heterostylism in this genus.

Hybrid Epiphyllum.—A plant was exhibited bearing numerous scarlet blossoms. It was specially interesting as being a true hybrid, or rather "bigener," between *Epiphyllum* and *Cereus*. It had the stems and habit of the former, but the flowers were those of a *Cereus*.

Crocuses and sparrows.—Dr. Lowe commented on the destruction by these birds of the flowers of Crocuses, and advanced as his belief that it was done for the sake of insects (thrips?) within the flowers, that great destruction occurred in some years and not in others, in consequence, he assumed, of the insects being more abundant in some seasons than others. Mr. McLachlan questioned the presence of any insects at this season of the year, and said he had watched them devouring the tube of the perianth. Col. Clarke had his *Primroses* attacked in the same way, probably for the sake of the juicy ovary within.

Garden stock.—Col. Clarke showed a curiously dwarfed form of this plant, said to be frequently cultivated by our ancestors, having slightly wavy leaves compacted together, giving the plant a dense conical form. It was said to come true by seed.

Monstrous Cyclamen.—This was remarkable by a fringed growth appearing on surface of each petal, as in the Peacock Tulip. It was remarkable, however, that a similar structure occurred simultaneously on the upper surface of the leaves. This appeared to be similar to the outgrowths on the surfaces of Cabbage leaves when they assume the form of pitchers, and would seem to be due to hypertrophy of growth.

Mr. Loder showed out specimens of *Ranunculus cortusifolius*, *Narcissus rapicola*, very sweet-scented and near to *N. juncifolius*; *Spirantha*

convallarioides, with small white star-like flowers; *Villarsia parnassifolia*, and *Calceolaria Barbidgei*, somewhat like *C. Pavonia*.

Polyanthus changing colour.—Mr. Henslow showed specimens which had passed from a crimson to a brick-red colour on light soil in Ealing. He had observed the same on the gravelly soil of Dropmore. With this change there was correlated a tendency to shorten the style (of the long-styled form, to which all the plants happened to belong), till in many cases the flowers were homomorphic. He had described a similar phenomenon in *Primula sinensis*, and observed that it was only one out of many instances he had noticed in which what may be called a "floricultural degeneracy" was coupled with an increased fertility by self-fertilisation. Mr. Darwin had found that a dark crimson Pink, normally strongly protogynous, when self-fertilised for years, became flesh-coloured and highly fertile. It is the same with pale coloured *Pelargoniums*—Christine and others. It was the invariable testimony of florists that weedy-looking individuals of garden flowers were by far the most prolific. One gardener purposely kept inferior *Cyclamens* to raise seed from, which he subsequently crossed till brought to the required standard of floral perfection. Mr. Henslow offered as an explanation the very simple one of compensation between the vegetative and reproductive energies, which, though modifications of one and the same vital energy, are in a sense antagonistic. Large corollas and rich colouring, accompanied by finer foliage, together represent so much energy directed to the foliar organs, which includes the calyx and corolla. But when through poverty of nutrition these fail to be developed to the extent florists aim at, the flowers begin to degenerate in size and colour; but, on the other hand, the reproductive energies gain the ascendancy, self-fertilisation follows, and a greatly increased fertility is the result. But what is particularly observable is that no injurious effects whatever of a constitutional kind are discoverable.

Vines on the extension system.—It is gratifying to have the testimony of such men as Mr. R. L. McIntosh (p. 310) to the correctness of one's views on any useful practice. I have had numbers of private communications of the same kind, and the pages of the horticultural papers have frequently furnished the like, thus placing the utility of the extension system beyond a doubt; while examples like those Muscats from Longleat at the late London shows, coming from Vines trained from the beginning on that system, speak for themselves. Certain gloomy predictions were made regarding the system when I first mentioned it in THE GARDEN in 1879. It was one of the practices that had been put to the test "about forty years ago," and proved to be wrong and bad in every way. The formal condemnation of it will be found in THE GARDEN (p. 20), May 24, 1879.—J. S. W.

Naming plants.—Four kinds of plants or flowers only can be named at one time, and this only when good specimens are sent.

Names of plants and trees.—A. G. Brown.—We cannot give you a name for your *Amaryllis*. It is a good variety and worth increasing.—T. P.—Your Grass is either the Pampas (*Gynerium argenteum*), or *Arundo conspicua* (the New Zealand Reed). Send a spike when in flower.—R. P. Gregson.—*Dendrobium moniliiforme*.—G. A. N.—1, apparently *Bletia Sherrattiana*; 2, apparently *Dendrobium crataecum*. Both poor specimens for naming accurately.—H. S. Newell.—A *Polyanthus*, not a *Primrose*; the former bears its flowers in an umbel-like cluster raised on a stalk.—H. G. Ocle.—Iris *fimbriata*.—W. Forrester.—Most likely a Lemon tree, certainly a *Citrus* of some sort; 1, *Rhododendron Sesterianum*; we do not name sorts of *Camellia*; 3, double-flowering Cherry; 4, *Rhododendron Gibsoni*.—A. G. Brown.—Both *Polyanthuses*.—Warwick.—1, *Campanula persicifolia*; 2, *Alyssum saxatile*; 3, *Mercurialis annua*; 4, *Arum maculatum*.—G. F. Wilson.—Dwarf form of *Ranunculus acronotifolius*.—G. W. Eden.—Orchid is *Oncidium cathaginense*; shrub, *Pittosporum Tobira*.—A. C.—A very fine form of *Dendrobium nobile*, almost as fine as that called *nobiliss*; 1, *D. crassinode*; 2, *D. chrysotoxum*; 3, too imperfect to name correctly.—Subs.—We cannot name sorts of *Camellia*. You should take or send your flowers when there is a collection of sorts for comparison.

WOODS & FORESTS.

USES OF HOME-GROWN TIMBER.

SPENSER in his catalogue of trees exhibits a fair knowledge of their practical uses, although his misings are not always correct. It is possible the woods may then have been used for the purposes he mentions, but at the present time in many cases their places have been supplied by others more suited. He speaks of the "Vine prop Elm." Elm stakes, poles, or branches, as well as those of other trees, can of course be used for propping the Vine and the Hops as well, but we are not aware that the Elm now holds any speciality in this way. Elm is now and has long been extensively used for the boarding and flooring of carts, waggons, and other agricultural and non-agricultural vehicles and appliances; it is also very generally used for coffin-making and in the construction of chairs. Elm has often been used in the framework for the foundations of bridges and buildings in water, and the timber is still considered to have more lasting qualities under water than above it. The "builder Oak" is a term accurate enough, for the Oak has in the past been extensively used for building purposes, and continues to be used more or less still. The "Aspen good for staves" is also fairly near the mark. The most valuable of our species of Poplar is the Abele or white Poplar (*Populus alba*), and it has been used to make various kinds of wooden vessels and utensils, including butchers' trays and turners' ware. For this latter purpose the Sycamore is also extensively used. "The Birch for shafts, the Sallow for the mill," wrote our poet. If he had substituted Ash for Birch it would have been more applicable, as Ash is the more general and better tree for shafts of carts, waggons, and other vehicles. Birch is extensively used in modern times for furniture-making, and Beech also, and both are stained to imitate other fancy woods. Beech is also used for the handles of carpenters, joiners, cabinet-makers, and other wood-workers' tools. It is a very durable wood when kept in constant use, but where it is laid by and not subjected to handling or action, it soon begins to decay and suffers from the ravages of wood-boring insects. Birch also under similar conditions suffers from the action of insects. It was long a habit of fishermen to steep their lines, nets, and sails in a decoction of the barks of the Birch and Oak, which tinges them brown, and also preserves them from rotting. As regards the Sallow, this has been used in the past and is used at the present time for a variety of purposes. The Sallows and Willows are well-known trees. The Osiers are used for tying and for basket making. The Yew, though according to Spenser was "obedient to the bender's will," might have been classed more warlike than "the warlike Beech," for bows and arrows preceded guns and gunpowder in battle, and were used for many centuries. The Yew, though used formerly almost exclusively for making bows, is still applicable to a variety of mechanical and ornamental uses. It is used by engravers, cabinet-makers, mathematical instrument makers, and by comb and pipe makers. The Yew and the bog Yew of late years have been utilised for manufacture into chests, tables, punch ladders, rolling-pins, &c. "The carver Holm, the Maple seldom inward sound." The Holm, or Holly, comprises numerous species, and as a wood it is, when seasoned, a very hard white wood, and well suited for carving, cabinet-making, and inlaying purposes. The Maple, of which the Sycamore is a species, has several varieties, and the wood is of economical value. Bird's-eye Maple is much used for veneers, &c. Several of these trees named have medicinal properties, and their leaves and bark are used for dyeing. D. B.

Hop poles.—An evening paper states that Hop poles are unusually dear this spring, and consequently more attention is being paid in the Hop-producing counties to the combined wire and string system. If this is true, it is very strange, as in the face of the complaints that are continually

reaching us of the difficulty of selling wood, we should have thought a demand of this nature would be met easily enough. That owners of woodlands should allow Hop poles to be replaced by wire and string is incredible, and the statement requires explanation. Will some of our readers in these counties give us the reason?

THE SCOTCH FIR AS A TIMBER TREE.

Now, when the subject of profitable planting is so much discussed, I should like to raise the question of the value of the Scotch Fir as a timber tree and the conditions under which it grows to the greatest perfection. The Scotch Fir is extensively distributed throughout the north of Europe, and in some countries produces the famous red deal used for so many purposes. In England, Hugh Miller noticed that the Oak was commonly used for joists and beams in the houses, even of the humblest, and that in Scotland it was the Fir which was almost as lasting, under some circumstances, as the Oak. The Firs in the Highlands produce timber of far superior quality to that produced in the south of Scotland and in England, where, although the tree attains to large dimensions and becomes a fine looking tree, its timber is almost worthless. This Fir is used extensively as a "nurse" in growing plantations, is planted for sheltering purposes and for cover, and it is supposed that the timber differs very much in different situations; but we have no reliable information on that important point. There are also superior and inferior varieties of the tree—the Braemar variety being considered much the best. The Highland timber is, I believe, equal to the best red deal imported from abroad, and I learn that planks, 5 feet and over, have been cut out of trees from Scottish forests. In many parts of England, on the Pennine chain, it grows fast and freely, and one would imagine its timber would not be so much inferior to the Highland Fir, difference in climate not being so remarkably great in any respect. I notice that in the low sandy lands in Nottinghamshire it grows into a fine tree, pushing out strong horizontal limbs, the characteristic of this Pine, and has beautiful clean bark; but in Yorkshire, on high and exposed situations, it grows slowly, and does not appear to be very long-lived. The tree loves shelter, and appears to thrive best in plantations of its own kind, but exposure is said to improve the timber. Can any reader furnish any useful particulars on this subject? Y.

A SUBSTITUTE FOR LARCH.

A GREAT deal has been written by practical men on a substitute for the Larch, as that valuable tree in many parts of the country refuses to grow, or at least makes so little progress, that in many cases it is all but worthless as a timber tree. I have paid some little attention to this subject for a period of some thirty years, and although I have planted and watched the progress of all the new Conifers suitable for the climate of our islands, yet I have found none to equal the Larch.

THUJA GIGANTEA is, in my opinion, the best substitute for Larch of any Conifer with which I am acquainted. It will, however, be for the next generation, who cut down the trees planted by us when they are properly matured, to decide this question. I have found it to be perfectly hardy, of free and rapid growth, sometimes adding to its height as much as from 18 inches to 30 inches in one season, but the rate of growth depends in a great measure on the quality of the soil and also on the situation. Its habit of growth is strictly conical, and if allowed plenty of room, the stem carries its thickness up along with its height in as fine a proportion as that of the best Larch. It bears with impunity the ordinary amount of stem and branch pruning, but as it seldom produces a double leader at the top, it is not often necessary to prune it. It is not in the least particular as to soil, provided it is thoroughly well drained. In places where the soil consists of hard till or pan, such will require

to be broken up with a pick in order to allow the roots to have free scope to ramble. I have planted it with great success on all classes of soils, on deep boggy ground as well as on clay loam and soils of a gravelly nature. In cutting the wood of the trunk of young trees I have found it to be of a firm texture, with the concentric rings firmly packed. All this points to the conclusion that it is a first-class timber tree. The only point I am doubtful of is whether the wood contains sufficient resinous matter to make it so lasting as that of the Larch.

The seeds of these trees should be collected as they ripen and stored in a cool, airy place till spring, when they should be sown broadcast on well pulverised light soil on beds about 4 feet wide. As the seeds are small and light, a thin covering of fine soil will be sufficient. When the seedlings are from 4 inches to 6 inches high they should be transplanted in nursery lines from 6 inches to 8 inches apart, and at a distance of from 12 inches to 14 inches between the lines; this space will afford plenty of room for stirring the soil and keeping down weeds—a matter of importance in the welfare of nursery stock in its early stage.

THE DOUGLAS FIR (*Abies Douglasi*) is another tree of great promise, and also thrives in a great variety of soils, including peat bog. It, however, does not stand exposure so well as the former, and on exposed situations is apt to lose its leader, which is a great drawback, but on moderately sheltered situations it is a vigorous grower, and attains large dimensions in a short space of time; and as the wood has a high character for durability, it is well worthy of the attention of the planter. Both trees are propagated by seed, and the former may likewise be propagated by cuttings. J. B. WEBSTER.

TREES FOR WET AND DRY SITUATIONS.

THE question is frequently asked by proprietors as to what trees can be planted with a prospect of success upon ground that cannot be properly drained, with the view of obtaining game or fox coverts; they also want to know what to plant in order to realise something in the shape of income for boggy swamps for which they have hitherto never received anything in the shape of rent. At first sight the question seems difficult to answer.

THE COMMON BIRCH (*Betula alba*) takes the lead in this respect, as we find it not only capable of growing and reproducing itself in wet miry places that cannot be properly drained, but also on the summits of rocky mountains, where the conditions as regards soil and situation are diametrically opposed to each other. At Anagariff Lake, in the Lough Neagh district of Ireland, I have seen this tree growing on a floating island composed of pure Moss, and although the tree had not attained a large size, yet it is the only species I have ever observed capable of growing and sustaining life under such adverse circumstances. It is a well known fact that pure Moss, even although thoroughly saturated, is capable of floating in deep water; consequently this island occasionally left its moorings during a spate and gale of wind, the top of the tree supplying the place of both sail and rudder, by which means it shifted its position and took up its quarters in another place. During a storm, however, the top of this tree was broken off by the wind, leaving a bare stump some 6 feet or 8 feet in height from the surface, and, strange to say, the stump was then a favourite resting-place of the cormorant, which, by the way, is the only web-footed bird I have ever observed use a tree for a perch or roost. I am not aware whether this has been noticed by others, as such appropriation seems singular and peculiar.

THE GOAT WILLOW (*Salix caprea*) is another tree exceptionally well suited for growing on wet ground that cannot be drained, as well as on dry rocky ground on exposed situations at a high elevation, and in such places is invaluable for shelter and covert. In the natural forest and other places it often attains a good useful size,

and when the wood is cut up it is of great value for a variety of purposes, more especially when used for sheeting for carts and waggons used for the removal of stones and other hard heavy material, as the wood yields to pressure, but never splinters into shreds like deal timber. I have used it extensively for this purpose, and found that it was by far superior to the very best Larch timber. As a tree for general utility I think its merits have been overlooked, and as it makes rapid progress even under adverse circumstances as regards soil and situation, all of which put together are points well worthy of the consideration of the cultivator.

THE ASPEN POPLAR (*Populus tremula*) is capable of growing under a great variety of conditions as regards soil and other circumstances, as we find it growing naturally on wet ground at the bottom of mountains as well as on the most exposed dry soil on the summit; and although the wood is of less value than the former, yet the tree is highly ornamental, which, combined with its hardness, renders it very suitable for such situations.

THE ALDER (*Alnus glutinosa*) may also be planted with success on damp, wet ground unsuitable for the better class of forest trees; it will likewise attain useful dimensions on dry ground of average quality, and as it is a rapid grower, and commands a ready sale when clean grown and of fair size, it is well worthy of being planted on such situations extensively. I have sold this timber at the rate of from 20s. to 30s. per ton, which is no mean recommendation to encourage its culture.

J. B. WEBSTER.

EFFECTS OF SHELTER ON TREES.

In my travels about the country I have paid particular attention to the aspect of trees in wind-swept localities, such as one sees on the seacoast from Dorsetshire to Cornwall. In the majority of cases the tree heads lean away from the direction of the prevailing winds, which here is south-west. The formation of the head may be distinctly traced in nearly every unprotected tree. Indeed, this course of formation is evident in trees and plantations in situations even moderately exposed. Scarcely a forked Oak, Ash, or Elm can be seen in which we cannot discover a greater facility of growth on one side than the other, according with the particular current of wind with which such tree has been affected. A man lost in a forest on a foggy day might steer his way with no other compass than the general bearing of the heads of the tall trees thereof!

The tendency of these observations is to show that shelter is requisite for the growth of wood of every kind, and that there are various ways of producing shelter. In some of the early enclosures of the Cotswold Hills allotments were bounded by walls, and Quickset hedges were planted on north and east sides; but such shelter kept off the sun during the greater part of the year; and a few thinking men planted their hedges on the south and west sides, arguing that such hedges would have more sun, and a screen at the back would prevent a current of wind. It was soon discovered that these hedges had the advantage. Just such a shelter does a single tree form for itself after a given time of probation, and such a shelter should be found to preserve young trees placed in the very front of an exposed plantation. I could point out several instances near me where trees on the south-west boundary of an exposed hanging wood have, within twenty years, thrown out very extensive, luxuriant, lateral branches. Such, too, is the effect in mixed plantations of Firs and forest wood after the former have made sufficient progress to break the strong current of the prevailing wind. But I would recommend, for early effect, that Ash and Sycamore be considered the best trees for the tops of hills, or other places much exposed; both are applicable to general use as timber or underwood, and are saleable whether young or old. Their chief good qualities for growth are, that the young branches are stiff and do not whip each other, and their

buds are hardy, contending successfully against spring frosts, although the leaves of both are often injured by them.

T. F.

VALUING STANDING TIMBER.

"WOOD AGENT" denounces my remarks on this subject before he understands what they are. I am writing of standing timber, and aver that for valuing this the eye is the only reliable guide. He goes out of his way to enquire if I ever knew a buyer who would trust to his eye rather than his tape in buying timber that had been felled. Now, whatever has this to do with the matter in hand? I am not touching the question of timber that has been felled, but that of valuing wood that is standing; therefore if what I say is absurd, your correspondent must adopt some other means of proving it to be so than by bringing questions into the controversy that have nothing at all to do with it. I am aware that when timber can be measured (for which purpose of course it must first be felled) it is better to do so, but for standing timber, until disposed of by some more forcible argument than "Wood Agent" has yet advanced, I adhere to my former statement that the eye is the most reliable guide for the work. To some minds it may be quite in order to be traversing an estate with a fishing-rod apparatus, but to me it would be humiliating to be found by a practical man making use of such an appliance. Then, again, what is the value of passing the tape round as far up as a man could reach, and then guess the girth at the proper height? The distance an ordinary man would reach would be about 7 feet, and say the height of a tree would be 35 feet. Now, what guide can the size of a tree at 7 feet be of its dimensions at 17 feet? Very little indeed; and although the idea of "taking a fair look round on all sides" is held up to ridicule, to the trained eye this would be a more certain and expeditious method than the tape business. That every woodman is not an expert valuer is no doubt true, and, what is more, I believe, by following this fishing-rod and tape business, will never become one. I will not go so far as to say that these things may never be of use to the entirely inexperienced in giving them some kind of idea to begin with, but to the man who aims at becoming a good judge of measurement their habitual use is pernicious.

NEW FOREST.

PLANTING WASTE RAILWAY LAND.

"A. D." does not grasp my meaning; which is not, as he seems to think, the indiscriminate planting with Larch of all railway embankments and cuttings close to the rails. This would be manifestly absurd and dangerous, and, as he points out, the remedy would be worse than the evil. There would certainly be a greater monotony in being whirled through interminable masses of foliage, with the view of the surrounding country shut off, than is now the case. I do not suggest anything of the kind, nor indeed would any reasonable individual. The question I asked was, whether something could not be done to efface the blot where they exist. If "A. D." thinks that perfection has already been attained in what may be termed railway landscape, I am sorry I cannot agree with him. Many a scar and ugly spot have been covered with foliage, but many are still observable that may be made beautiful by judicious planting. It is my wish to look at the question in a practical way, and I therefore propose Larch for suitable situations. "A. D." seems to imply that it is improper to have anything to say about lands under the control of railway directors, but in the same sentence he is ready to advise landowners of another sort, by which I presume he means private holders. If it is improper to discuss the doings of railway directors, who have to study the requirements of the public, I am sure it is still more improper to criticise private holders, who have only their individual pleasure and profit to study. Be this as it may, arguments of this kind will not dispose of facts, and it is a fact that many waste pieces of railway land could profit-

ably and safely be planted with Larch. As a proof of this, I could point to many plantations of this tree growing in situations of this kind. "A. D." further tries to prove that railway land is unsuitable, but this he fails to do. Mere assertion is not proof; but in defence of what I say I know where considerable numbers of these trees are thriving well on waste land taken from deep railway cuttings. It is not my purpose to point out particular spots where this tree could be successfully grown, as I desire rather to direct attention to the subject in general. Many places, however, in my own particular locality occur to me as I write, and I have no doubt suitable situations in their respective districts will present themselves to many of your readers. I should like to see the matter thoroughly discussed.

D. J. YEO.

Planting to resist gales—Having regard to the damage that so often results from gales of winds, there is a necessity when forming plantations of distributing and arranging the trees so that those best suited to withstand severe storms of wind and in sheltering their neighbours are placed in those positions where their presence would prove beneficial. It is equally necessary that proper care be taken when planting in spreading out the roots evenly around the plants, and not, as is too frequently the case, having them crushed together on one of their sides. Thinning must also take place early and frequently, with those so placed, so as to encourage the trees to grow up with a stiff and robust habit of growth, and to be clothed with branches to the ground. If precautions such as those stated be observed, less damage will be the result when the full force of the winds sweeps over the trees.—A. S.

Timber of Scotch Elm.—The Wyeh or Scotch Elm (*Ulmus montana*), as every planter knows, has a wide, rambling manner of growth; but it is so useful for timber when compared with other kinds of Elm, that it is a great pity it should be used as a stock, unless the graft be better than itself, which certainly is not the case with the English Elm (*Ulmus campestris*). The timber of the Scotch Elm is nearly equal in value to the Ash, and it is good for the naves, poles, and shafts of gigs and other carriages, and from its not splintering, as the Oak and Ash do, in time of battle, for the swingle-trees of great gun carriages. It is also used for dyers' and printers' rollers, the wood by constant use wearing smooth. Cartwrights employ it for shafts, naves, beds, rails, and standards for wheelbarrows, and the handles of spades, forks, and other agricultural implements. The English Elm (*Ulmus campestris*) is only used in ship-building and in the construction of pumps, wheelbarrows, coal-tubs.—J. A.

The Cluster Pine (*Pinus Pinaster*) is invaluable for planting on sandy stretches along the sea-coast where shelter belts are needed. As a proof how vigorous and healthy it grows close to the sea, it may be seen at Hastings on an exposed hill adjoining the shore thriving beautifully where no other Pine succeeds so well. On the coasts of the Bristol Channel and many other parts of the west examples of the Pinaster may often be noticed standing out boldly where but few other trees can exist, bearing the brunt of terrific western gales without injury. Indeed, it is essentially the Pine above all others for planting on the sea-shore for shelter or ornamental effect, but it should not be crowded together when planted in belts or masses, but should be thinned out regularly and gradually, so as to allow its wide-spreading branches room for full development. It has a peculiar habit of growing crooked in the stem, and often in a leaning direction, as if threatening to uproot, but in reality rarely doing so, for it is a comparatively deep-rooting Conifer. As an ornamental tree, when well grown and fully matured, it ranks among the quaint picturesque type, and its foliage is of a deep green colour. The timber is coarse and of no great value compared with that of other kinds of coniferous trees.—FORESTER.

Conifers for hedges.—What success has attended the employment of any of the Coniferæ for hedges? The idea of employing such popular ornamental subjects for such purposes may look like barbarism at first sight, but my impression is that some of the Firs and Spruces might be found valuable for forming hedges, both lofty and strong in a short time. The common Spruce makes a good hedge. The first hedge of this kind I ever saw ran along the side of the railway between Paris and Fontainebleau, at a point not far from the last place, perhaps a little beyond it, and was both broad and thick, presenting an effectual barrier to cattle, and affording as good a shelter as a wall, so close was it. What the Austrian Fir or the Nordman's Spruce would do if topped and pruned at the sides, I cannot be sure, but I have a conviction that a good fence or screen might be formed by either in a very short time.

The Holly and Yew are two valuable trees. They will grow tolerably well in the shade and in almost any ordinary good soil, but in a rather dry, strong loam both do best, the Holly particularly. Though a difficult subject to transplant, I never remember the Holly to have shown any signs of distress from drought if the roots had had time enough to get hold of the soil, but the Yew occasionally suffers, owing to the habit of the roots spreading out close to the surface. Hence the benefit trees growing on lawns and other exposed places receive from top-dressings, which should be placed over the roots as far as they extend. Still, though there are trees that prefer a dry, and others a moist situation, as a rule all timber trees prefer a soil free from stagnant moisture; hence the necessity of drainage in plantations, which may be effected by means of open drains to a considerable extent, if the drains be cut in parallel lines at regular distances apart and kept open by periodical cleanings. I have known extensive woods drained in this way when doing it otherwise would have entailed much expense.—W. S.

Thinning plantation trees.—Upon the subject of thinning trees, some analogy may, perhaps, be drawn from the culture of Turnips, in which no farmer of the least experience ever expects to obtain these roots of the full size that they are capable of attaining without thinning them out to sufficient distances, and it can hardly be doubted that the advantage of so doing proceeds from thereby affording the plants ample room to extend both their roots and leaves. Surely, the same effect will result from the proper and cautious thinning of trees, but there is this difference between the two cases, that with regard to Turnips the result may generally be observed in so short a space of time as to leave no possible doubt upon the subject; whilst, on the other hand, the growth of all trees is comparatively so slow, as to require much longer time and a series of close observations of the effect of experiments before any satisfactory deductions can be obtained. By such experiments it may probably be made to appear that, to a certain extent, the removal of any tree will have the effect of ultimately adding to the bulk of its neighbour to much more than the amount of the solid contents of that which has been taken away, though without such process neither of them would have attained to one quarter of the bulk of the tree which was left.—FORESTER.

Underwood.—There are probably no species that grow so well under the shade of deciduous trees as the Holly, Yew, Box, and Rhododendron. It is not the habit of any of these to grow in the shade, however; all that can be said is that they endure shade better than almost any other trees, but the shade must not be too dense, or they will dwindle and die. In the younger woods round Dalkeith Palace there are some fine examples of healthy mixed evergreen and deciduous plantations, but deciduous trees, mainly Oaks, have been kept moderately thin to let the light into the Yews and Hollies under them, and these were in good health when we last saw them, and made fine trees, the planting having been very methodically done at the outset, with the object

of forming a fox covert. Managed in this way, a wood that is green summer and winter may soon be had, presenting quite different aspects at the two seasons of the year, for the deciduous trees hide the Evergreens from general view in the summer time, but after November, when the leaves have fallen, quite a transformation occurs, the glossy foliage of the Holly and the dark green Yews coming into fuller view. Grown under the shade, Hollies do not, however, produce any of their bright scarlet berries, or very few of them; a branch here and there, perhaps, where it gets the sun hangs a few fruit, but that is all; and the Rhododendrons flower very sparingly, also, and the flowers are pale.—Y.

TREE NURSERIES ON ESTATES.

THE numerous advantages of a well-stocked home nursery, especially where planting is extensively carried on, are so well known and appreciated by every proprietor of large estates, that comment on this subject seems almost unnecessary; however, a few remarks on the subject may not be out of place. I do not propose to dilate on the details of nursery management, my object being more to dwell on the advantages of a home nursery for the rearing of plants for special purposes, such as the planting of barren, exposed districts, as well as the convenience of having at hand a stock of plants suitable for all emergencies, and whose hardiness can to a great extent be relied upon.

Where ornamental planting, game coverts, or hedging is performed on an extensive scale, the convenience of a home nursery cannot be overvalued, the plants, being always at hand and of the size and in the quantity required, thus obviating the necessity of sending to a distance for these when wanted. The advantages in these cases are too well known to require comment, and plants, more especially those of a large size, sent from a distance cannot, after packing and transmission by road and rail, be expected to succeed equal to those raised and planted on the same day. The extra soil or ball with which large plants can be removed for a short distance is also much in their favour, but which is next to impossible where packing and transit have to be resorted to. It is well known that too sudden a change from rich, well-sheltered nursery borders to bare exposed hillsides often proves fatal to young plants; and when we consider that few public nurseries are at a greater elevation than 300 feet, the necessity of proprietors rearing their own stock whose plantations are, perhaps, upwards of 1000 feet above sea level will the more readily be seen. There are certainly difficulties to contend with in planting high-lying ground, more especially if the soil is poor and the situation exposed, and in these cases the advantages of using hardy plants that have frequently been transplanted in a well-chosen home nursery are only too perceptible, especially when contrasted with others that have been grown under more favourable circumstances and in a sheltered position. Some plants seem better adapted than others for this removal, but in the majority of cases the shock sustained by transferring from low-lying ground to that at a great elevation is only too apparent, and from which the plants seldom recover. A good deal of comment has taken place as to the necessity of rearing trees from seed sown on the site of the future plantation; and although the suggestion has many points in its favour, still, artificial planting is better adapted to the wants of our country, and not at all likely to be superseded by artificial reproduction, which is more fitted for countries differently situated from our own. The nursery treatment of plants is, therefore, sure to remain a prominent feature of British forestry, and as such the soil and situation, as well as most successful treatment of these, so as to produce plants suitable for the positions they are intended to occupy, will require due consideration, and vary much according to the situation of the estate and ground to be planted.

In choosing the site of a home nursery, a good deal will depend on the general elevation and exposure of the estate. The situation should be

neither too much exposed nor yet sheltered, but partaking to a certain extent of both, and with a southern or western exposure; for although too sudden a change from sheltered to exposed ground often proves fatal to young trees, this should not altogether form a criterion for rearing such in situations unfavourable to the development of strong, healthy plants. The soil should be good friable loam on an open, porous subsoil; but the quality of ground required for different seedlings is so diversified, that it is next to impossible to suit all within the small bounds required for a home nursery. As water is indispensable where seedlings are raised, as well as for numerous other purposes in the nursery, it is well to have provision made for a continuous supply, either by a stream running through the nursery ground or in close contiguity to it. From 6 acres to 10 acres will be found sufficient nursery ground for most estates, but it is advisable to add a little more than is really required, so that the breaks may not all be under forest trees at the same time, but undergo, when found necessary, a course of green crops, which will not only enrich, but clean the ground and leave it in good condition for replanting with seedling forest plants, bearing in mind that farmyard manure should always be applied first to the green crop, and never directly to the plants themselves. Land intended for nursery ground should be thoroughly trenched to the full depth of the soil, and, where necessary, heavily manured or enriched by the addition of lime, vegetable soil, or loam, as the case may require. In laying out the ground into breaks it will be found convenient to have these either square or rectangular in shape, and, if possible, parallel to each other. The breaks may be divided by different kinds of hedges, which, when well kept, give not only a neat and tidy appearance to the nursery, but are highly beneficial in the way of shelter. The site chosen for the seed beds should be naturally sheltered, or, failing this, such artificial shelter as is found necessary should be provided, as exposure of the young plants to cold, cutting winds causes them to become stunted and bark-bound. Young trees, like other plants, rarely thrive well in a bleak situation.

In the management of a nursery the amount of care and attention required is certainly great, but any trouble as well as expense connected with starting and keeping it in good condition afterwards will be amply repaid by the increased value and superiority of the stock obtained; and as the subject of extended planting is one well worthy the consideration of proprietors owning exposed or otherwise worthless tracts of land, a step in the right direction will be the establishing and maintaining in good order a well-stocked home nursery.

A. D. WEBSTER.

THE SCOTCH FIR AS A JOINERY WOOD.

A GENTLEMAN, writing from Ireland recently on the merits and demerits of the Poplar as a building wood, added, there is another of our woods very much neglected which, in my opinion, could be turned to good account for doors, architraves, skirtings, window linings, &c., in place of the yellow Pine, viz., the Scotch Fir. There is a large quantity of it exported from Ireland for propwood, and as anything over 8 inches diameter is objected to, the large clean butts are nearly unsaleable, and the shipper here would be glad to find an opening for it at a very moderate price. I am convinced that if a firm, say in Liverpool, to which port freights are low, started the manufacture of doors with suitable machinery and a moderate amount of capital, it would be able to compete successfully with America, Scandinavia, or any other country; for instance, the butts could be cut into suitable lengths in the wood, say 7 feet or 14 feet, so that there should be no waste, then blocked to the width of the framing and piled away to dry, which does not take long in the case of Fir when once opened. When ready there would be nothing to do but run it off with the circular saw to the desired thickness. This is important testimony on the suitability of home-grown wood for building purposes, as it comes

from an authority who is competent to speak. What is true of Irish-grown woods is equally true of what is grown here and if it would be a fair speculation to ship this wood from Ireland to Liverpool to be manufactured, and then again to be sold, it certainly would be more feasible to cut it up and use it in the place where it grows. The fashion of using imported woods for so many purposes certainly has a strong hold, but it is worth a strong and persistent effort to arouse a greater interest in the development and use of our own resources. Z.

PESTS AND DISEASES.

THE LARCH BUG.

"NORTH RIDING FORESTER" asks if the Pine beetle ever attacks the Larch either when in its perfect state or to breed in. I have never known the Pine beetle (*Hylurgus piniperda*) attack the Larch; I have, however, occasionally found the Pine weevil (*Hylobius abietis*) attack young Larches for feeding by eating off small patches of the bark around the collar of the stem and occasionally on the tops and branches.

Young Larches often suffer severely by the attacks of the Larch bug (*Coccus laricis*), but their attacks are not altogether confined to young plants and trees in early life, as I have often found old trees also infested with this destructive insect. I do not remember ever seeing the plants attacked while in the seed-bed, but after they are planted out into nursery lines the insects often make their appearance the second or third year of the tree's growth. Young trees affected by this insect may be detected during winter and spring by the black sooty colour of the bark, and in summer by a whitish cotton-like substance which adheres to the bark and foliage, and is always of a clammy, sticky nature; and in the selection of young trees from the nursery such trees should be rejected, not only as worthless, but even dangerous to plant in the forest or elsewhere, as they might thereby become the means of affecting clean healthy trees, and thus multiply the insects.

There are several species of the Coccus, and there are few if any trees and shrubs which can be said to be altogether proof against their attacks. They hibernate during winter in the egg state; the mother insect deposits her eggs in autumn underneath her own body, which then becomes fixed to the spot and acts as a covering for the former during winter, and appears on the surface of the bark like small warts, some of which have an oval shape, while others are of a globular form, and some kidney-shaped. By raising up one of these during winter with a knife the mother appears to be quite dead, and merely serves as a covering till such time as the eggs are hatched in spring. As these insects breed rapidly during the time the plants are in active growth, as soon as young trees in the nursery are noticed to be affected, such trees should be removed and burned, as the progeny in course of time become winged and would soon spread and take possession of other trees in the vicinity which have hitherto been clean and free from their presence. Some seasons these pests appear in rather a sudden and mysterious manner, and again at other times disappear rather suddenly. I have known young Larch plantations badly affected with the bug for a couple of years, when the insects then disappeared, and the trees then gradually regained their wonted vigour; so that young plantations need not be cut down or destroyed owing to their presence. Trees badly affected in old plantations had better be cut down in the course of thinning and the bark and branches removed and burned, with the view of keeping the insects from spreading. Standard trees of different species growing in the park or lawn are sometimes attacked by this insect, and in order to destroy them, the stems and other parts of such trees affected should be washed with lime water and soot, using a hard brush for applying the solution. The beginning of summer, when the eggs are hatched, is the best time for the operation, as the insects at this stage of their growth are easily destroyed. As the eggs are firmly glued to the bark, they are not easily

removed and destroyed, so that the better plan is to allow them to be hatched, when the work can then be executed to better advantage.

J. B. WEBSTER.

A DAY AT BURNHAM BEECHES.

"I HAVE, at the distance of half a mile through a green lane, a forest (the vulgar call it a common) all my own—at least, as good as so, for I spy no human thing in it but myself. It is a little chaos of mountains and precipices; mountains, it is true, that do not ascend much above the clouds, nor are the declivities quite so amazing as Dover cliff, but just such hills as people who love their necks as well as I do may venture to climb, and crags that give the eye as much pleasure as though they were dangerous. Both vale and hill are covered with most venerable Beeches and other very reverend vegetables, that, like most other ancient people, are always dreaming out their old stories to the winds."

So wrote Gray from Burnham in September, 1737. Burnham was once a market town of considerable importance, but it has now dwindled into a long straggling village, wearing the drowsy, picturesque appearance that seems to so well accord with a decayed town. It is, however, rather with the Beeches than the village we have to do. No such Beeches can be seen anywhere as in that part of the common which is named from them "the Burnham Beeches." The trees in this ancient forest are all pollarded. Apparently they were lopped at or about the same period. A tradition ascribes this, like many other devastations, to Cromwell's soldiers, but this is highly improbable, as it is much more likely to have been done at some time when there was a special demand for the wood. It is stated that the Parliamentary soldiers used the records in Windsor Castle for lighting their fires, but it is hardly probable they would have come to Burnham Beeches for fuel. The uniformity of the pollarding is also against it. The few Oaks and other kinds of trees in the forest have been lopped at the same time as the Beeches.

There is a character about these latter trees that is not to be found in any others. Their trunks are of enormous size, and the pruning of the heads seems to have thrown a superfluous amount of vigour into the trunks. The long knotted roots and the base of the huge twisted and contorted boles are covered with vivid dark green and brown Mosses, contrasting with the bright Lichen. At one moment you are shut in on every side by these grey old sylvan giants, the sky barred out by the foliage overhead; then there opens out a glade of living verdure, which these rugged trunks and interlacing branches enclose as in a wild frame. This is indeed a delightful place to ramble about in on a summer's day, when the deep green leafy woods form thick impenetrable canopies and gloomy recesses into which hardly a ray of midday sun can reach.

This, too, within an hour's ride by rail from London, and specially preserved for the use of the people. For the information of such of our readers as have not already visited this romantic spot, we would add that the easiest and quickest way is by the Great Western Railway to Maidenhead, where a conveyance can be obtained; but a more pleasant day's excursion would be to alight at Slough, walk from there to Stoke Pogis, thence to Burnham, and home by Maidenhead.

Habits of trees.—Trees, like plants of smaller size, vary much in habit from seed, and present us with a great variety of contour of top and branch, which by selection, as in the case of the Scotch Fir, might doubtless be perpetuated. The Sycamore presents the most noticeable differences; hardly two trees are quite alike, some being of a spreading habit, while others are compact and dense, bearing great masses of verdant foliage one upon another at this season of the year, when the woods are in their prime. The Beech and Oak and other trees differ in the same way. The Yew sports widely, no end of varieties being known to the nurseryman—some compact, some straggly, some growing in the pyramidal

form naturally, and some round-headed, with all shades of difference between. Like a numerous family of children, hardly any two of the progeny from one tree have the same look; and the difference does not end here, but extends to the period of leafing and flowering. To the landscape gardener and woodman such differences of habit present themselves in different aspects. The first looks at the ornamental appearance of the tree, and the second at its timber, and prefers the straight-limbed specimen to that with the wide-spreading, umbrageous head so ornamental in our parks. There is room for both, however, and it will be acknowledged perhaps that the arboriculturist has not been so quick to take advantage of the sporting disposition of his trees as the gardener has been to fix special characteristics in his plants. The subject is one commending itself to the forester and nurseryman.—J. S.

Forestry in America.—Tree planting is becoming almost universal on the great prairies of Minnesota, Dakota, Kansas, and Nebraska, where it was once believed trees would not grow. Many causes have contributed to this remarkable result, prominent among them being the Timber Culture Act passed by Congress. This Act was amended in 1874 and again in 1878. The area covered by the applications already made amounts to 13,677,146 acres, nearly one-fifth of which was entered in 1882. This shows the growing influence of the premiums offered by the Government, and also by many of the Western States to encourage tree planting. The Timber Act may need further amendment to prevent frauds, but those who have had the largest experience in the States enumerated are convinced that the benefits conferred by the Act are very great. Many settlers have planted much more than the required ten acres in their quarter section of 160 acres. An inhabitant of one of these States remarked recently that they had thousands of trees 30 feet to 40 feet in height and 8 inches or 9 inches in diameter that had grown from seedlings or cuttings planted less than ten years ago. The trees and the land are said to be already worth three times their cost.

The saw-mill men in New South Wales are considerably exercised over a proposed change in the forest laws of that colony. Hitherto Government has granted licences to cut timber at a nominal sum per annum, but now wish to levy a royalty of 1s. 6d. per 100 feet on all first-class wood. The mill-owners declare if this is carried out it will shut up the country mills, ruin the owners, and further increase the foreign imports, which are already heavy. To meet the difficulty of a wanton waste of timber, it is suggested that a heavy fine should be imposed on any persons using logs under a certain size. This restriction would leave the young trees to grow on and keep up the supply. The system now in vogue of proclaiming State forests and reserving the matured timber, as well as the young trees, is declared to be unsound.

Compressed Teak for loom shuttles. The increase of the price of Boxwood, largely used in the manufacture of loom shuttles, has directed attention to the possibility of producing some cheaper material equally suitable. It has been found that compressed Teak will answer the purpose, and a powerful hydraulic press has just been made by Sir Joseph Whitworth & Co., of Manchester, for Mr. Robert Pickles, of Burnley, to be used in compressing this class of timber for the manufacture of loom shuttles. The press consists of a strong cast iron top and bottom and steel cylinder, with a large ram. In the centre of this ram is fitted a smaller one, with a rectangular head fitting into a die which is placed on the top of the large ram. The timber is put into this die and a pressure of 14 tons per square inch applied. The timber thus treated is made very dense, uniform, and close grained, and is capable of taking a very high finish.—E. M. L.

Rearing plantations in America (G. E. B.)—We should welcome any communication from you bearing upon difficulties you say you have to contend with in rearing plantations on the prairies, and particularly as regards the kinds of trees you are planting for timber and those for shelter.—ED.

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"This is an Art
Which does mend Nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare*.

A PRIMULA CONFERENCE.

ANOTHER conference! This time the Primulas are to be mustered and talked about. This much we learned on Tuesday last at an informal meeting of Primula growers, assembled at South Kensington, in order to discuss the desirability of carrying out such a conference. It need hardly be said that the vote in favour of such a proceeding was almost unanimous. No better plants could be chosen for creating a charming exhibition than the Primroses, and if confusion in nomenclature be one of the reasons for holding the conference in question, then assuredly it would be difficult to find a genus of plants so confused both in gardens and herbaria as the Primroses in respect to their names and identity. Botanists, indeed, consider the genus to be one of the most intricate with which they have to deal, on account of the singular tendency of Primulas to become intercrossed. The fact is we know so little of the wealth to be found in the genus Primula in gardens, that some are apt to suppose that there would be but little to show and less to talk about beyond Auriculas, Polyanthus, and the commonest kinds of Primula. But in this genus we have nearly a hundred species and almost as many natural hybrids distributed throughout the northern hemisphere, from Japan to California. Of this multitude of beautiful plants few comparatively speaking are known in English gardens; even Kew itself could not muster half a hundred species, while on the Continent probably quite two-thirds of the number are cultivated, besides hosts of hybrids. Indeed, if any practical good is to be expected from a Primula conference, the co-operation of our Continental friends will be a necessity. Look at the number of Primula species that are to be found in the catalogues of the Villach Botanic Garden and of Fröbel, of Zurich, and in the gardens of such enthusiasts in Primula culture as Mr. Otto Forster, of Lehenhoff, and Professor Kerner, of Innsbruck—that king of Primula botanists. Look again at the list of European Primulas alone given in Nyman's "Conspicua," and what is more calculated to whet one's appetite for these gems of the European Alps than the long list of Primulas which Mr. Gusmus was good enough to contribute to the twenty-third volume of THE GARDEN? This list alone contains some three dozen European species and twice as many European hybrids, besides the names of some forty species found in different parts of Asia and America. Numbers of these are grown in the Villach Botanic Garden and also many garden varieties. If we want to make the Primula conference a success, we must invite such Primula savants as Mr. Gusmus, and no doubt he and many others on the Continent would be glad to aid such a project. The charming collections which Messrs. Paul, of Cheshunt, have been showing us lately have enhanced our interest in alpine Primulas, though comparatively a small number of species has been shown. The co-operation of our Austrian and German friends should also be enlisted; with these and with such English Primula growers as Messrs. Llewelyn Whitehead,

Backhouse and others, we might be able to make a large and interesting show, and have something to talk about besides Auriculas and Polyanthus. In any case the promoters of a Primula conference should soar beyond a mere Auricula or Primrose show; they should endeavour to make the occasion a red-letter day in the annals of British horticulture—something worthy of the Royal Horticultural Society, and thus be the means of introducing to our gardens a whole host of new Primulas. The introduction of new species should, we consider, be the primary object of the conference. Nomenclature, too, as we have said, is greatly in want of attention. For example, three species were shown at South Kensington the other week under the name of *pedemontana*. The exhibitor wanted to know which plant was the correctly named one, but nobody could tell him. Again, ask for *P. pubescens* at the nurseries, and in all probability you will get *villosa* or *viscosa*, while the little white *viscosa alba* may be found under half a dozen names. Even the recently introduced capitata species from the Himalayas are in a muddle, and the names of *pulcherrima*, *denticulata*, *purpurea*, *capitata* and *cashmeriana* are often given to the same plant. Then, again, some cultivators have *P. Sieboldi* under its old name of *P. cortusoides amœna*. These are matters which the conference should decide. Even such abstruse questions as the origin of colour in Primulas, the relative functions of pin-eyed and thrum-eyed flowers, might be considered, though few probably would be much the wiser after such a discussion. This Primula conference will differ from that devoted to Daffodils in this respect, that whereas we were suffering from a plethora of Daffodils with their names in chaotic confusion, in the case of Primulas our want is the material to deal with—that is if it does not resolve itself into an Auricula, Polyanthus, and Primrose show. Not that these would not make the most attractive show, but we doubt if the florists will agree to have the names of their flowers overhauled by a conference committee. These flowers would be a valuable adjunct to a Primula show, and would be interesting as showing at a glance the art of floriculture in transforming the wild Auricula of the Swiss Alps and the Primrose of our native woods, the Primroses of the Chinese and Japanese into the rich diversity of form and colour in which we see them at the present day.

THE LESSER PERIWINKLES.

AMONG the many spring flowers now in bloom or already past, from none have I derived a keener pleasure than from the white form of the lesser Periwinkle, now at its best. I can think of no hardy flower that has a greater look of absolute purity, with its clear-cut outline, firm texture, and rarely beautiful quality of white. This lovely little plant is at its happiest in half shade among low bushes. We have it at the roots of some bog Myrtles on a dryish bank; the finest flowers are near the heart of the bush among its many stems. Having occasion lately to pick some, it was a double pleasure to have the sweet scent of the Sweet Gale. The prettiest form of the small white *Viola* we have is from a friend's garden in the south of Ireland; the shape of the flower is rather rounder and richer than in the wild kinds, as it has six petals, but sometimes more and rarely five. We have also a very dainty wild white, five-petalled, from the Italian lakes.

The common blue is also a lovely plant, and

its double variety, as we have it, is very pretty. The doubling strangely alters the character of the flower, giving it rather a double Daisy look, as the broad blunt-ended flatly arranged petals are transformed into a strap-shaped pointed form, and the flower assumes the shape of a flattened dome. The doubling is fairly even and regular and generally constant. Our double purple or dull purple-red, on the other hand, has every shape between single and a moderately good double, and the individual petals are not so narrow as in the blue. We have also one with variegated foliage whose flowers are sometimes white, sometimes blue, and occasionally parti-coloured. Once I found one exactly half white and half blue, the dividing line being perfectly sharp and clear, but the parti-colouring generally takes the form of a flower mainly of one colour, with one distinct wedge of the other.

The lesser Periwinkles do well in most poor soils; the only care they need is not to be left too long undivided; they are rapid growers, and should be replanted at intervals of not more than four years. If this is not done they grow into unsightly matted masses, yielding fewer flowers and leaves. I should be glad to hear if anyone has a double white, or any desirable varieties other than those named.

G. J.

West Surrey.

PRUNED ORCHIDS.

THOSE interested in this subject had an opportunity of seeing for themselves on Tuesday last at South Kensington an example of a pruned *Dendrobium nobile*, from the Hon. Mrs. Portman's garden at Buxted Park, Sussex. It was a very fine specimen, measuring fully a yard through and carrying no fewer than 630 flowers on about a score of stems. This remarkable plant, for such it may be termed, had been grown under what is called the pruning system, that is, each year's growth is cut off either in flower or as soon as the flowering period is over. Here was a plant which the gardener, Mr. Prinsep, asserted had been grown strictly on this system, and it was as fine, if not finer, than could be produced by any other means. The stumps of the last and previous year's growths were still perceptible, so that there was no gainsaying the matter. Every stem the plant bore was particularly large and plump, and nearly all were profusely wreathed with flowers. The few flowerless stems were those that sprung up latest in the season, and these bore healthy leaves. With the exception of the stems that did not flower this year, Mr. Prinsep assured us that all would be cut down while in bloom, after which the plant would be placed in a high temperature, higher than *Dendrobes* are usually grown in, in order that it should send up strong new growths. When these are perfected a lower temperature and drier treatment are given, in order to thoroughly ripen the growths. Such is the treatment that this fine plant, as well as others similarly remarkable, receives at Buxted Park, with results, as everyone must admit, highly satisfactory. It is, indeed, a great gain to our knowledge of Orchid culture to be assured that cutting away the stems of this *Dendrobium* annually when in flower does not injure the plant, for who would not prefer a long flower-stem clothed with beautiful blossoms to solitary blooms where they are wanted for indoor decoration? Whether all *Dendrobiums* of a like character to *D. nobile* would submit to the pruning system is a question, but in the case of this kind it is an accomplished fact, and Mr. Prinsep would do good if he published a detailed account of his mode of treatment, and particularly if he will undertake to show the same plant next year. The opponents of the system must yield, but its advocates must not jump at conclusions, and fancy that because pruning suits this

Dendrobium it will suit other Orchids, or even other allied Dendrobies. This has to be proven. We commend the subject to the scientific committee of the Royal Horticultural Society as a fit subject for their consideration, and one that if thoroughly dealt with would be a real aid to horticulture.

NOTES ON RECENT NUMBERS.

Daffodil names (p. 331).—Complaint is made of "a flagrant case of setting the conference committee at defiance." In justice to the floral committee of the Royal Horticultural Society it should be remarked that the inconsistency complained of was the fault of the conference committee themselves, who are responsible for the name *spurius coronatus* as included in their list. Blooms sent from Holland to the Royal Horticultural Society under the name of General Gordon were found by the floral committee to be identical with the variety named *spurius coronatus* last year, and were certificated as such. Moreover, *spurius* is classed under the head of major, not pseudo-Narcissus, which already contained one named Chinese Gordon, but I do not suppose any Englishman would grudge that the finest Daffodil we can find should be called after so great a man. The nomenclature committee have had a hard task to keep their work straight and consistent, and I believe their efforts have been well appreciated, not only here, but also in Holland. It still remains, however, for some people to discover that their duty is not to detect microscopical distinctions, perhaps only of a temporary nature in the specimens submitted to them, but to stamp with their authority the names and merits of the best varieties. In some cases a name is given merely as a distinguishing label for a plant on its trial, but for each name added to the list might not five be expunged?

Flowers and birds (p. 334).—Mr. Wilks told us a little while ago that he had been "vastly angered by slugs." Lately one of your correspondents has been "very vastly angered by birds." As a rule, it seems that the prettier and more interesting a bird is, the more mischief does it do in a garden, *e.g.*, bullfinches among the Gooseberry buds and tomtits among the Pears. Still, the sparrow, not to be behindhand, does his share among the Crocuses (which I always thought they attacked for the sake of the saffron stigmas, but, according to Dr. Lowe, for the insects in the flowers), and with Primroses and Polyanthus they are more than provoking, unless in some cases the delinquents are mice, picking the pips off and scattering them on the ground apparently in wanton and derisive mischief. To keep them off cotton wound round sticks is sometimes effectual, and a correspondent of another paper in recommending this plan said that the gardener had heard a sparrow give a loud scream when flying against one of the threads. A large mass of pseudo-cobwebs does not improve the appearance of the flowers, but one is obliged to adopt something of the sort if their beauty is to be kept intact for any length of time. The new race of Primroses and Polyanthus are so easily grown as annuals, and are of such good colours and so free blooming, that I expect we shall shortly be told, as of washing machines and antibilious pills, "no household should be without them."

A substitute for Larch (p. 355).—We are fortunate enough to be in a district where the Larch continues to do remarkably well; therefore we do not require a substitute, but we do want something that we may grow to take the place of foreign deals. Larch, of course, as timber has this one great disadvantage, that it "winds" and cannot be trusted to keep straight, in which respect it is nearly as bad as Chestnut. Of the two trees named as substitutes, *Thuja gigantea* would seem to be the best to look to, for the Douglas, as mentioned, is so liable to lose its leader, and its branches spread to such a distance, that it often takes up more room than can reasonably be spared for it. A quick rate of growth in a tree does not necessarily intimate a proportionate weakness in the wood as timber, for what can be faster grow-

ing, and at the same time tougher and more enduring, than the *Eucalyptus*? I am speaking of a rate of growth in different sorts of trees, not in different trees of the same sort. *Thuja gigantea* would probably soon outrun the Douglas in length, but would not swell in bulk so quickly. Another sort I should have expected to see recommended is the *Cryptomeria japonica*, which in its native country forms most useful timber, and might be expected to do the same on a more moderate scale here. The stem does not swell out very fast, but is very hard, and the rough bark which peels off each year seems to take the place of the outer or sappy wood, which reduces so much the value of many trees.

Trees for a wet and dry situation (p. 355).—Of these Alder is the most valuable and always commands a ready sale, on account of its use in making charcoal for gunpowder in those parts of the country where the powder manufactories are established. One of the large firms the other day, I heard, was in great difficulties to complete a Government order from their inability to get sufficient Alder poles. The stems, being so straight, come in for a variety of other purposes and cannot fail to be useful. Oaks very often do not seem to mind wet, and some we have growing in a pond which are surrounded with water for some months in the year look quite as healthy as their brothers high and dry by their side. Osiers, which one naturally thinks of in connection with swampy ground, are always being recommended and written about; they should be profitable, for good wicker-work is dear, the excuse being that good Osiers are so difficult to get, and certainly there is a vast difference in the lasting powers of some baskets and hampers compared with others. Whose fault is this? the planters, the Osiers, the man who cuts them, or the man who uses them?

Sussex.

C. R. S. D.

GROUPING PLANTS AT EXHIBITIONS.

MISS JEKYLL'S plant-group as arranged at the recent Daffodil show at South Kensington merited warm praise. It was quite refreshing to turn from the monotonous banks of cut flowers, set up in all sorts of nondescript utensils, to the pretty Moss bank in question; and although it was hinted that the Moss used might have been a little greener, it must be remembered that we have had a singularly dry parching spring, and that even Moss has, along with numerous other things, assumed rather the golden-brown of autumn than the verdant hues of May. No doubt the golden tint in the Moss bank somewhat diminished the effect, because yellow Daffodils and golden Polyanthus found in it a bad groundwork. On the other hand, the pretty climbing *Primula rosea* and the mauve-hued *Irises* peeped forth from it with special charm, as did also the few crimson Polyanthus. If Munstead could have furnished a dozen or two good clumps of red or purple Primroses or several good heads of rich-coloured Polyanthus, or if a striking patch or two of *Anubrieta violacea*, or even a few double red Daisies had been intermixed in the group, the effect would have been greatly enhanced. I am not criticising what was done in any carping spirit—very far indeed from that, but the lack of depth in the ground hue of the Moss did make the lack of colour in the flowers bedded into it all the more noticeable. The use of the tall arched plants of the great *Convallaria*, or Solomon's Seal, was a brilliant conception. Raised up to the level of the eye and in full bloom, the effect was most charming. One could not but regret that as these had been grown under glass, another lovely hardy plant, the *Dielytra spectabilis*, had not been represented also by a small clump, for, conjoined to Solomon's Seal, we have in these two of the most elegant spring flowers in cultivation. As a rule, our exhibitors of even hardy plants have a wonderful wealth of material at disposal, but unfortunately little taste in arrangement. It seems as if from that direction we should never get beyond the ordinary method of showing plants or flowers. Even if all groups were not set up absolutely in accordance with art rubrics, the result would be

commendable whenever a genuine effort was made to break away from stereotyped forms. We might almost say of our plantmen and exhibitors that whilst we have plenty of cultural ability we have also the greatest possible absence of decorative power or suggestiveness. What a change might be wrought in our shows were genuine artistic efforts in arrangements with a view to natural effects made the chief aim and object of prize schedules. Perhaps an experimental show devoted absolutely to art efforts such as that arranged by Miss Jekyll the other day would do something to create new decorative tastes.

A. D.

THE MANGO.

THIS has not only fruited in the Palm house at Kew, but also more recently in the Botanic Gardens, Regent's Park. Although these two instances are ample proof that the Mango has fruited in this country, my knowledge of its fruiting carries me back to fifty years ago. In 1835 the then Earl Powis applied to Mr. Aiton (then director of the Royal Gardens, Kew) for leave to allow his botanical artist, Mr. George Bond, to proceed to Walcot, the earl's seat in Shropshire, to make drawings of the flowers and fruit of the Mango. Having forgotten the particulars, I wrote to Mr. Bond, and in a recent letter he informs me that on his arrival he found that the plant which he was to make the drawing from was 20 feet high, and the flowers being terminal, a stage had to be erected for him to stand upon; the drawing of the fruit he made from another tree, which with others was bearing plenty of fruit. In 1837 Mr. Bond became head gardener at Walcot (and has only just lately retired). The earl was then in his 85th year, and the height of the tree, 20 feet, shows that he had for many years cultivated the Mango. He died in 1839, and the cultivation of the Mango was given up by the second earl, and a selection of Mangoes and other tropical fruits was presented to the Duke of Northumberland for his newly erected tropical fruit house at Sion. With regard to the plant fruiting at Kew, it was sent from the Calcutta Garden by Dr. Roxburgh early in the present century. In 1823 the late Mr. Sabine, then secretary to the Royal Horticultural Society, obtained the loan of it from Mr. Aiton in order to try some experiments to fruit it, but not succeeding after keeping it three or four years, it was returned. It was then a bushy plant, 4 feet or 5 feet high, and in time it became an inmate of the Palm house, and is specially noticed by Sir W. Hooker in his "Garden Guide," in which he says, "Among other valuable trees in this house may be noticed the Mango tree (*Mangifera indica*), now annually yielding flowers, and sometimes its rare and delicious fruit." In 1857 it had attained a height of 15 feet, with a girth of stem 1 foot 1 inch; spread of branches 9 feet; growing in a box 3 feet square. In that year it bore 16 fine fruit, each weighing half a pound, part of which were sent to the Queen. In 1858 it showed abundance of flowers, and although this fine tree was in its prime, one day before the fruit had begun to set this fine old Mango tree ceased to be an inmate of the Palm house, and was no more seen.

JOHN SMITH (Ex-Curator).

Royal Gardens, Kew.

Daphne Blagayana.—Amongst the rock-work plants now in bloom, one of the most pleasing is a mass of this little low-growing *Daphne*, thickly studded with clusters of creamy white blossoms which exhale an agreeable perfume. For a well drained spot on rockwork or some such position it is well suited, as it quickly forms a good sized clump. This *Daphne* was awarded a first-class certificate at South Kensington some four or five years ago, but it is still scarce, though not by any means difficult to propagate, and it is, moreover, perfectly hardy. A good method of increasing it is by means of layers, which root without difficulty. If grafted on the Spurge Laurel, suckers from the stock are frequently a source of trouble, which is obviated in the case of plants raised from layers.

—ALPHA.

FLOWER GARDEN.

TOO MANY DAFFODILS.

MOST lovers of Daffodils, unless they have the mania in a dangerously acute form, will agree there are too many, or will at least allow that there is already danger of there soon being too many. Indeed, for the general public there are a great many, too many, particularly in the Medicoronati division and in the Burbidgei section, both of which the general public seem somewhat slow to appreciate. It requires a trained and really skilful eye

to recognise the minute differences of size and shape and shade of colour which distinguish (?) many of them. I have had a great many people and some good gardeners to see my Daffodils this year, and I find a universal complaint of "too much alike," "cannot see the difference," and so on. Now, for general garden utility, I take it a flower should be distinct in one or two ways, either so distinct in colour or form that an ordinary eye can at a glance detect the difference between it and another when they are placed a foot or two apart, as between *maximus* and *spurius*, or distinct in time of blooming, as *Horsefieldi* and *Empress*, *p. ornatus* and *p. recurvus*. Also for general utility a garden flower should not be exceedingly costly. I subjoin a list of what I consider to be distinct in both these senses, and though in the case of the variety named *J. C. Backhouse* I seem to have transgressed the

third desideratum of utility, the beauty of the flower has compelled me to include it. I might have added a fourth desideratum, viz., robustness, but all that I shall mention are (with me at least) not only robust, but very prolific also. I will name them in the order in which they flower here. The *Ajax* group: *Pallidus præcox*, *obvallaris*, *nanus*, double *Telamonius*, *cernuus*, *maximus*, *spurius*, *Emperor*, *Horsefieldi* and its near relative, *Empress*, *Dean Herbert*. The *incomparabilis* group: *Sir Watkin*, *J. C. Backhouse*, *Mary Anderson*, *Barri conspicuus*, *Cynosure*. Of the other groups I would recommend *odorus rugulosus*, double *odorus minor*, *poeticus ornatus*, *p. grandiflorus*, *p. recurvus*, double *poeticus*, and the single and double *Jonquills*. No one, I think, could call these too much alike, and if a cold frame is at hand I would strongly urge to add *Corbularia conspicua* to the list. I have as I write a shallow pan of it

before me only 6 inches square with twenty-eight fully expanded blooms and numbers more to follow. It is a gem, and gives no further trouble than just to protect its foliage during winter from severe frosts. I have written the above list not for the Daffodil "grower," but for the ordinary amateur gardener.

Shirley Vicarage, Croydon.

W. WILKS.

VIOLA MRS. GRAY.

THIS lovely variety is generally admitted to be the best of all the *Violas*. It is certainly the

THE PLANTING OF GLADIOLI.

THE difficulties which have attended the successful cultivation of this delightful autumn flower have led to all sorts of dogmatic assertions as to the proper mode of planting them and the soil which is most suitable. Some have advocated the very poorest, and some the very richest; some have said, plant as early as possible; others, defer it until May, when all fear of spring frost is gone; some say plant deep, and others shallow; some plant the bulbs a foot apart, others plant them 6 inches. One person has perhaps been successful

for a season, and he immediately attributes it to his mode of culture; another has grown with success some of the older and harder kinds, and he forthwith assumes that he will be equally successful when he ventures further afield and launches out into the newer, more highly bred and expensive kinds, but with rare exceptions, which only prove the rule, one and all have to say that there is something about them which they cannot understand. Now I have grown them in my small way as long as any amateur in the country—perhaps longer, and if experience would justify anyone in writing dogmatically on the subject, I should be fairly entitled to do so; but I honestly confess that the longer I grow them, the less inclined am I to make assertions as to their successful culture, and nothing that I know of can ward off that destructive malady which so often disappoints the hopes of the grower. I can



VIOLA MRS. GRAY (COLOUR CREAM-WHITE).

most beautiful amongst sorts that have been sent to us. It has creamy white flowers with just a few pencillings of purple and gold. A bunch of it sent last autumn by the raiser of it, Mr. Gray, Eglinton Castle, was so charming, that we had it drawn. It is an abundant and continuous flowerer and is hardy enough to withstand the winters well even so far north as the west of Scotland. Our drawing was made from an autumn bunch, thus showing its continuous flowering season. Nothing could be prettier than a few blooms of this *Viola* placed in a vase by themselves.

Puechkinia libanotica and *selloideæ* I have had for some years, but if they were rightly named as I received them I prefer *scilloides*; it has a little more blue in it. I find both delicate, increasing very slowly from the bulbs, but freely enough from seed. They are lovely little things when closely examined, but very ineffective as garden plants.—W

only, therefore, give my own experience in the matter and detail my method of culture.

I do not think that it is very material as to the time when the bulbs are planted, although I know that some advocate the system of planting even in February, so as to keep the bulbs out of the ground for as short a time as possible; those, however, who have to plant *Ranunculuses* know how difficult it is to catch the ground in good order during that month, and it is, indeed, very rarely one can have the ground, especially if it be at all stiff, in as good condition as it has been this season. Having noticed that some of the best bulbs that I had seen during the past year were grown in stiff soil, contrary to what I had been led to believe, viz., that light soil was the most suitable for them, I determined to plant mine in a portion of my garden where the soil is of that character; and in such good condition was it, that

I was enabled to get my beds planted early in March, not that I think this early planting is a necessity. I remember at the great Paris exhibition in 1866, that in September M. Souchet exhibited some grand spikes of bloom from bulbs which had not been planted until May, but as all bulbs dislike being left to be dried up, it may perhaps be as well to get them into the ground not later than the middle of April. I have tried amongst other plans that of potting them in small pots as soon as possible and planting them out from these, but I did not find that it made any difference as to the time of flowering or the preservation of the bulbs. Some kinds are early and some late. Whatever the season may be, I have never failed to have Shakespeare in bloom about July 27; and however favourable it may be, Phœbus will not bloom until all its companions are faded and gone, and itself can hardly open in the cold and ungenial weather of October. Intermediate between these two periods, you may, with a tolerably fair collection, have spikes to cut at any time.

After many trials of various kinds, making some years separate holes for each bulb, I have come to the conclusion that it is just as well and far more easy to draw a deep drill and plant them in it. I have tried filling the holes with prepared compost, and again placing a considerable quantity of sand or powdered charcoal round each bulb, but no good results have ever come as to warding off the malady which has proved oftentimes so fatal to them. I last year placed some road grit round each bulb, but I do not know that it was of any use. I grow mine in 4-foot beds, and place four rows in each bed. The bulbs are planted about 1 foot apart in the rows, and that gives them a considerable space; this is perhaps more desirable for getting at the plants than for their absolute need. The roots do not spread much, but go down deep; but where flowers have to be shaded or any work to be done amongst them (tying, &c.) it is well to have plenty of room.

As it is desirable to be correct about the names, I not only place labels in the beds, but write down in a book the list of roots as they are placed in the bed; thus, first row, Adolphe Brogniart, four; Horace Vernet, five; Meyerbeer, four, &c. I can then at taking-up time if there has been any displacement of the labels easily correct it. Gaps there are sure to be, and consequently it is as well to have the number of each variety noted, so that they may be looked for if they have failed to make an appearance, for I have sometimes found the bulb entire as at the time of planting. I would here again mention what I know has been helpful to many, viz., the desirability of cutting the corm when it is large. By stripping off the skin, it is easy to see what eyes it has, and it can then be cut in halves, leaving an eye to each half, when they will as surely grow as Potatoes treated in the same way. Some of the largest bulbs and some of the finest spikes I had from bulbs so treated last year. I plant them about 4 inches under the surface; at one time I used to plant deeper.

An excellent illustration of the remarks that I have made in the earlier part of this paper is shown by a writer in THE GARDEN, who tells of the success he has attained by leaving the corms in the ground and by not using manure, which he considers must in some way injure the bulbs, and tells of the very large bulbs he has lifted. Now, it might be well to know what are the sorts which have been so treated; are they such kinds as *brenchleyensis*, *Bowiana*, *Don Juan*, &c., because these are hardy, and such varieties will stand a good deal? I have myself tried leaving them in the ground, but I cannot say success has marked the attempt; its only real use would be to diminish the amount of disease, and this I have not found it to do, and it must be remembered that our two greatest growers, Soullard and Branelet, at Fontainebleau, and Mr. Kelway, take up all their bulbs, great and small, and that the grandeur of the spikes produced from their roots is unquestionable. Then, again, as to the question of manure. I can recall the time when Mr. Standish, of Bagshot, took up their growth with the enthusiasm he displayed in everything he undertook, and his contention

for a time was that it was impossible to grow them in too poor a soil, and that even the poor soil of Bagshot had to be burned in order to still further reduce it. He, however, altered his practice in later years, and I know that both at Fontainebleau and Langport large quantities of manure are used—of course not at time of planting, but dug in in the autumn, and I have seen in both places the ground well mulched with rotten manure as the time of flowering drew on, and I do not believe that any deleterious effect is produced by its use on the bulbs. One large grower sells a special *Gladiolus* manure; but I should not feel indisposed to try some of the artificial manures advertised.

I last year grew some of Lemoine's hardy hybrids, but cannot say that I am particularly struck with them. I am afraid the parent *purpureo-aureatus* is too close a flower ever to produce a good offspring, and at present it seems to be an advance backwards.

DELTA.

NOTES ON HARDY PLANTS.

CAMPANULA ZOYSI.—This charming little Bell-flower is, I believe, seldom kept in good health from year to year in English gardens. Its root is moderately creeping in habit, and the older underground stems are very wiry. I think it may safely be said to prefer a hard, but porous soil of a sandy character. Twice have I established it in rich black earth, but it has died off with the exception of such parts as have run into the hard sand of which the little walks are made. When I have wanted rootlets I could only find them there or under a piece of stone. Slugs are very fond of it; and I am not sure that the sandy walks, from their being unpleasant to slugs, may not have afforded the plant some protection. It is a most desirable alpine plant, at once rare, interesting, and beautiful. It wants no coddling, but if two or three bits are set in a seed-pan firmly and the pan plugged, it may be more surely saved, and a painful if it would have no mean appearance.

ANTHYLLIS MONTANA.—Another seldom seen alpine of shrubby habit and only a few inches high, with foliage and flowers of a pleasing type. It is of slow growth, and, according to my experience, not easily propagated; practically, division is impossible, and certainly undesirable with such a slow grower. Though I have a strong specimen of it which flowers abundantly every year, I never get any seed. The only method of increase apparently is by means of cuttings. The wood is very hard and tough, even the new wood, and the leaves will not endure the confinement of the usual bell-glass. Wood a year old, if slipped off and firmly inserted in sand and leaf-mould, roots during a whole summer, and is fit for potting about this time, which is also as good a time as any for putting in fresh cuttings. Many fail to establish this handsome Kidney Vetch, and I feel sure that it will not thrive in poor or cold soil. My specimen of it is in a heap of loam and leaf-mould, quite black and from 2 feet to 3 feet deep.

CROWN IMPERIALS.—For the first time in seven years these promise to yield a full complement of bloom, doubtless the result of the hot, dry summer of last year. Whilst in some gardens these never fail to flower, in others they are flowerless year after year. That they like a sunny situation may be put down as a fact, and there is some reason to believe that if planted only 2 inches or 3 inches deep, they would answer better than they generally do; in that case litter or ashes would, of course, be required for winter protection.

SISYRINCHIUMS.—Of *grandiflorum* I have met with more than the common and white forms, notably a little group of lilac shades which certainly do not merit the specific name, the flowers being small and their effect further lessened by their straight and somewhat stiff scapes. The finest kind I ever met with belonging to the early flowering section is one I have grown under the name of *pennatum*; its flowers are broader in the bell than those of *grandiflorum* and more closed at the mouth; they are also of a deeper purple and fringed. The grass is more slender, also the

scapes, which are often unable to support the big flowers. These Irids, I find, do much better if kept well divided than left undisturbed. So dense does the increase at the roots become, that scores of minute offsets may be seen in old clumps, living without soil, packed between the older or stronger crowns. If little tufts of roots are separately planted in autumn, their improved condition becomes manifest the following spring, and if left until another year they may be expected, though not large, to flower beautifully. The white form of *grandiflorum* is just as free and vigorous a grower as the type. The flowerless state of many clumps of this so-called Lily I take to be due to the overcrowded state of the roots; the grass, in many instances, is so weak as to resemble that of the finer *Festucas*.

GERANIUM LAMBERTIANUM.—I am obliged to "K." for his notice of this (p. 309), but he quite mistook my meaning. The fault might have been mine in not being more explicit. I had, however, no idea of describing the plant which was then folded in the sprout coats, and it was merely the coats I meant were cherry red. This might have been inferred, as I said, "they had been visible all winter." I feel sure that my plant is the correct form; had I had any doubts, "K.'s" remarks would have removed them, for, when out of the winter coats, the stems and leaves are pale green and hairy, assuming a little colour later on. *G. eriostemon*, *armenum*, and *Wallichianum* I have growing quite close to it, but I did not mean *armenum*, which has also red sprout coats, though of a much less conspicuous kind. Those of *Lambert's* are large, round, and quite level with or possibly a little lower than the surface.

SEMPERVIVUM TRISTE.—Though pretty when in flower this plant could scarcely be more so than now, when its fine succulent leaves of a greeny purple hue shading to pink at their base fairly glisten from the new life which is rising into the big rosettes. Among the eighty species and varieties of *Houseleek* grown here, this is one of the most distinct and desirable. As the leaves open the colour in the middle of the rosettes turns crimson; but a colour description of this genus, as regards foliage, is a blind guide, for during the whole year the hues of the different species keep changing. An allied form called *violaceum* is remarkable for its colour, as indicated by the name, especially during the summer.

WEBBED HOUSELEEK.—Of these there are four or five distinct kinds—a large and small form of *S. arachnoideum*, *Lageri*, *tomentosum*, and *pseudo-arachnoideum*. What the last named may really be I cannot say; it has not yet flowered, and never for these past three years has it shown itself as it does at present. Though now larger than *S. arachnoideum*, it still appears to be in a growing state. I had it under this name from the late Mr. J. E. Daniels, of Epsom, a most careful raiser of succulents. He did not, I think, tell me that he had raised this from seed, but it is not unlikely that he did raise it in that way. It forms round rosettes which are $1\frac{1}{2}$ inches in diameter now. The leaves are finely crined, a colour by which the white webs are better set off than in the supposed type. The webbing is also more completely furnished over the whole rosette.

VERONICAS.—Of the more recently introduced shrubby sorts, such as *V. salicornioides*, *epacridea*, *chathamica*, *catartæ*, *Lyallii*, *devoniensis*, *Hillekeana*, &c., a note about their hardiness may be of use, for New Zealand kinds have not hitherto proved safe when left exposed in the open. All the above named are, however, looking healthy in a border where they have been during the past somewhat mild winter without protection of any sort.

GRAPE HYACINTHS.—Beautiful as the blue varieties of these are, their effect is much enhanced by having bits here and there amongst them of the white *botryoides*. Grape Hyacinths are unlike the *Gentians* in this respect, for we can scarcely appreciate the latter if of any other colour than blue. A white Grape Hyacinth or *Muscari*, however, among the blues is a great improvement, and the same holds good in the case of

Scillas. One little clump of the lovely *nivalis* gives effect to a set of dark blues.

BUPELURUM FRUTICOSUM.—This is a quaint old species of a distinct genus of plants and shrubs. Many of the *Bupleurum* are not suited for the flower garden, but this both pleases and interests one. It is evergreen and dwarf; its foliage is entire and sea-green and uniformly arranged on the branches, on which, since November until now, it has been blended screw fashion, alternating with coils of the curious little dark-bracted flowers, which last in perfection for weeks, and even months. The growth of this plant is slow, but a specimen of it is not amiss in the flower border among old-fashioned flowers.

PRIMULA OBTUSIFOLIA—Believing that my plants of this are from the same seed as those of Mr. Wolley Dod, upon which we have notes (pp. 278 and 309), I may just state one fact for what it is worth as having a bearing on the identity of Mr. Wolley Dod's seedlings, and in the first place it should be stated that the plants growing here were kindly sent to me by Mr. Wolley Dod last summer. They were potted singly at once, and stood out in the open half plunged in sand along with other *Primulas*, and side by side with *involucrata*, to which Mr. Dod referred. Both have been under precisely the same conditions up to this time and both are in good health, but the three plants of the so-called *obtusifolia* have now four or six leaves, each about the size of a shilling, while in the whole batch of a score of pots of *involucrata* not a crown is yet fairly through the mould. I do not forget that seedlings and clean young plants often start more vigorously and earlier than others, but it is well known that scarcely another *Primula* makes such a great number of healthy and long-rooted offsets as *involucrata*, and in a score of pots which contained crowns of all degrees of strength it might be reasonably expected that some would be as forward as seedlings. These *Primulas*, therefore, are not alike in date of growth.

ERYTHRONIUM, now so showy among our sweetest spring flowers, increase themselves pretty freely at the roots, but this class of plants serves to show us the advantages of giving to our borders and rockeries a top-dressing of good material; this not only imparts to them freshness, but forms a capital seed bed for such things as will sow themselves, and all without the risks of digging among precious plants, whose roots are soon injured. *Cyclamens*, *Gentians*, *Hepaticas*, *Ranunculus*, and many bulbous plants come up freely from seed, which falls thus on "good ground."

MONTBRETIA POTTSII.—This plant pushes very early, and in March its spear-like leaves were showing an inch or more above the ground. The severe frosts which we had on several nights did them harm, which they will not outgrow. The brownness of the ends of the foliage we have so often to complain of during summer in this otherwise highly decorative plant may in a measure be thus caused. It may be observed that the early growth is not like that of, say, the *Gladiolus*, which leads with the point of one leaf, but several, perhaps all, are enfolded in the somewhat bulky and firm sprouts as they first appear. Then there is the fact that we are rarely clear of frosts until May, to which period further damage may occur, and the injury done to the delicate texture of the leaves is permanent.

RANUNCULUS ANEMONOIDES is surely an overlooked spring flower, it is so showy and lasting and yet rarely ever seen. The flowers, which appear in April, are nearly 2 inches across, white, with the pinky brown on the under side just showing on the face of the bloom, and the little tuft of golden stamens, greenish at the earlier stage, gives it a rich finish; these big flowers, singly borne on stout stalks, just overtop the young and scarcely developed leaves, which are very pretty indeed, being glaucous, handsomely cut, and of clean appearance. True, it is not an old plant, but its hardy constitution and the ease with which it may be propagated should recommend it for more extended culture. As already hinted, the flowers last a good while, quite a fort-

night in ordinary weather. A coloured figure of it appeared in *THE GARDEN*, September 16, 1882.

PUSCHKINIA SCILLOIDES, so delicately beautiful, all too pretty for the open air of our coarse spring weather, is by no means showy; in the cold greenhouse or in frames it may be had in perfection, where its shaded stripes may be made a colour study. The bulb is perfectly hardy, and even a pot of seed which germinated last autumn has stood 10° and 12° of frost evidently without injury, as the young plants are now growing quickly. I feel satisfied that if the bulbs are set in light material they are all the better for being left in the earth all winter. A dry sunny bank will do for the open air, but for pots very sandy loam with a little peat answers best. J. WOOD.

Woodville, Kirkstall.

ZINNIA BEST IN LARGE MASSES.

No one, I think, who has seen *Zinnias* in large masses will disagree with "M." (p. 307) that they look best in that way, a fact with which I was impressed years ago, and every season we always have a big bed in which the colours are mixed, and the effect which they produce is both brilliant and striking. To grow the plants well, however, they must have good deep soil, and therefore the bed for them should be specially prepared by being trenched, and during this operation a dressing of manure worked in below, which the roots will find and reach when most needed, just as the plants come into bloom. Why many fail with *Zinnias* is in sowing the seeds too soon, the middle or end of the present month being quite early enough, as when got in before that time they either get drawn or starved long before it is safe to plant them out, and if checked in any way they seldom do well after. The plan we pursue with ours is to sow in pans or boxes filled with light fine mould, which we place in gentle heat to get the seed to germinate freely; as soon as the seedlings are up, we then stand the pans or boxes in a cooler temperature, like that of an ordinary frame, and near the glass, which keeps the plants sturdy and strong. At the end of May or beginning of June we plant out in rows from 1 foot to 15 inches apart and the same from plant to plant, which gives room for them to grow and branch and well furnish the bed. This they always do and begin to flower freely in July, and continue right on through the summer and autumn till destroyed by the frost. Although the single are very showy, we like the double sorts best, and the seed of these we mix up before sowing that the colours may be blended well all over the bed. The proper situation to grow *Zinnias* is in a position in full sun, as they like plenty of heat, and it is advisable to mulch between them to prevent their suffering from want of moisture, as water can then be given and have time to soak in before it is taken out by the dry air. S. D.

FORMS OF IRIS TUBEROSA. (HERMODACTYLUS TUBEROSUS.)

THROUGH the kindness of the editor of *THE GARDEN*, I have been allowed to examine two specimens of this *Iris* sent to *THE GARDEN* Office by Mr. Kingsmill, of Eastcott, Pinner. One, the roots of which I understand were gathered in Corfu by Mr. Kingsmill, is the form which, as far as my experience goes, is the one usually cultivated. The other, the roots of which I understand were gathered in Algiers, is in many respects very different. The claw of the fall is very wide, twice or nearly twice as broad as the blade, which ends obtusely. In the ordinary form the claw is only as broad as, or very slightly broader than, the lamina, which ends, when intact, more or less distinctly in a point. When roughly handled the lamina is apt to split at the apex and become bifid; it is so figured in Sweet. The standard, which in *I. tuberosa* is always very inconspicuous, is in this form shorter than in the ordinary form, and is more rapidly narrowed to an awl-like point. The crests of the style are broader than in the ordinary form and not so pointed, and the

column formed by the united styles is less conspicuous. Lastly, the spathe valves are longer, overlapping the flower to a greater extent, and more swollen than in the ordinary form. Obviously we have to deal here with two quite distinct forms, but I do not feel able to give either of them a distinctive name.

I have long been puzzled by Sweet's ("British Flower Garden," 2nd ser., ii., t. 146) account of this *Iris*. He describes three forms—1, *longifolius*, from Italy; 2, *repens*, from Greece; 3, *bispathaceus*, which he considers the common form. 1 and 2 he says have only one spathe valve; 3 has two. But not only both Mr. Kingsmill's forms, but every specimen I have yet met with has two spathe valves, and Parlato describes the Italian form, one habitat of which he gives as Corsica, of *Iris tuberosa*, as having two spathe valves, adding that he cannot recognise Sweet's *longifolius* form. Spach admits Sweet's three forms, but, contrary to his usual custom, seems in this case to have followed Sweet without independent observations. Had it not been for this point of the spathe valves, there are some points of resemblance between Mr. Kingsmill's forms and Sweet's *longifolius*, as far as can be judged apart from leaves and tubers. But I must confess the spathe valves puzzle me; one can hardly think that Sweet made a mistake, and if any reader of *THE GARDEN* possesses an *Iris tuberosa* with a single spathe valve I should much like to see flowers and leaves. Let me add to this dry note a word of thanks to Miss Jekyll for her appreciation of the beauty of this *Iris*. None of the *Irises* are gaudy flowers; had they been so I should not, I think, have got so much entangled with them as I have, for it was their quiet beauty, their reposeful, soft hues which first led me to them; and this *I. tuberosa* is, as it were, an exponent of the principles governing the whole genus, showing how much beauty can, by adequate toning, be drawn from a greenish yellow and a purple-tinted black. M. FOSTER.

NOTES ON HARDY PRIMROSES.

It is well known that there are two colours common to the wild *Primrose* of our woods, viz., pale yellow and pale red. In one garden near here there are numbers of the red variety which differs in no way from the yellow except in colour. I have a suspicion also that the yellow changes from yellow to red under some circumstances. A few years ago I moved a lot of *Primroses* from the woods to some of the shrubberies, and two or three years after a number of the clumps produced red flowers, and have done so since. What can be the cause of this?

TRANSPLANTING PRIMROSES.—This is a good plan in the case of old clumps that have grown poor and produce poor flowers, but I doubt if the *Primrose* can be propagated by division for many years. My impression is that it is not a long-lived plant, and that it must be renewed frequently from seed. I think the terms annual, biennial, and perennial have a wider signification than we imagine sometimes, and that *Primroses* should be included strictly among biennials so far as culture of flowers is concerned, as these grow decidedly smaller and poorer the older the plants become. As it is as easy or easier to sow and plant periodically, I prefer propagation by seed to division and transplanting. Seedlings sown now in boxes in a cold frame will bloom in autumn if pricked off in good soil in time, and will flower better than older plants next spring if planted out in October; but at the end of three or four years they grow weak and run out, both flowers and leaves showing a sensible decrease of size and vigour. Good soil makes considerable difference, and it should be well drained as well as rich. The hardy kinds seed more or less freely, both coloured and common, and if the ground is not disturbed between the plants young plants will come up thickly among the old ones. It is surprising how soon the common *Primrose* will extend itself in this way even among long Grass. A patch here originating from one or two plants growing in the shrubbery now

covers several square yards, quite mastering the Grass, and we have thinned the patch out freely once in transplanting. In all the single varieties of the Primrose a great diversity of habit is conspicuous, but on the whole I like the dwarf dense Primrose habit best. At present many of these are dense masses of colour that adapt themselves to the rockery or any other position. We have one white variety which quite equals the wild kind in freedom of flowering and in any other way, and the wild type certainly flowers more abundantly than any other. S. W.

PINKS, PICOTEEES, AND CARNATIONS.

THE winter, now it is to be hoped drawing to a close with the expected advent of the cuckoo, has been on the whole a mild one. No exceptionally severe frosts, snow, or wind storms or floods of rain have marked its course, and yet it has hit some forms of vegetation harder than last winter. The early alpine Forget-me-not (*Myosotis dissitiflora*) is far more purple than usual, and Pinks, Picotees, and Carnations of varieties that were green as Leeks at this time last year are of a most unwholesome jaundiced type this April. The change is so great as to be strikingly manifest. Neither is it confined to any specially good, and hence it might be assumed exceptionally tender, sorts, for even the purple and scarlet and old red Cloves have suffered almost as much as the more choice Carnations and Picotees. But the fact is the collection is exactly the same as last year, and they are growing on the same border, though in fresh soil, the same, or even better than they had then; and yet, while last April they were the picture of health, this year they are—well, a rusty lot. Neither is the case at all exceptionally bad for the season. All I have seen around us are in a similar plight, and I should be grateful for the opinion and advice relative to this matter of growers of these sweetest and best of all old-fashioned garden flowers.

Fortunately, we have another string to our bow, having put in cuttings under glass of all our finest varieties, and these we shall speedily plant out. As a rule, however, spring planted Carnations and Cloves do not yield that wholesale harvest of colour and sweetness that layers early rooted and carefully planted in autumn do. I have a theory of the cause of partial failure, which does not seem, however, sufficiently strong to account for it—that is, that the constant succession of "little go's" in the form of frosts have proved too much for the endurance of the plants. The weather has been all things by turns, with the exceptions already indicated, and nothing long, and the plants have succumbed beneath the incessant alternations of growing conditions. No doubt, too, the slugs, notwithstanding various slight dressings of lime and soot for their special benefit, and applications of sharp road sand and coal ashes as antidotes, have had a hand in the work of destruction. But they had little effect on the strong green grass of the Cloves, which have assumed a rusty brown; and not a few of them, especially the old red Cloves and yellow Carnations, have become jaundiced within the last month. A fancier says the only sure remedy is to winter all the young stock under glass till the end of April. Should the old plants pass through the winter, then form fresh plantations elsewhere; and should they suffer as they have done this winter or spring, then root them out, wholly renovate and largely renew the old quarters before planting, or, better still, form a fresh plantation on maiden soil. What say Mr. Douglas and other growers to this?

D. T. FISH.

Chrysanthemum coronarium and its varieties are amongst the most useful and easily grown of annuals, and when cut they last long in good condition. The best way to proceed is to procure a packet of seed and sow it at once. There is no better place in which to rear young seedling plants than a slight hotbed from which a crop of Asparagus has been taken, but failing this a cold frame will do. A few spare lights should

be placed over it in severe weather. Very good plants can, however, be raised by sowing where they are required to flower. A good strong loam and a little well-decayed manure produce plants 3 feet through, provided they are looked after and well watered. I have had them begin flowering in July and continue till cut down by frost towards Christmas.—G. MERRITT.

CHRISTMAS ROSE BUDS.

AMONG the many ornamental aspects of the early Hellebores, whether growing or cut for indoor enjoyment, perhaps the beauty of the flowers in the bud stage is hardly enough noticed or appreciated. The flower is bold and beautiful in all states, but is singularly graceful when drooping in early bud and in its younger half-expanded bloom. This is most noticeable in the varieties that are pure white outwardly, and whose buds are long and



Buds of Christmas Rose.

slender. Our engraving draws attention to the grace of bud form of this noble winter plant, both as growing and as a little handful gathered for room decoration, grouped with a leaf or two of the broad-leaved Saxifrage, whose warm winter tints set off the pure white flowers charmingly. The leaves of the Christmas Rose are too precious to cut, and in many soils they are not in good order at blooming time. It is worth while to grow some plants of the common *Helleborus foetidus* (easily grown from seed and doing well in any out-of-the-way corner) for its fine supply of handsome leaves to accompany the Christmas Rose flowers.

Day Lilies.—These are specially adapted for wet places or for growing near water, a position in which they are just at home, inasmuch as they are fond of moisture, and their flag-like leaves and bold flowers are strikingly pretty, associated with aquatics or the grand old Lily of the Nile or Arum Lily (*Calla aethiopica*), all spare plants of which should now be put out in ponds or in basins of fountains to grow and bloom during the summer. The largest of the Day Lilies is *Hemerocallis Kwanso*, which attains a height of about 3 feet, and has strong flower-stems that bear large brownish coloured blossoms, which are of short duration, but though that is so, others follow quickly and continue opening in rapid succession. Besides the green-leaved form of *H. Kwanso* there is a variegated one of the same kind which has foliage beautifully striped with rich creamy white, and almost as nice-looking a plant as the well-known *Pandanus Veitchi* that requires the heat of a stove. The freest blooming of the *Hemerocallis* is *H. flava*, which has rich yellow flowers, and is so good that no herbaceous border

should be without it, as it makes a very fine show; besides being of such value outdoors, it forces well and is worth taking up for that purpose or potting to embellish the greenhouse. Those who are not so fortunate as to possess this *Hemerocallis* will find this the best time to get it and plant it, or for taking up any to divide, as they may now be cut through without any risk if each piece severed has roots and a crown.—S. D.

Daffodil names.—THE GARDEN (p. 331) has unintentionally maligned the floral committee in this matter. It is true that the very fine Daffodil sent to Kensington by Mr. Krelage as General Gordon was re-named *spurius coronatus* by the committee, but this re-naming was done for the purpose of simplifying the nomenclature, not of complicating it. A reference to the catalogues of Mr. Barr and Mr. Ware for 1884 will show that the name *spurius coronatus* had already been given to a Daffodil which in Mr. Barr's opinion is identical with Mr. Krelage's variety; the name already printed was therefore retained. I hope to be allowed to say a few words more about this Daffodil and about the general question of nomenclature by-and-by.—G. H. ENGLEHEART, *Appleshaw, Andover.*

—You have been somewhat misinformed as to the floral committee changing the name of Krelage's General Gordon into *spurius coronatus*. The committee simply recognised the flower as being identical with one named *spurius coronatus* by the Daffodil committee last year, and out of deference to that committee and to avoid the confusion of two names, the floral committee requested that last year's nomenclature should be continued. Opinions may differ as to the convenience of Latin or English names, but no one would like two sets of names, or that names given last year after deliberation should be altered by individuals either inadvertently, as in Mr. Krelage's case of General Gordon, or purposely, as I fear is being done in other instances. Nothing but confusion and disappointment can arise from duplicate names.—W.

—The writer on this subject (p. 331) has put the saddle on the wrong horse. A little inquiry would have satisfied him that the name *Narcissus spurius coronatus* was that decided upon by the conference committee. The name will be found on page 34 of Barr's "History of the Narcissus." For the misleading name that body is entirely responsible. It would have made confusion worse confounded if the name General Gordon had been allowed to stand when the same plant had been previously well known under another name. In a case of this kind the committee of the Royal Horticultural Society and the conference committee have always worked, and will continue to work together.—J. DOUGLAS.

—In your issue of April 18 (p. 331) the floral committee are charged with changing the name of *Narcissus General Gordon* to *N. spurius coronatus*. Permit me to reverse the statement. The floral committee awarded a first-class certificate to *N. General Gordon*, and this was by chance noticed by a member of the Daffodil committee. Mr. Barron was then informed that the same variety had last year, by the conference committee, been recognised under the name *N. spurius coronatus*. It was then taken back to the floral committee, who, after demanding and receiving evidence that the correct name was *N. spurius coronatus*, the award to the flower under its old name was confirmed.—ARGUS.

**** Uniformity in the nomenclature of plants is at all times desirable, but in the case in question why not have exchanged the Latin name for the simpler one of General Gordon? There are so many forms of the so-called *spurius*, genuine and otherwise, in catalogues, that probably this fine *spurius coronatus* will be confused with them. It is our opinion that no one now has a clear idea of what Hawthorth's (*Ajax*) *spurius* really was; therefore all the more reason to suppress the name. Besides we are under the impression that one of the chief points settled by the Daffodil conference last year was the suppression of Latin names to varieties and the substitution of popular ones. It is incon-**

sistent to still retain Latin names for some sorts and give popular names to others.—Ed.

CHRISTMAS ROSES.

Now is a good, even if not the best, time to plant or divide clumps of these favourite flowers. A few years ago only the common weedy little *Helleborus niger* (see *Botanical Magazine*, t. 8) could be found in gardens, and even yet it is far too common. Then the late Miss Hope, of Wardie Lodge, Edinburgh, drew attention to the large *H. maximus*—*H. altifolius*, and also to a large white-flowered kind, which Mr. Barr calls *H. angustifolius* var. *scoticus*. Both are good free growers, and a great advance on the wild type to which I have before alluded. Then a year or two ago "Veronica" first drew attention to a very fine green-stalked form, with pure white, Eucharis-like blossoms as existing in Irish gardens, and this is now well known to the best of hardy flower growers as "St. Brigid's Christmas Rose." But more recently Mr. Brockbank has described a similar form as being plentifully cultivated around Manchester, and as this has also been distributed as "St. Brigid's Christmas Rose," some little confusion may be expected to arise. All these varieties are far in advance of the wild Austrian *H. niger*. During the past season Mr. T. Ware, of Bath, has sent me flowers of several varieties, all more beautiful and all quite distinct as garden plants from the type. Of these one called *H. niger ruber* is a gem, with its large shapely flowers stained or suffused with rosy wine colour. It is a vigorous grower, and when better known will be one of the most highly valued of all these Christmas flowers. Another form has shapely white flowers and neatly rounded leaflets, and is a great improvement on the type. *H. niger major* (Bath variety) is another kind to be commended. It may be some years ere these forms get into the hands of private cultivators, yet it is pleasant to know that such fine forms of sturdy habit do really exist. Lastly, comes a plant from Mr. Poë, of Nenagh, seemingly intermediate between *H. maximus* and *H. angustifolius*, and again a great advance on the typical variety. It is somewhat in the way of Miss Hope's *H. niger scoticus*, but yet different from that variety as grown at Wardie Lodge, and it is well worth a place along with a form of *H. maximus*, grown at York by Messrs. Backhouse, which is of a taller and more slender habit than the typical *maximus* of our gardens.

Having myself found some little difficulty in the culture of these flowers, I have come to the conclusion that in hot dry soils they like shade as well as shelter and plenty of good rich cow manure dug into the soil at 18 inches or even 2 feet in depth. If stones the size of hen's eggs are added to the soil if it be fine and sandy, so much the less will the plants suffer from drought in June and July, when green fly follows, and then good-bye to all hope of perfect blooms. There are but few other evergreen perennials that root so deeply as these do, and they enjoy either plenty of manure deep down in the soil or copious doses of liquid manure in May and June when making their growth. In some soils and positions this race of *Hellebores* lose their leaves annually, become herbaceous in fact, which weakens them very much. They do best in a good deep, moist, red loam; if stony so much the better. Since writing the above, a friend near Bath has kindly

sent me the following notes as to the method he adopts to ensure success in the growing of these beautiful and classical flowers:—

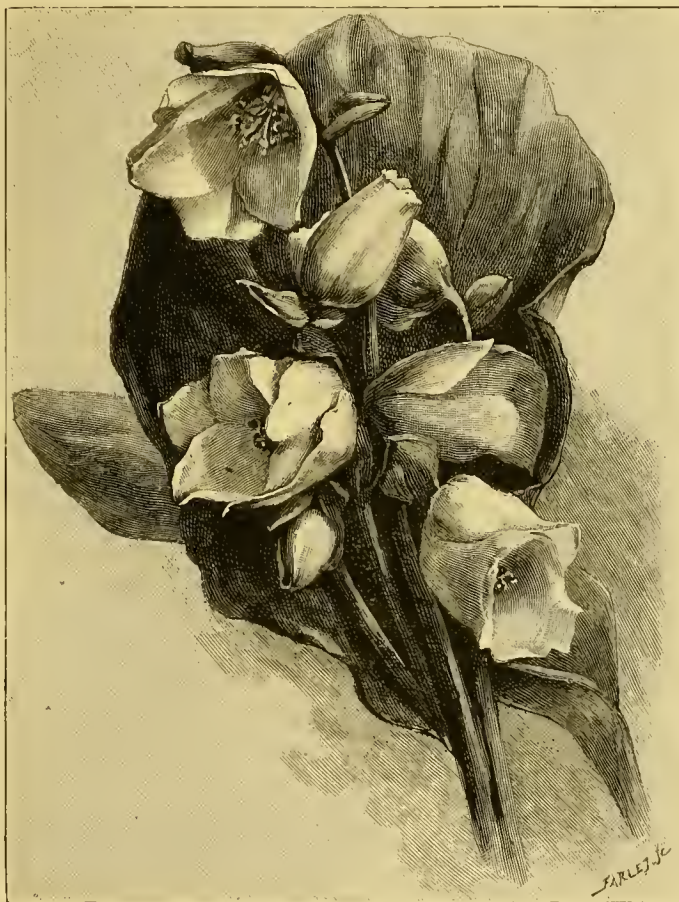
"Now, as to the culture of *Hellebores*, my short experiences here leads me to believe that a good climate is necessary to their well-being and not merely soil alone, although they enjoy a good deep one. I have lifted *H. maximus* with roots of one season's growth nearly 3 feet long. We have here a moist stony subsoil, and this seems to keep them up during summer, when they usually suffer so much elsewhere from drought.

"Although here with us they do not really show signs of want of rain during the summer, in the absence of rain we water them well once a week, as they are, I think, when growing thirsty subjects. With us they do not get a scrap of shade, but there can be no doubt that they require it where the climate

we attend to them and give them good nourishment whenever we think they want it, and we get the finest of flowers as a reward." Christmas Roses are so much appreciated at the present time, that I hope other growers will give us the benefit of their experience. My own may be summed up as follows: Deep culture, with abundant manurial stimulants, solid or liquid, good shelter from dry north and north-east winds, with copious waterings if the soil be at all dry and porous. This year we are trying a system of permanent pot culture in cold frames, the result of which remains to be proved, but the leaf growth is good to see, being far ahead of that in the borders.

F. W. E.

Heliotropes are always acceptable on account of their sweet perfume. They can be grown in many ways; in the flower garden as bedding plants, in pots for house decoration, and planted out in greenhouses and conservatories for cutting from. There is now quite a large group of *Heliotropes*, and therefore purchasers can make a varied selection. Some of the very best are White Lady, pure white, a very free-blooming variety, well adapted for cultivating in pots in order to have flowers all the year round; President Garfield, bright mauve-purple; Swanley Giant, pale rose colour, an admirable variety for planting out for covering walls; Duchess of Edinburgh, one of the darkest, an excellent bedding variety; Lady Molesworth, a variety that opens quite dark, but becomes paler with age; Sensation, bluish purple, very distinct, and good for any purpose; Mrs. Lewington, a very fine and useful dark variety; and Madame Margenot, reddish violet, large trusses and very fine. In forcing the *Heliotrope* the principal point to be attended to in its winter management is never to allow it to become dry at the root and to prevent all cold draughts of air from striking it. If good flowers are to be expected, keep the plants comfortably warm—say in a temperature of from 50° to 55°—otherwise they become sickly and stunted, lose their leaves, and become of little value. The great beauty of the *Heliotrope*, in addition to its flowers, is its foliage, and, like the Fuchsia, if it once loses that, it cannot be replaced. About Christmas the earliest plants may receive their final stopping and be encouraged to grow on as much as possible. Plants thus treated should



Half-opened buds of Christmas Rose.

is dry; for instance near London they make a bold start in spring and before June is out they get green fly and exhaust themselves, while here they make a second crop of foliage and continue growing all the summer through, whether watered or not. The common *H. niger* is the worst grower of the group. The six varieties which I am pleased to be able to send you are all good free growers, and I hope may do well with you. I do not know anywhere in England where *Hellebores* grow so finely as they do near Bath, and even there they vary, doing much better in some gardens than in others. Mr. Ellacombe, of Bitton, cannot grow them successfully, though only four miles from Bath. The first year after planting our plants get a mulching of manure in May and a good drenching of water in dry weather. We conduct the water about in iron pipes from a large tank at the top of my garden, supplied from a spring, and the ground being on a steep slope we get a good force anywhere. Stand-pipes are fixed at certain intervals, and an india-rubber pipe is attached. With this a man can get over a deal of ground in a day; in fact,

now be finely in flower.—R. D.

Daffodil Sir Watkin.—Mr. Brockbank continually puts forth statements and proves nothing. If Sir Watkin descended from an "old mountain giant," surely his descent might be traced, and as Mr. Brockbank is given to pilgrimages, I hope he will not let the season pass without making an effort to find some trace of this interesting great mountain Daffodil. I am very much of opinion that Sir Watkin was raised at Longford Bridge by the late Mr. E. Leeds, and what makes me think so is the fact that after studying some kindred forms which were certainly raised by the late Mr. E. Leeds, viz., incomparable Edward Hart, Sir William Harcourt, and Hudibras, I come to the conclusion that these are all steps in the ladder, Sir Watkin being [at the top].—AN OBSERVER.

Chionodoxa Lucillæ (p. 304).—With reference to this plant I may say that up here in my garden seedlings spring up of their own accord, like Mustard and Cress, without any sowing, just as they fall from the ripe seed vessels on the plants.—A. R., Windermere.

FRUIT GARDEN.

EXTENSION MELON CULTURE.

MELON growing on the extension system is, I think, likely to become popular. Cucumbers have long been grown in a free, unrestricted way, one or two plants frequently filling a house, and why not Melons? The plan has long been successfully practised at Longleat. At that place the favourite variety is the hybrid Cashmere, but it was found nothing could be done with it unless it was allowed to grow almost unrestricted, as stopping was invariably followed by canker and failure was naturally the result. Eastnor Castle was also tried in the same manner and did well; indeed, I have never seen such grand crops of this variety as at Longleat. There was no mistaking the superiority of the system, and since I have adopted it Melon growing has become a comparatively simple matter. At Longleat large fruit are in demand, and as there grown Eastnor Castle is very fine and of the best quality. We have not succeeded so well with it, many of the fruit being ugly in shape, and besides they grow larger than we want them. Our favourite sorts are Hero of Lockinge, green flesh, and Blenheim Orange, scarlet flesh. Both varieties are handsome in appearance, and both, if well grown, are not easily surpassed when in competition with other varieties in their respective sections.

CLEAN, HEALTHY PLANTS only are preserved, as I hold that it is a great mistake to plant any that are weakly and dirty, for it is almost impossible to thoroughly dislodge insect pests that have been allowed to get well established. I consider the first week in February quite early enough to sow seed for the earliest crop, another sowing being made about the middle of April for planting in May. If sown much earlier, the progress which the seedlings make is very slow indeed, and oftener than not they become miserable, spindly objects, which under favourable treatment may attain a respectable size, but which are more likely to be weakly throughout their career, finally collapsing when subjected to a severe strain. We sow singly in 3-inch pots filled with fairly good soil, and place them on a raised hot-bed in a light forcing house. Here the seedlings grow sturdily, a light support being placed to each rather as a precaution than a necessity. Before they become root-bound they are shifted into 6-inch pots, using a loamy soil previously warmed and potting rather firmly, and they are kept growing in a sunny or light position, well away from any insect-infested stove plant. In this manner we obtain vigorous plants, and these, being planted before they experience a check, soon reach the trellis, and keep in robust health throughout. In order not to be under the necessity of fruiting them early, a few plants are fruited in 11-inch or 12-inch pots, each carrying on an average three medium-sized Melons. At the present time (April 17) these pot plants are fast swelling off their fruit, which will ripen late in May or quite as soon as required. About the time when the seedlings receive their shift their fruiting quarters are prepared for them. These consist of four square pits in each house, formed with loose bricks on an iron grating over a heated chamber. No heating material, such as leaves or stable manure, is used and no attempt is made to closely cover the chamber for the purpose of providing bottom heat, this being quite unnecessary. The pits are four bricks square, five bricks deep, and each holds about three bushels of soil. Preference is given to rather clayey loam, ours usually being cut fresh from under the turf of good pasture land; to each bushel we add an 8-inch potful of lime. If these pits of soil have not become well warmed through at the time when we wish to put out the plants, the requisite warming is quickly done by simply plunging about three heated bricks in each for a short time. We ram the soil firmly about the plants, but do not attempt to make it as hard as a road—an unwise practice still thought necessary by some cultivators. A certain amount of ramming

may be judicious, especially if the soil used be loose in character, the firmness being necessary to insure sturdy fruitful growth. Melons when first planted require but little water, but when well established they must have liberal and frequent supplies, much oftener, in fact, than plants on beds of decaying heating material. The latter frequently get much more water than is good for them, but in the case of our brick pits we can easily examine the sides of the heap of soil and water accordingly—once a day or oftener. Directly the soil has become full of healthy roots a shift is given, that is to say, the walls all round, or on as many sides as space will permit, are pulled down, and set out wider, usually about the space of a brick being allowed. This is filled up with more fresh soil, to which is added a liberal sprinkling of Beeson's manure, well ramming the whole down as in the first instance. The old square of soil for some time receives the heaviest waterings, as should this be allowed to get very dry, probably the plants on the first bright day would be badly burnt. When the fresh soil has also become closely occupied by roots a thin top-dressing of good loam and leaf soil with a slight addition of artificial manure is given, the aim being to keep the roots active, or otherwise it becomes impossible to support the mass of foliage and fruit. The method of

TRAINING THE PLANTS is equally simple as the root treatment, and this I will endeavour to point out as plainly as possible. Our Melon houses are three-quarter span-roofed; the plants are placed at the front, each having a space about 8 feet wide, and they are trained from the front to the back wall. The same plan would be adopted if the houses were span-roofed, only if at all narrow more width would be allowed each plant. The wires of the trellis are strained across the house at about 12 inches from the glass, and are passed through iron eyes screwed in the principal rafters, the plants being supported with stakes till the trellis is reached, and having all side shoots closely rubbed out, are then trained straight up the roof, all the best placed laterals being laid in on each side. The latter should not be crowded, and each ought to be at least 1 foot clear of its neighbours. Neither should they be stopped till they have nearly reached the limit assigned them. It is the sub-laterals or side shoots produced from the lower laterals that should be first fruited, and the plants by that time having attained much strength, no difficulty is experienced in setting abundance of fruit. We consider six on each plant ample for the first crop, and the strain not being severe another crop of fruit can be set long before the first has matured. As a rule, we do not interfere with the setting after the first crop is started, as we find that the plants continue to swell fruit at intervals and in accordance with their vigour. Thus we have fruit in various stages of growth all on the same plant, some being produced on the sub-laterals, others on the last formed laterals, and the remainder on late-formed back growths. The use of the knife is seldom resorted to, crowding being prevented by early disbudding, or else by stopping with the finger and thumb. Sometimes it is not necessary to stop the shoots beyond the fruit, but where they are strong they are stopped at the second or third leaf. This season we shall try to grow a plant or two still more like Cucumbers, stopping them when they have reached the trellis, and again at intervals up the roof, and believe we shall secure a crop from the sub-laterals at each stopping.

OTHER CULTURAL DETAILS are very similar to those generally followed, and I will only briefly touch upon them. At the commencement, our night temperatures range from 60° to 65° (we cannot keep the house any hotter if we would), and in the daytime from 65° to 70°. Later on the figures are raised by about 10°, a little air being given at the top of the house during bright sunshine, closing early so as to run up the thermometer to about 90° and freely syringing the plants as well as the floor and walls of the house at the same time. In hot, dry weather the floor of the house is frequently damped, and we also lightly shade the glass with thin lime-water applied with

a syringe. The plants, as before stated, receive abundance of water when they most require it always slightly warmer than the temperature of the house, and this is frequently varied with freely diluted farmyard liquid manure. No drying off the plants near the time the fruit should ripen is ever thought of, the fruit ripening in due course, and much more rich and luscious thus treated. Any fruits approaching maturity are lightly supported, and when they commence to change colour they are damped as little as possible, or otherwise they would be more liable to crack. When they are cracking round the stalk and before they separate from it they are cut, placed on a shelf in the same house for a day or two to finish colouring, when, if not wanted at once, they are transferred to a cool fruit room where they will keep for several days and yet be good when cut. I do not assert that by this method a greater number of fruit can be grown in a given space, or that by no other means can fruit of a similarly good quality be grown. The advantages I claim for the practice are simplicity, comparative immunity from insect pests, notably red spider, non-liability to canker owing to the stems and growth generally being of a hard and durable nature, and the almost certainty of securing a good succession of handsome, heavy, and finely flavoured fruit.

W. I. M.

THINNING GRAPES.

FROM the middle of April until the end of May is the period during which Grape thinning is most common, as then all midsummer, autumn, and winter Grapes require thinning. The small vineries belonging to amateur growers are seldom started into growth until the days lengthen, and the majority of these are just ready for thinning at this time. That operation might be divided into two sections—first, the thinning of the bunches, and then the thinning of the berries. All Vines in good health produce a great many more bunches than are required to form a crop; very often, especially in the case of Gros Colman, Foster's Seedling, Duchess of Buccleuch, and some others, there are two, three, and sometimes as many as four bunches produced on one shoot, and one of these is enough for a crop. Again, every shoot will produce at least one bunch, but it is very seldom one bunch can be allowed to remain on each shoot, as that would be too heavy a crop; the whole of the bunches must therefore be judiciously thinned off before the berries have swelled to any extent. The very smallest of the bunches may be cut off before they come into flower, but a general thinning should not take place until the berries are fairly formed, when the worst shaped bunches and those in which it does not appear the berries are well formed should be taken off. In doing this, the important question of the proper quantity to leave for a crop will occur to the thinner, and this is a most difficult matter to decide properly, so much depends on the strength and age of the Vines. One year's experience, however, will help the cultivator, as it is easily seen when the Vines have matured their crop whether it is too heavy or not. If the fruit did not swell up well and finish off nicely last season owing to the crop being too heavy, do not fail to have it lighter this season. If the Vines finished off the fruit beautifully, and gave the impression that they could have perfected more, do not thin the bunches so much this time. Over-cropping is a serious matter, as it cripples the Vines and the fruit produced under such conditions is always inferior. It is much better to under than over-crop. We have rods of Gros Colman just now bearing fifty-five and sixty bunches. The rods are about 18 feet in length and the bunches are in bloom, but before they have formed berries the size of Peas they will be cut off until only about twenty bunches to a rod remain.

As soon as the berries are the size of Peas, thinning should begin. Those who have had no practice in this work will not thin very quickly at first, and it is well that they should do it slowly, as to attempt to thin fast would lead to taking out many berries that ought to remain, and it is an easy matter, too, to injure those left, as the point

of the scissors may penetrate them, and the operator not know that he is doing harm until the decay hereafter exhibits itself. Practical hands soon run over a large number of bunches, and make no mistake; they know pretty correctly the size to which each berry will ultimately swell and thin accordingly. For several years we had six weeks each spring day after day Grape-thinning, and wearisome work it was, but the practice once acquired is not readily forgotten; and I would advise all beginners to attend to it diligently at first, and note the results of their work as the fruit develops itself. The berries should be well cut from the centre of the bunch to begin with, then thin the extremities, but do not cut off the very outside ones, as that would reduce the size of the bunch, and as a rule it will be found that those outside ones swell up best. Thick clumsy scissors should never be used for Grape-thinning. Long narrow ones are the proper sort, as they may be pushed between the berries without doing any injury. They should be clean and sharp and cut the footstalk through without the slightest difficulty. A small twig of Birch, in the form of the letter Y, should be used for holding up the shoulders of the bunches and moving any of the berries which require touching.

Some say that rust is produced by rubbing the berries with the fingers or touching them with the head, and although I do not credit this, there is no advantage to be derived from rough handling, and this is why the stick in question should be used. Black Alicante and Lady Downes have generally a great many small berries in each bunch, and these should be taken out first, allowing the largest and most robust to remain to form the crop. Muscats do not always swell up evenly, many bunches being composed of large and small berries, and it is very important that the whole of these should be clipped out. Where the berries gain a larger size in maturing than was anticipated, a few of them from the closest part of the bunch may be taken out just as colouring begins.

CAMBRIAN.

AUTUMN STRAWBERRIES.

We have just planted out about 800 plants of the variety Vicomtesse Héricart de Thury. From these we obtain our earliest runners of this variety. They begin throwing up their flowers about three weeks later than the ordinary Strawberries, so that they form an excellent succession to Oxonian, which is our latest variety. I annually adopt this system. I have been asked repeatedly if these plants, which bear such a profuse second crop, are not weakened for the next year's work, and I have always answered in the negative; in fact, I see no difference whatever between them and the usual plantations of Strawberries that have not borne autumn crops. I may here add that these 800 plants have all been forced this season. On or about the 25th of this month I intend to plant out a similar number of La Grosse Sucrée, which forms an excellent succession to the Vicomtesse. This variety I find to be excellent in many ways, and I shall grow it largely next season. For a third batch we employ Sir Charles Napier, which gives us numbers of excellent dishes of fruit all through October. The great point to be observed in this kind of work is to have no delay. The very day on which they come out of the houses they should be planted out and protected with small Yew branches. The site now occupied with the first lot is a south border, which on one day had upon it the remains of Snow's Winter Broccoli; on the next it was manured heavily, dug deeply, and planted as the digging proceeded, and, moreover, it was refreshed by a good soaking with water.

I may mention that each variety of Strawberry just named has its own peculiar characteristics. Vicomtesse Héricart de Thury, if taken from strong plants for forcing, becomes too large, splitting up the centres into half a dozen crowns, which to me is a bad omen; one well-ripened eye is the thing desired. This is the reason why I employ forced plants from which to get my first early runners—they are just the right strength.

La Grosse Sucrée, on the contrary, cannot be got too early. I plant in autumn a bed of this variety purposely in order to get runners for forcing, and have never yet had occasion to regret doing so. Just now I have about 800 pots swelling fruit most satisfactorily.

R. GILBERT.

Burghley.

Vines on the extension system.—Mr. R. L. McIntosh gives (p. 310) his experience in regard to this system, and although he has told us nothing that is new, his testimony is valuable as being likely to assist others who may be doubtful as to the utility of this method of Grape growing. As regards myself, I was many years ago convinced of the superiority of the extension system, and have acted on it, and did so in the case of a newly planted viney last year. The Vines were cut back to the wall plate in the winter, and every bud that started into growth was allowed to grow its own way; not one was removed, but the strongest shoots had their tops taken off twice during the summer. The rest were allowed to ramble about on the wires as they liked, and the result was that long before the autumn rods had reached the top of the house nearly every foot of wire space was covered, and this with one summer's growth from newly planted Vines. At pruning time I found the wood thoroughly ripened and the stems large enough to furnish bearing wood. These Vines are now showing a greater number of bunches than they must be allowed to carry, seeing that they are the result of only one year's growth. It must not, however, be supposed that I think I have accomplished anything extraordinary, as I am aware others have obtained equally satisfactory results. I only mention the facts as they have occurred. Many are still sticklers for restricting the growth of Vines, but I am satisfied that if they adopt the extension principle, they will have no cause to regret the change.—J. C. C.

NOTES.

The first fruits of a newly made little rocky terrace for dwarf Irises comes in the form of the sky-blue I. pumila cœrulea, a dainty, solitary little flower, but soon to have company, as I see not only this, but other kinds are throwing out their buds in plenty. The little "Widow Iris"—the Vedova of Florence—has grown here like a weed for years, and its robust health and spreading habit have charmed one or two of our visitors who mistook it at first sight for I. reticulata, which it somewhat resembles in leafage. It is the Iris tuberosa of botanists, and bears erect solitary flowers of a silky greenness, each of the fall petals having a blackish velvety blotch; hence its popular name. I quite agree with "G. J." in thinking the soft and fluctuating colour of this little Iris most lovely. Our clumps of Iris stylosa have long been a source of anxiety, but now we have flowers on those also, and the secret in both cases is a dryer position. We have failed for years to grow many Irises that now seem inclined to luxuriate with us through having fancied they liked moist places; but one day in looking over Wood's "Tourist's Flora" I was a little surprised to see that some of the European species generally grew in rocky places or on old walls, and so we have altered our tactics. Only the other day Professor M. Foster, king of Iris growers, told us that many of the Irises liked exposed positions in full sunshine, and this is also our own experience.

The white Daffodils are now most lovely; especially so is N. tortuosus, with its broad, high-shouldered perianth and sulphur cup. Mr Hartland has sent us at least six or eight distinct varieties this season, the most distinct being N. cernuus pulcher and N. moschatus Minnie Warren. The last is quite a little gem. Fancy a dainty white Daffodil scarcely so large as N. nanus, and with leaves almost so narrow as to seem Rush-like. No doubt when we get all the wild white Daffodils collected in Spain we shall find them nearly, if not quite, as variable in size and form as are the more robust yellow sorts,

"The Pale Maiden" of the wind-swept Falkland Islands is at last happy with us, and is throwing up several stout scapes in a cold frame. Its roots came wedged tightly in a sod of Lomaria alpina, and there they both are now in a little pot side by side just as they were at home on the other side of the Equator. Perhaps this fair lady among the flowers of the south objects to travel alone, and only seems happy because she has an old friend ever near to her. At any rate, other plants which were equally healthy are dead, and the one in the Fern tuft is bright and happy. Ah! I forgot to mention the botanical name, and "Veronica" has been so lectured of late, that one must be careful in future. The plant is Sisyrinchium filifolium, but the lady who carried the plant home for me says "Fair Maiden" or "Pale Maiden" is its name in the Falklands, and that it there flowers in about a year after the seed is sown.

The best Daffodils now in flower are N. maximus, N. Horsefieldi, N. princeps, N. cernuus pulcher, N. moschatus, N. incomparabilis Stella, N. Sir Watkin, N. obvallaris, and N. Emperor. The other day Mr. Ware sent us a Spanish Daffodil, one of the richest in colour I ever saw. It is dwarf and sturdy in habit, and at first sight might be mistaken for the Tenby variety, but if you place the two kinds side by side a great difference is apparent. In colour Tenby then appears quite pale. The trunk, again, of this bright golden trumpet of Mr. Ware's is flanged at the brim, as in N. obvallaris, but instead of being six-lobed and crenulate, it is more deeply and irregularly lobed or gashed. Among the flowers was one with eight perianth divisions, eight anthers, and a four-lobed style, which seems to be the first step from single to double among these flowers. This sturdy deep golden variety is one of the most distinct forms I have seen this season among the self or yellow-flowered race. Horsefield's Daffodil is now glorious, the perfection of all the N. bicolor race, as I think, for ordinary garden culture. The whitish perianth and yellow crown are lovely—"apples of gold set in silver," and to see a good large bed of it in full flower is a great treat on a sunny April day.

Gardening experiments are not always successful, but I am very glad to have settled, for ever so far as I myself am concerned, the right and proper time to plant or to replant Narcissi. I moved our whole collection here—thousands of bulbs—in July and August last, and the result is greater vigour of leafage and blossoming than we ever had before from old-established clumps. At the time named both leaves and roots were alike decayed, and the bulbs themselves were like so many cricket-balls. After digging, the bulbs were placed each kind separately with its label in a deep flower-pot, and they were covered with earth to prevent their coats becoming dry. After the ground was dug nearly a yard deep, the bulbs were at once replanted, a little sand being sprinkled along the rows. It may suit the conveniences of trade growers to dry off or rest their bulbs, but we shall never risk our Daffodil roots in that way. The best time to remove and replant them is when roots and leaves have died away, and when replanted at that time they actually benefit by the removal.

Plump green buds are bursting from a thousand twigs and shoots on hedges, walls, and trees alike. Clematis calycina shows its Hazel-nut-like grey-green buds and bell-like flowers, and the soft catkin-like racemes of the Wistaria promise well for the Grape-like clusters of flowers in May. Forsythia suspensa is a mass of golden bells, and the fiery red of the Pyrus japonica on the old grey walls forms a glorious background for silver and gold of the various Daffodils. The Crown Imperials are most stately, each flower-bell filled, as it were, with pearls.

The Primrose season is already upon us, and beds and borders are alike gay with their flowers. The rosy species with its bright garnet-like buds is universally admired, so also are P. marginata and the dainty little P. minima. For breadth of effect and showiness, the large Oxlip

race is far beyond all others, being of vigorous habit and throwing up great trusses of white, yellow, and vivid orange-eyed flowers. We raise a batch from seed every year, and find all the Primroses to succeed best here when treated as annuals. Indoors, *P. poculiformis*, *P. floribunda*, and *P. verticillata* are now blooming, the last perfumed with the essence of all the Cowslips—the whole set a trio worth a place in every garden.

The Violet Cress.—*Ionopsidium acaule* is a little annual popularly known by the above name. It grows an inch or two only in height, each seedling forming a dense tuft of leaves and flowers about 3 inches across. It is such a pretty little plant, and flowers so freely nearly all the year round if sown at various times, that it should find a place more often than at present is the case. It is one of the very best of plants with which to carpet bulb beds and borders, because its roots are small and do not rob the soil, nor even shade it from the sunlight to any serious extent. It flowers in two or three months after sowing, and on light sandy soils sows itself, and so gives but little trouble to keep up a stock. A few seeds sown in small pots and wintered in a sunny frame form pretty tufted masses of lilac flowers in the spring, and are very pretty for decorative uses.

The Orchid conference is likely to be a great success, but it is much to be regretted that Prof. Reichenbach was not induced to come over in person, instead of his merely sending over a written communication. I am sure all of us would have liked to have welcomed him, and perhaps some of us might also have questioned him as to the nomenclature of these plants. In a recent number of a contemporary I see that he has taken to naming our horticulturists as well as our Orchids, but I object to Mr. Elwes being dubbed the "king of Lilies;" indeed I am sure Mr. Elwes himself would be the first to "render unto Caesar the things which are Caesar's," and to offer Mr. G. F. Wilson a title which he has so well won! It seems strange that no English botanist will take up the study of the Orchids, seeing that the Kew herbarium and English gardens offer facilities superior to any elsewhere.

One of the points to be raised at the Orchid conference, no doubt, will be in reference to the nomenclature of garden Orchids, hybrids and seedlings. It is high time that we ceased using Latin names for plants which are not one bit more different from each other than are common florists' flowers. A few years ago every new variety was a "*gloriosa superbissima*," and now we get far too many of the "Bogsoni" and "Jobsoni" type. If the Orchid conference committees will free us from the incubus of Latin names for garden forms and slight natural variations, they will not have met in vain. When we have at least 300 genera and from 7000 to 10,000 wild species of Orchids with Latin names, it is a little too ridiculous to go on naming every native seedling and slight variation from these in Latin also when English names would serve the purpose quite as well.

Fashionable flowers as the Orchids may now be, the mere fact of their being expensive to purchase, and still more expensive to cultivate, has given them a fictitious value in the eyes of unthinking people. As a recent writer expressed it, "the Orchids are not more beautiful than the Irids, but they are ten times more expensive to grow." Let those grow Orchids who admire them by all means; let them weed out their bad varieties for the encouragement of the new beginner, for after all it is, perhaps, better to spend money on Orchids than on horse-racing. There is no gainsaying the fact that some Orchids are exquisitely lovely—strange beauties in a strange land. What I argue is, that Orchids are usurping the place of other plants equally, even if differently, beautiful. We have fifty collections of Orchids in England, but no one collection of greenhouse or stove bulbous plants, and I know of no amateur rich enough to found a good garden for economic plants. Those who will look long enough and

close enough at the golden Orchids may see more than a grain of truth in this matter.

The Orchids certainly deserve all the respect that a lover of all flowers can give them, and I have done my best not only to love them, but also for the past twenty years to praise them, but I am not of those enthusiasts who "empty the purse of Croesus into the coffers of the Orchid merchants." There is a tendency just now to over-rate both the beauty and the value of Orchids. Of course, if any individual likes to spend thousands of pounds annually on Orchids, he has as much right to do so as I have to spend shillings on Primroses; but one must not confound the real beauty of a plant with its market value, as many people now do. It is not the most beautiful of all the Orchids which are most valuable, but the rarest ones. In a word, the real love of beautiful Orchids has degenerated into a mere craze, with a dash of stock exchange speculation thrown in, just as cayenne pepper is sometimes mixed with champagne! VERONICA.

OLD CYCLAMENS.

A GREAT deal of the cultural directions respecting Cyclamens appears to be based upon the method of raising seedlings and treating the plants until they flower. Comparatively little is said about treating the bulbs after they have once bloomed; and yet I have seen in Mr. H. B. Smith's collection many plants eight and nine years old, and was shown one specimen that was fifteen years old. The corm, as might be supposed, was so large, that it quite covered the surface of a large pot. It was astonishing what a vigorous free-growing specimen this was, and as many as eighty flowers were picked off it at one time. It was kept by Mr. Smith because it was of excellent quality and pretty in colour, being found valuable for seed purposes. These old plants require a time of rest, and they must on no account be neglected. The corms have to be preserved with some care, but a little extra attention works wonders with them. They must be potted in a rather light, rich soil and brought on gradually, and thus treated they make admirable specimens.

The extent to which Mr. Smith grows Cyclamens at his Hanwell Nursery is something astonishing. It is not unusual for him to pot off 25,000 or 26,000 seedlings. The seeds are sown about September or earlier, according to the time they ripen, generally in pans. When they have made two or three leaves they are pricked off into pots, about twelve in a pot, and a light rich soil is used, a good deal of leaf-mould being incorporated with it. It is worthy of notice that the young leaves take on a long heart shape, and they afterwards gradually assume a round form. At the end of February the plants are potted singly into 2½-inch pots, then into larger ones in April and May, and again into 6-inch pots in July, as the seedling plants flower earlier than two and three-year-old plants, and thus by means of the latter the season is considerably prolonged. To show what a rapid development there is in a plant fifteen or sixteen months old, one in a 6-inch pot had thirty flowers fully expanded, and with another one hundred to expand, and what a window plant a Cyclamen makes! One lasted in flower fully four months placed in the window of an ordinary sitting-room. Two-year-old plants make very fine exhibition specimens, and, if the variety is good, carry magnificent heads of flower. The large-flowered varieties of Cyclamen require time to fully develop their flowers; a fortnight is not too much. He has two very fine white-flowered varieties, viz., *Mont Blanc*, with long, broad, well-formed petals, very free; and *Baroness Burdett* Counts, pure white, very fine indeed, with broad smooth petals, stout, and extra fine in quality. R. D.

Lachenalia Nelsoni in sand (p. 306).—I find the following in my notebook written several years ago: "Try these in pure sand; said to grow them 2 feet high." I do not know whose idea this was, but it is evidently not a new one. The flowers of many *Lachenalia*s are erect on the stem, and not drooping, as *L. violacea*, *L. pustulata*, and others.—A. R., *Windermerre*.

GARDEN FLORA.

PLATE 489.

THE LION'S-TAIL PLANT.

(*LEONOTIS LEONURUS*.)

THIS handsome Labiate forms a small shrubby greenhouse plant, which during autumn and early winter is very showy, producing as it does from two to four successive whorls of flowers on all the best shoots of the preceding spring and summer's growth. The accompanying plate well represents the general character of the plant, but it should be mentioned that the leaves are distinctly serrated, paler green in colour, and with more clearly defined venation. In each whorl there are about eighteen flowers, and the corollas are 2 inches long. It was cultivated in the Chelsea Botanic Garden as long ago as 1712, and Philip Miller described it in his dictionary as being very ornamental, but it seems to have been lost sight of until recently. About five years ago I found it in the Ghent Botanic Garden, thence it was introduced to Cambridge, from which probably all the plants now grown have emanated. In Turkey it appears to be a favourite, as it is said to be frequently met with in the gardens of Constantinople and those of its neighbourhood, where it is called the Minaret Flower. It is also said to be largely cultivated in the Imperial gardens. "The natural height of this plant is 7 feet or 8 feet; its leaves, which are evergreen, are oblong-lanceolate, obtusely serrated, shortly stalked, and about 2½ inches or 3 inches in length. The young stems and leaves are soft and hairy. It is named *Phlomis Leonurus* in the *Botanical Magazine*, but *Leonotis* is distinguished from that and other allied genera by its corolla having an elongated, concave, entire upper lip and a very short lower one, which is almost equally three-cleft. A variegated variety of this species was grown in Miller's time, and there is a white variety recorded from South Africa. The plant here represented is a native of that country, and is found near Cape Town, in the province of Uitenage and elsewhere.

CULTIVATION.—It needs a greenhouse temperature; I find that it will not even live against a wall out-of-doors. As regards soil, it is not probably particular; I have found it to flourish well in a mixture of loam and peat. It is by no means delicate, and requires only the usual treatment of greenhouse plants, which are placed out-of-doors in summer. Exposure to light and air during summer is certainly beneficial to it. It is not very compact in habit; some pruning is, therefore, necessary, and it should be done before growth commences—not later than March—in order to secure the strongest possible stems for flowering. Plants raised from cuttings put in now, if well treated, may flower late in the year. Though Philip Miller speaks of it as being an aquatic in South Africa, it grows perfectly if merely an ordinary amount of water is given it.

OF OTHER KINDS, there is only one to which attention requires to be drawn. This is *L. intermedia*, from Algoa Bay and Natal, which, so far as I know, is not cultivated in this country. It is, however, grown along with *L. Leonurus* in the gardens about Constantinople, where it is also called the Minaret Flower. It is (and is figured in the *Botanical Register*, t. 850) described as a fine half-shrubby perennial, which in a stove flowers during the greater part of the year. It is distinguished from *L. Leonurus* by its greater height, by the very long joints of the stem, by the cordate base of the leaves, by the velvety down of the calyx, and by the lighter pale orange colour of the flowers. Its inflorescence is very similar to

* Drawn in Messrs. Cannell's nursery, Swanley, in November.



LEONITIS LEONURUS.

that of *Leonurus*, and no doubt its cultivation would be the same as for that species. The genus includes about twelve species, and there may be one or two—as, for instance, *L. dubia*, that would be worth introducing, but the majority of them—and, indeed, all those not here mentioned of which I have seen specimens—are not very ornamental. *L. nepetefolia* has been in cultivation, it is an annual, and rather a coarse one. All kinds are African, but this extends over various parts of India. R. IRWIN LYNCH.

INDOOR GARDEN.

GARDENIAS AT ALL SEASONS.

UNDER certain courses of treatment *Gardenias* may be had in bloom at almost any time of the year, the season when they are of greatest value being winter, when they fetch a long price in the market, there generally being a great demand for them then for making up into bouquets and wreaths, or for wearing in button-holes or ladies' hair, for all of which purposes they are specially adapted on account of the form and purity and delicious perfume of their flowers. Another point in their favour over other blooms is that they seldom or never fall to pieces, and therefore last without being wired. The best kinds to grow are *G. radicans* major and *G. florida*, both of which form neat, compact bushes, that may quickly be grown to a moderate size, and as young plants are the most preferable, the way to keep up a good lot is to propagate annually and discard the old stock. With a proper propagating box and plenty of heat, *Gardenias* may be struck at any time, the shoots most suitable for forming the cuttings being those that are moderately vigorous and about half ripe, and these should be taken off about 4 inches long, when, after trimming away the lower leaves, they should be heeled close to a joint. As soon as prepared in this way they will be ready for putting in, and may either be inserted by dibbling several into 4½-inch pots, or by placing them singly in 3-inch pots, the latter being best, as then there need be no disturbance after they are rooted, when all that is necessary is to turn them out carefully and repot in 6-inch pots, which answer better than shifting on by degrees.

The soil most suitable for striking *Gardenias* is in peat, which should be mixed with plenty of sharp sand, and it is advisable to fill in with a pinch of the latter around the cutting, which will hold it firm and prevent any damping. If there is not a propagating box at liberty, a good substitute may be had by using handlights or bell-glasses placed on slates in the warmest part of the stove, under which the pots can then be stood and packed round or plunged in Moss or Cocoa-nut fibre so as to keep them moist, which either material will do if sprinkled with water now and then, as it will continue to evaporate and refresh the foliage. Once struck, the point is to grow them on rapidly, which may easily be done by timely shiftings and affording them the requisite warmth and plenty of moisture. Although some object to bottom-heat, I have always found that it greatly improves *Gardenias*, and if a bed can be filled with fresh fallen leaves or a mixture of them and stable manure, it will be a great help, as besides stimulating the roots, it greatly benefits the plants by giving off ammonia and keeping the atmosphere about them regularly humid, which is what their foliage delights in. Before using the fermenting material, however, it is necessary to sweeten it by frequent turnings, so as to let out the fiery gases, when it will be safe and lasting and not so likely to get too hot for the plants. At first plunging these will require watching, and if the heat rises above 85° or so the pots should be lifted, or have the stuff loosened round them, and when the heat declines it may be made firm again. The temperature most suitable for top-heat is 70° by night, rising 10° or 15° by day, or even higher than this during the middle part of the summer, after which plants intended for winter forcing and flowering should be ripened and rested; previous to that stage they cannot

have too much water all the time they are growing, provided their pots are full of roots and well drained, as *Gardenias* are moisture-loving subjects and like copious syringing, which should always be with warm water, and the same for the roots.

The way to rest them is to gradually increase the air, and if the lights over them are movable it is a good plan during September to withdraw them altogether by night, which will do much towards maturing the young wood and setting the buds. To attempt to force without such preparation with a view to get flowers is futile, for if the blooms in embryo are not there, no after management will bring any out. After blooming, the same plants may be kept drier and cooler, and when so rested for a time be thinned out and pruned back, then shaken out and repotted and grown on again. By treating them in this way and having batches coming on one after the other, a constant succession of flowers may be obtained, but to keep the supply up the plants must be perfectly clean, as nothing cripples *Gardenias* so much as mealy bug, an insect to which they are very subject, and unless proper means are adopted, it is most difficult to eradicate. Hand-washing is quite out of the question; the most effectual way of dealing with them is to syringe with water, into which paraffin is put in the proportion of a wineglass to four gallons, and after this has been on a few minutes it should be thoroughly washed off by the help of an engine. This may be done by laying the plants on their sides on a temporary stage made for the purpose, when they may be played at before and behind, which drenching will cleanse them effectually without bruising or injuring the leaves or tender tips of the shoots. Even without paraffin or other insecticides *Gardenias* may be kept clean by the aid of clear water alone if rinsed frequently in the way referred to, as it breaks up the webs of the mealy bug, and by washing them off prevents it from breeding. S. D.

BOUGAINVILLEA GLABRA.

THIS is one of the best plants we have for decorative purposes, for if well managed in the first stages of its growth, it will flower freely in a small state. Young plants of it are easily obtained in spring when the old plants are pruned back after being rested during winter; procure then as many cuttings as may be required for one season; take them off with a heel of firm wood attached to them, as cuttings of that kind root quicker and are more to be relied upon than cuttings taken off the points of long shoots. The soil used for the cutting pots should consist of sifted peat, leaf-mould a third, and a small portion of silky loam, adding about one-half of the whole bulk of sharp silver sand. Mix well together, fill the pots and place a thin layer of sand upon the top of the soil, firming it well. Dibble the cuttings round the sides and place the pots in a propagating pit or hot-bed in which there is a steady bottom heat and a top temperature ranging from 65° to 70°. Under such conditions the cuttings will root in a few days; the young plants should then be potted off singly into 3-inch pots, using the same compost as before, but not so much sand. After potting replace the plants in the same temperature as before until they get established in the fresh soil, when they may be removed into a temperature of about 50°; thus treated the wood will be firm and short-jointed. When the shoots have made four leaves pinch their tops; they will then form good specimens. Shift once more during the summer when thoroughly well rooted; 6-inch pots will be sufficiently large for the first season, and if well treated a few nice sprays of bloom will be produced during the autumn. Attend well to the watering, and endeavour to promote growth until the end of September or beginning of October, when water should be gradually withheld until the whole of the leaves fall off. After that, just give sufficient to keep the wood of the plants from shrivelling. Keep them in this state until February or early in March, when they should be again started into growth. Where a good supply of bloom is required for several months, the plants

should be started at intervals of three or four weeks. Shift them into larger pots as soon as they commence to grow. Some prefer giving them a shift into larger pots as soon as pruned in the autumn, but I must give the preference to spring potting. Use good fibry peat and yellow loam in the proportion of three of the former to two of the latter, and a fair portion of sharp sand to keep the whole open; by this treatment good specimens may be had the third year. If room for this plant can be found in the intermediate house, place it there either planted out in a prepared border or in a large pot, training the shoots over the roof, and a long succession of bloom will be the result. At Addington Park there used to be a fine specimen of this *Bougainvillea* growing in a low span-roofed house, in which it was hardly ever out of bloom. Indeed, during summer bushels of bloom were often cut from this plant.

W. CHRISTISON.

Double white Violets.—In March last year I got half a dozen plants and three dozen cuttings of the Swanley White or Comte Brazza's Violet; the cuttings were inserted when received, and also others which I took from the plants, in 5-inch pots in a compost of yellow loam, leaf-soil, and sea sand, twelve being put in each pot and put into a warm Cucumber frame. At the end of April I had, by dividing the six plants and the cuttings I had rooted, about one hundred strong plants, which were planted in a border under a west wall. The border had been well prepared beforehand, and was given a liberal mixture of leaf soil and sea sand. They were kept well watered all through the very dry summer which we had last year. In the early part of September they were taken up carefully with good balls of earth attached to them and planted in a early Melon frame 12 inches apart each way; the soil in the frame was prepared in the same way as that of the border. On fine days through the winter the lights were taken off and on wet days they were tilted; they have been watered a few times with strong soot water, and the result has been all that could be desired, the produce being large individually and of snowy whiteness.—G. H. M.

Acacia Riceana.—As a roof plant, where there is sufficient space for the long, pendulous, thong-like branches to display themselves to advantage, few more beautiful objects are to be seen than this *Acacia* when laden with sulphur-tinted blossoms; indeed, at all times it is most graceful and pleasing, owing to its drooping habit of growth. For clothing a pillar in a greenhouse, or for some such purpose, it is well adapted, and when employed in this way no more pruning than is absolutely necessary should be given it. It is a somewhat vigorous feeder, and if required to cover any considerable space it should be planted out rather than confined to a pot, as in that case its rate of growth is much quicker, and it flowers just as freely under the more liberal treatment. Cuttings of it are not difficult to strike; indeed, the more slender-habited kinds root quicker than the stout growing ones. When the young shoots are in a half-ripened condition is the best time for taking the cuttings, which should be cut to a length of 3 inches or 4 inches and inserted firmly in pots filled with light sandy soil. When finished the whole must be covered with a bell-glass, and after that the only attention needed is watering and shading.—H. P.

Weigelas under glass.—Amongst shrubs seldom employed for the embellishment of greenhouses or conservatories during spring must be included the various *Weigelas*, which flower freely enough thus treated provided early forcing is not attempted. The kinds most in favour for the purpose are *Abel Carrière*, a Continental variety, simply an improved form of *W. rosea*, the flowers being larger and brighter coloured than those of the type, while the habit of the plant, though vigorous, is by no means coarse. The next is *W. hortensis nivea*, which seems to do better indoors than *W. candida*, though as an outdoor shrub the

last is liked best. These kinds are much more showy than those with deep coloured flowers, though one of that class may be added if required for the sake of variety, and in that case *W. Lavallei*, with deep claret coloured blooms, is perhaps the best. Though two or three kinds will be enough for flowering under glass, the list for open-air culture might be much extended, notwithstanding the fact that *Weigelas* are too much alike. The specimens which we use for indoor blooming are planted out in an open spot, lifted in the autumn and potted for forcing. If possible they should be allowed a year's rest in order to reconstitute themselves; the better plan is, therefore, to have a couple of sets and force them in alternate years.—T.

WORK DONE IN WEEK ENDING APRIL 21. APRIL 15.

THIS morning the mercury fell to 26°, and there was an attempt at snowing, which happily passed away, and until it is warmer we would prefer that it continued dry, for moisture and frost combined would do serious damage to fruit buds, which are now in a very advanced state, some kind of Plums, Pears, and Cherries being in flower, and the bulk of them nearly so, and there is such an extraordinary promise of fruitfulness that its loss would be calamitous in the extreme. We still keep on the protective coverings both on frosty nights and during bright sunshine. Disbudding Peaches on the open walls; some of the fruit is rubbed off at the same time. They have set splendidly, as also have Apricots, and it is now safe to predict good crops of both these fruits, of course, with continued attention to protection in cold weather. Planting hardy plants in flower beds, as for several days past. Pricked out Celery in cold frames, and also more Gold Feather Pyrethrum, annual Chrysanthemums, and dwarf Sunflowers. Potted off first batch of *Cinerarias* and *Primulas*, and sowed for the general supply. Potted seedling *Grevillea robusta* and *Chamaepeuce diacantha*, two of our best bedding plants, for centres of beds or panels. Tying down and stopping the shoots of Peaches, Figs, and Vines is now of daily occurrence, and need not be further alluded to, except to say that in regard to all we are not particular as to how close or far apart the shoots may be tied or stopped. Trellis space settles that point; our endeavour is always to try and cover the space without overcrowding.

APRIL 16.

A decided change for the better in the weather conditions began to-day; slight showers with intervals of bright sunshine were just what we needed, and so we "made hay whilst the sun shone" by thinning out Lettuce, planting the spare seedlings in other borders, and made another sowing of Lettuce, Radish, Mustard and Cress. Broccoli are now turning in too rapidly, and those ready for use have been lifted and heeled in under a north wall. We always endeavour to make the supply last out till spring Cauliflowers are ready, and these we shall not have for at least a month to come. Spring Cabbages with us are all but a total failure, owing to premature seedling, and the Coleworts which were planted last week are intended to take their place, and another lot will be planted soon as the ground is cleared of winter Lettuce, the part that has already been cleared having been dug to-day. Spring flowers are now so gay that we have been trying to make them look still better by weeding and smoothing over the soil of the beds and borders, and other patches of *Mignonette*, *Candy-tuft*, *Larkspur*, *Virginian Stock*, *Nemophila*, and *Clarkia* have been sown wherever there was space for them near the front of the borders. At the back will be planted, soon as the plants are ready, *Zinnias*, *Everlastings*, dwarf Sunflowers, &c. Disbudding Peaches, and there being traces of green fly on some of the trees, the curled leaves were picked off and the branches syringed with Tobacco water. By such washing, the moment that blight is perceived we save ourselves

a lot of labour that we should otherwise have to effect a riddance of the insects and probably the loss of the fruit into the bargain. The soil of the border having cracked away from the wall, we have had it well rammed down with a stout potting stick and the mulching pressed down over it, and soon as disbudding is complete the trees will have a heavy syringing with tepid water, and this will help to settle the soil and mulching, that cracking will not again occur till the weather is exceptionally dry, at which time a thicker mulching will be given. Shrubs that were transplanted during the winter have been examined as to the mulching, and where pheasants, partridges, and other birds have disturbed it the same has been replaced with additions, which mulching is infinitely preferable to watering, and for which, by the way, we have no time. Potted Tomatoes into fruiting pots; we have no house or pit specially for growing them, but they do very well in the lighter vineries where the foliage is not too dense; of course, the plants get drawn a little, but the fruit is good, so that appearance of plants does not matter much. Other plants are being grown 'on for open-air culture. Sowed ridge Cucumbers, Gherkins, and Vegetable Marrows, and made another sowing of Rollison's Telegraph and Sutton's Cluster Cucumbers for frame culture. Propagation and potting on of bedding plants and shifting them from one house to another, the warmest places being required for the tender and newly potted plants.

APRIL 17.

To-day has been quite hot; sunshine all the day long. Hoed between the rows of Onions and early Carrots, and roughly but carefully raked over Asparagus beds. The "grass" is just making its appearance, being a full fortnight later than it usually is. Planted out in the flower beds *Violas* and *Calceolarias*, and though it is rather risky, we have also planted out *Gnaphalium lanatum*, a plant we use for tracing out the design on beds, or, in other words, as a dividing line for the various colours. The hardy white-leaved *Veronica incana* answers the same purpose, but it is not so white, and therefore not so effective. Made a new plantation of Strawberries on a south border with the plants that have been forced this year, our object being the obtaining of a supply of fruit when the ordinary crops of Strawberries are over. The variety is *Vicomtesse Héricart de Thury*, a kind that never disappoints one in the matter of fruiting at whatever season it may be required; good supplies of water will be given, and all flowers that show will be kept picked off till midsummer, and such as appear at that time and onwards will be left for the production of fruit from the middle of August to the middle of October. I need scarcely say that of the two the most liberal, that is, as to manure and depth of soil, is required for the production of autumnal fruit. Advantage has been taken of the warmer weather to overhaul Pines, *i.e.*, the weeding and top-dressing of plants, and adding fresh heating material to the plunging beds; the fruiting and first succession pit has been finished and a few more suckers potted. As the sun has come on us with such suddenness, shading with tiffany will be applied to all pits till the plants get more accustomed to the sunshine, when Smooth Cayenne only will be regularly shaded, other kinds for a couple of hours on exceptionally bright days. Other work in the house has been entirely of a routine character.

APRIL 18.

Another grand day; fruit tree blossom has expanded as if by magic. All Pears on walls are in full flower and standards nearly so; one dreads frost now more than ever, and we shall not risk leaving off coverings for a single night, no matter how warm it may be. Planting out the same description of plants as yesterday. Watered Coleworts, Brussels Sprouts, and Cauliflowers. We always plant them in drills, and consequently watering is readily done with a long-spouted pot. Dug up and heeled in under a north wall more Broccoli. It is only by such forethought that with the limited space of ground at our command a constant succession can be maintained.

Staked Peas and made a first sowing of runner Beans—rather early yet for them, but having for many years sown as early and only failed last year for the first time, by their being cut down by the severe frost at the end of May, it can hardly, therefore, be said to be too early. Sweeping and rolling, as is our wont on Saturdays, besides the weekly extra wash-out and rearrangement of plants in the houses; the surplus bunches were cut off a house of mixed varieties of Vines, and as these are intended to be looked at as well as to be eaten, the biggest ones were left, and with a view of making them even a little bigger only a very few have been left on the Vines. The rafters of house are not more than 12 feet long; necessarily, therefore, the canes are short, and each Vine carries from four to eight bunches according to size of bunch. The border is but a narrow inside one, but the depth makes amends for its contracted width, and feeding is done with a liberal hand, warm liquid manure being given at every watering. Watered Pines, also Figs and Camellia borders. The latter plants are making their growth after flowering, and it is so rampant that we have had to knife out many of the principal branches, in order that the remainder may have space for development. Strawberry forcing gives us an immensity of labour in this sunny weather, watering being needed always twice and sometimes thrice a day. Every plant indoors has to-day been handled, some for thinning out of the fruit, others of the flowers, and others for green fly, which we keep in check by going over each affected plant by hand. Fumigation when in flower is certain injury to the blossoms, and if deferred till the fruit is formed the taint of tobacco adheres to the fruit when ripe. Grapes are now beginning to shrivel, and we know of no way of preventing this happening so late as this, except what we do, and that is to keep the stems in the water and the room as cold as possible.

APRIL 20.

Being so dry and fine, we began to mow with an old horse-power machine, so as to clear away worm-casts and small stones, and thus prepare it for mowing with our best machine. Those parts of lawn that have been manured with soot and wood-ashes will not be mown till there has been a soaking rain to wash in the manure, and the plots formed anew by sowing Grass seeds will for this season be mown with scythes only, as the mower is apt to cut too close, and on thin turf this is to be avoided. The last few days the sun has been so hot, that we deemed it advisable to give a thin mulching of leaf soil to a piece of lawn that was turfed a few weeks ago, and when we get rain a few Grass seeds will be sown over the soil, and it will be well worked into the crevices between the turves. Planting out in summer bedding arrangements *Echeverias*, *Saxifrages*, and *Sedums*. Weeded amongst hardy Ferns, and planted amongst them all the kinds of Primroses that have been weeded out from a bed of seedlings as not worthy of propagation for spring bedding, but for all that they are good, and another season will make a good show in their new quarters before the great bulk of the Ferns expand. Indoors the sudden heat makes the routine work extra heavy, watering and airing taking up a great part of each day. Another turn at l'ires. Potted a few of the strongest successions and top-dressed others that did not require larger pots; the bed was turned over and a little fresh litter added, the minimum bottom heat being 75°, though we strive to keep as near 80° as possible. Propagating *Alternantheras*, planting out *Pelargoniums* in turf pits, and Grape thinning have also to be included in the work of to-day.

APRIL 21.

This has been another summer-like day. There have now been five consecutive days of bright sunshine, and, looking at the state of fruit trees a week ago and now, the advance made might be considered sufficient to have been made in as many weeks. With the exception of Apples and Morello Cherries, every kind of fruit tree is now in full bloom, and though at present everything seems to indicate safety, having a too

vivid recollection of last May, the coverings will be continued. Hoed between the rows of Onions and Early Horn Carrots. Sowed a good breadth of Turnips and Beet, and drew soil over Potatoes. Cut the first dish of Asparagus from the open garden. We are forbidden to send it to the kitchen except in a green state, blanching not being approved, and I think rightly so, for if it is not tough it is flavourless, and oftentimes both, and therefore we cut it at the ground line only, which has the additional advantage of not injuring the crowns that may be growing near, as must often occur by cutting it 3 inches or 4 inches below the surface. Finished planting out Strawberries for autumn fruiting. Continued Pine potting and renewing of plunging material. Thinning Grapes, tied down shoots of Peaches in late house, a few more being cut out and a large proportion of fruit rubbed off.

HANTS.

FRUITS HARDY AND UNDER GLASS.

FIGS ON WALLS.—The unusual lateness of the season has delayed the pruning and training of Figs on open walls beyond the period at which it is usually considered safe to perform these operations. In the south and west of England open to the softening influence of the sea, protection through the winter months is quite unnecessary, but in the midlands and the north the Fig has been proved over and over again not only to be tender, but liable to be killed to the ground by the action of severe frost. In these localities it is the common practice to protect with dry Fern, straw, or evergreen branches from the time the trees go to rest until the embryo fruits near the points of the shoots show signs of returning life, but in this district there is as yet no sign of the upward movement of the sap, and so long as it remains dormant the removal of the covering will be carried on piecemeal and with caution. When it can be obtained, dry Bracken is the best of all coverings for Figs, as it does not exclude air, it dries quickly after rain, and being a good non-conductor, its retention does not hasten the swelling of the fruit. In gardens where a set of houses is devoted to this delicious and now fashionable fruit precautions of this kind are unknown, but where the connoisseur depends entirely upon wall trees for his supply, the preservation of the minute Figs formed near the point of every well-ripened shoot is a matter of the greatest importance, as they ripen two months earlier than the most forward that can be obtained from shoots of the current year. Assuming, then, that the trees have been divested of all the covering and the embryo Figs are safe, the pruning and training should be taken in hand and completed with as little delay as possible. There are various modes of training, and it not unfrequently happens that a great deal too much wood is left at the spring pruning; a crowded growth of elongated shoots and leaves follows; the fruit made under such conditions rarely passes the flowering stage, or if it does it is rapid and flavourless. Figs on open walls should always be grown on clean single stems with perpendicular leaders; the side shoots some 18 inches apart can then be laid out horizontally, a position which will check and balance the flow of sap as it passes along into the short spur-like pieces of wood from which fruit of the best quality fully exposed to light and reflected heat can be obtained. Pinching, it is hardly necessary to say, plays an important part in this modern mode of culture, and the spurring back of every alternate shoot at the spring pruning keeps the trees furnished with short-jointed successional growths for the succeeding year. The Fig being a very accommodating tree and a gross feeder, it is apt to get too strong if left undisturbed in the poorest of soils. It is therefore a good plan to restrict the roots to a well drained and concreted border from which there is no escape, and to root-prune in the true sense of the term every year. Autumn is the best time to lift, root-prune, and correct a gross habit of growth provided the borders can afterwards be kept dry and safe from frost, but transplanting can be equally well performed quite late in the spring and without risking the crop, as nothing short of

entire disrooting seems to tell unfavourably against them. When Figs are annually root-pruned they should be grown in light, rich, calcareous loam, made very firm and well mulched with rotten manure. Water is an important element and may be given *ad lib.* through the mulching from the time the trees break until gathering is discontinued in the autumn. Brown Turkey, Brunswick, and the Ischias are the kinds generally met with in old gardens, and it will be difficult to find one better than the first. As yet we have but little experience of the newer kinds mentioned in my list on April 11; but there hardly exists a doubt that they are as well adapted to culture on walls as they are to forcing.

MELONS IN POTS.—In order to keep up a constant supply of fruit small batches of plants should be put out at short intervals. If pits or small compartments are at command, a successional plantation may be made every three weeks, that is on the assumption that one sterling variety only is used for succession. But where one large house is devoted to Melons and a constant supply is expected, mixed kinds may be grown with advantage, as some are much later than others, and a judicious selection will prolong the supply. The mode of planting, training, and general management will, as a matter of course, be different in the two houses. In the small sections plants in pots plunged in bottom-heat answer best, as they can be pushed rapidly forward, and give quick returns. Moreover, a successional set of plants 2 feet or 3 feet high can be got forward and ready for taking their place as soon as the last fruit is cut. The mode of managing these pot plants is so simple, that a repetition of details seems superfluous. The main points are a bottom-heat ranging from 75° to 85°, fresh sound heavy loam firmly rammed into the pots when dry. One plant in each 14-inch pot trained up to and over the trellis until the vine measures some 4 feet in length and the pots are full of roots, when the first pinching will induce the formation of fruit-bearing laterals. All mulching and feeding should be withheld until the fruit is set and swelling, when liberal supplies of the best will tell in favour of size, although it is doubtful if it will not be at the expense of flavour; and as flavour is the true test of merit, a moderately fed Melon of medium size has many points in its favour.

MELONS ON RIDGES.—When Melons are planted out on ridges or hills, and trained over the trellis on the old-fashioned principle of stopping twice before they are allowed to set any fruit, they require plenty of room for the development of the vines and foliage. Assuming that the plants are turned out of 4-inch pots into the hills, which may be from 2 feet to 3 feet below the trellis, each plant will be allowed to grow a few inches above the wires before the point is pinched out of the leader, as it will be necessary to get from two to four breaks for training to the extremities of the allotted space. When this is reached, if equally strong, each point will be pinched out simultaneously to force a set of laterals, which will show fruit at the first joint. These will be impregnated with male blossoms as they open, but stopping will be deferred until the young Melons begin to swell and a sufficient number for the crop has been secured. Pinching and the removal of spray which may crowd the main foliage will then require attention; more earth may be added to the hills or ridges, and the remainder of the treatment, including syringing and watering, will in no way differ from that recommended for pot plants. Melons if properly grown never require shade; indeed, they cannot have too much sun. Syringing on bright mornings should not reach the foliage, as some kinds are apt to burn or scald, but unless they are in flower they may be copiously syringed after closing on bright afternoons at a temperature of 90°. They set best when allowed to get a little dry at the root during the time they are in flower, and they attain the finest flavour under similar conditions when ripening. Early ventilation to let out condensed moisture is imperative, and a liberal supply through the hottest part of the day will keep the foliage clean, densely green, and leathery. Every old leaf from

the base of the stem upwards should be carefully preserved, as they cannot be removed without producing a check to the plants, which may result in canker and death.

SCARLET-FLESHED MELONS.—Although these are not considered so good as the green-fleshed kinds, there are several varieties which, when well grown, are very little inferior, and having a flavour peculiarly their own, many fruit-eaters hold them in high esteem. They are not well adapted for growing in close moist pits or frames, but when planted in pots placed on kerbs or over hot-water pipes in Pine stoves, where they can have plenty of dry heat and light, they attain their highest degree of quality and flavour. It must not, however, be assumed that the swelling fruit does not revel in plenty of moisture from the time it is set until it changes for ripening, as Melons cannot be kept clean and healthy without it, but before the fruit begins to show signs of approaching maturity a dry heat is essential to sprightly flavour. Many growers complain of Melons on kerbs requiring so much water, but this difficulty can be got over by placing shallow boxes 3 inches deep over the pipes for the pots to stand in. Some may say, why not use pans or saucers? but these do not answer so well, as the constant drenching keeps them full of stagnant water, while boxes allow it to pass away freely. Moreover, when the latter are loosely filled with lumps of turf and old mortar, a body of devouring roots very soon emerge from the apertures in the pots and luxuriate in the good things there provided for them. Melons, the tyro must bear in mind, should never be earthed up the stems, as a body of soil about them checks growth and is the most common cause of canker. They should therefore, to avoid this troublesome disease, be planted, nay, elevated, on the ridges, where they will stand any amount of sunheat, and prove grateful for a weak attempt to imitate their native burning plains. The varieties most worthy of cultivation are Read's Hybrid Scarlet, Blenheim Orange, Hero of Bath, Scarlet Premier, and Turner's Scarlet Gem; the last is a little too small, but it has not yet been surpassed for flavour.

CUCUMBERS.—These will now require an abundance of water of a stimulating nature and frequent top-dressing with fresh turfy loam and old lime rubble, little and often as the roots show upon the surface; copious syringing with pure soft water at a temperature of 80°, and occasionally with clarified soot water, will also be necessary to the maintenance of a fresh, healthy, fruitful growth of vine and lateral, which will now be showing more fruit than it will be prudent to allow to swell to maturity. To keep summer Cucumbers in permanent bearing, they should be stopped, tied, and regulated at least three times a week, otherwise they will soon become a tangled mass from which it will be impossible to extricate them without producing a check and laying the plants open to the attacks of disease and insects. Although shading is not generally approved of, bright, closely glazed houses of modern construction which require an abundance of ventilation to keep down the temperature may be the better for having some very light material drawn over them for a few hours during the hottest part of the day. Hexagon netting or tanned pilchard netting are suitable materials, as they break up the burning rays of the sun without interfering with the free passage of light, but these should not be used systematically, as shading gives a great deal of trouble if it does not enervate the plants, and for these two reasons it should never be commenced if successful culture can be carried on without it. Where several small compartments have been in bearing all the winter and the oldest plants show signs of exhaustion, they should now be cut over, that is, divested of all the fruit and a few of the old leaves to give them a fresh start, but if spider has been troublesome and the pit can be spared it will be wise to make a complete clearance and replant with clean young stock. After the pit has been carefully cleansed, fresh fermenting material should be introduced, and hills or ridges resting on sods of fresh-cut turf should take the place of pots for summer culture.

W. COLEMAN.

KITCHEN GARDEN.

YOUNG SPRING VEGETABLES.

Now is an important time in regard to all kinds of young vegetable plants. Sowing seed is an easy matter; when good it germinates freely and the plants appear without much care, but when up they are frequently destroyed or so much stunted, that their after success is never satisfactory. Very early in spring young plants of such things as Cauliflowers, Lettuces, Brussels Sprouts, Celery, &c., cannot be raised without the assistance of glass, but this may now be dispensed with. My remarks will, therefore, apply to all gardens of moderate size, where little or no glass can be devoted to rearing young vegetable plants. Small birds are at all times a great annoyance to raisers of young vegetables. They begin their depredations by picking up the seed, and go on until they have an opportunity of drawing up the young plants. I have seen large pieces completely uprooted by them, and if an outlook is not kept on what is going on, a great deal of damage may be done before anyone knows it has begun. This applies to Turnips, Broccoli, and indeed to everything. We have found nothing so good to prevent the drawing up of the young plants as dusting them over with soot. If this is done immediately after rain, the soot sticks to the leaves and makes them bitter and distasteful to the birds. Snails and slugs, too, dislike soot, and it is a capital practice to dust over all plants once or twice weekly with it until they have grown up a little and gained strength to take care of themselves. Lime may be used in the same way, but we prefer soot, as we find it more of a stimulant than lime, and not so liable to form a crust on the surface.

YOUNG PEA plants should be dusted now and then to prevent birds from damaging the points of the main stems. They frequently do this, and then the crop is never a good or early one. Liberal earthing up and early staking are great helps to the advancement of all Pea crops. Broad Beans are often attacked by a black or green fly when quite young, and if this is allowed to go on the growth is soon permanently injured, but a good dusting with soot will clear off the fly and promote healthy growth. Earthing up is of great benefit to young Broad Beans, as if the soil is drawn well up to the stems and made firm they do not get injured by wind. Young Kidney Beans of either tall or dwarf varieties are very tender subjects in the forepart of the season, and should not only be earthed up as soon as through the ground, but Spruce twigs should be put in along each side of the rows to break wind currents. Young Carrots are about as hardy as Parsley, and although many are afraid of their getting injured when they come through the soil in March or early in April, I have never known them checked much by the weather; apart from hoeing between the rows as soon as it can be seen where these are, the best way is to leave them alone. Early spring Onions come under the same treatment; although we have tried to advance the growth of the young plants by different modes of protection, we never succeeded to any perceptible extent, the non-protected ones just being as forward by July as those which were sheltered with branches, &c.

POTATOES are the most tender of all crops when the stems first come above ground. They will not bear the slightest amount of frost, and when the first growths get cut by it those which follow are never so robust, nor is the crop so good; it is, therefore, of importance that the first growths be saved if possible. We earth up the rows of all early sorts as soon as it can be seen where they are; the soil is drawn so much up to and over the young growths, that they are generally covered to a depth of some inches, and this affords them shelter for some time. All early breadths should be treated in this way and small branches may also be put against and over each plant when they grow above the ridges. Broccoli, Cauliflowers, Savoy, Brussels Sprouts, &c., are very hardy even when young in April and May, and no protection

need ever be given them, unless it be from wind, which injures them more than frost; indeed, wind is so much against the success of all kinds of young vegetables of this sort, that they should always be sown in a sheltered position. Lettuces and Endive are very liable to be eaten over with snails, and extra care should be taken of them in this respect. Birds are the only pests with which we have to contend in the case of Radishes; they are remarkably fond of them, but Radishes grow quickly, and their culture in an early state need never be a matter of anxiety.

CELERY SEED is often sown far too thickly, and the consequence is that before the young plants are a quarter of an inch high they present a close green surface. This is a bad beginning for the young plants and should be avoided; sow thinly in the first place, and thin out early afterwards when the plants are only a quarter of an inch high; they may be too small to dibble in for stock, but there may be hundreds of more plants in the boxes or frames than will be required, and it is much better to throw these away at first than keep them on to ruin the whole. Celery is more apt to seed prematurely than almost any other esculent, and every care should be taken to prevent this. Giving the plants plenty of space in which to develop themselves robustly is one way of doing this. A rich soil, plenty of moisture, and a genial temperature will be found to thoroughly agree with them. A change from wet to drought at the root, or a sudden shift from a warm place to a cold one, will spoil the plants. They do not require any coddling, but changes of treatment do not agree with them. If the seed is sown in the open air or under a handlight, let the plants grow in this position until wanted for the trenches. If raised in a frame, do not transfer them direct from under glass to the open air; if kept in the frame until ready for planting, and due attention is devoted to the hardening of them off, they will do well. All kinds of young vegetables are liable to suffer through being allowed to become too close in the seed beds. They get drawn up lanky and with their roots so close together, that they can never be lifted with any soil attached to them, and such plants are very long in beginning to grow after being transplanted; even throughout the season anyone with a practical eye could tell that they had been badly used when young. This applies more particularly to Cabbages, Cauliflowers, Savoy, Leeks, and Broccoli, all of which should be taken from the seed-rows or beds when only a few inches high and dibbled in 3 inches apart in another place, there to await transference to their proper quarters. This gives a little more work than allowing them to become crowded in the seed-beds, but in this way much better plants are produced, and these are so very superior to non-transplanted material, that it always pays to treat them in this manner. A few may be left thin in the seed-bed, but it will be found that those which have been transplanted lift with the best balls of soil and have the best roots. Nothing ruins crops of Carrots, Turnips, and similar vegetables quicker than neglecting to thin them when young. In fact, to avoid crowding is one of the mainsprings of success in the raising of young vegetables. In raising young Tomatoes, Vegetable Marrows, and ridge Cucumbers, it is a common practice to get them up very early and grow them into a large size in a warm, close place. Thus treated, for weeks after they are planted in the open they make no progress, which they would have done if sown later, the plants grown on in a cool, airy place, and no planting out done until they had been gradually inured to the open air. I would rather have plants of the subjects just named grown entirely in the open than have to deal with those got up quickly, suddenly stopped, and re-started, with no energy in them.

FRAMES AND PROTECTORS are excellent in spring when properly used, but unless the plants can be taken from them to open quarters without being checked little or no gain is the result. I often notice that plants raised under glass in March are inferior to those raised entirely in the open air in April.

J. MUIR.

Margam, S. Wales.

Mushrooms in sawdust.—There is nothing new in growing Mushrooms in sawdust. I have done it here for years past, that is to say, after it had done service as a bed for horses and got intermixed with their droppings. I have never been able to detect the least difference in size or quality between Mushrooms in sawdust and those produced in the ordinary way. I have also been successful in growing them in peat moss. Respecting the quality of Mushroom spawn, my belief is that the majority of it is fruitful, and I am fully convinced that if Mushroom growers would take the precaution when ordering it to add these words: "Please send the spawn quite fresh, so that it can be broken by the hand," good samples would in every case be supplied. If it requires hammering to get into pieces, success need not be looked for.

—R. GILBERT.

Pea Ne Plus Ultra and Jeye's Conqueror.—A friend tells me that these are identical, but another of my Pea-growing acquaintances stoutly maintains that they are distinct, the latter being a stronger grower. I am inclined to think that there are two varieties, but that the true Jeye's Conqueror is held by a few only, and therefore does not come much into the hands of seedsmen. I am the more inclined to think so after reading a note in a late number of THE GARDEN, wherein it is stated that Jeye's Conqueror was a selection from Ne Plus Ultra, but eventually reverted to the type. The question is, was this reversion universal? or was it so far partial as not to affect some stocks? I am told that if you order Conqueror from a seed merchant, you get Ne Plus Ultra, but this does not absolutely prove the identity of the two. A friend assures me that he has Conqueror quite true, and I am more inclined to credit his assertion, as he comes from the locality where it originated, and brought his stock from there. We know how soil and climate influence fruits and vegetables, and it seems possible that in some places Jeye's Conqueror has remained fixed, whilst in others it has gone back to the type. I fancy that it would be found true in a good many gardens in the locality where it originated.—J. C. B.

Cabbages and their behaviour.—We sowed our first spring Cabbages on July 25, the varieties being Ellam's Dwarf and Imperial. They were planted on a west border after Onions without any digging, the holes being made with a crowbar. I notice that when I write "crowbar system" some of your correspondents object to the term, so in order to please everybody I have left out the word system. During the mild winter which we have had both varieties made great progress, and I cut some nice heads of Imperial in March; since that time, however, a great alteration has taken place. Imperial, without splitting straws, contains at least four varieties, and the majority bolted, whilst Ellam's Dwarf is as near perfection as could reasonably be wished for, producing close to the ground fine conical heads of the best flavour, and not one of them bolted; in fact, I am highly pleased with it, but I must add that the seed I procured was a little mixed; nevertheless, I look upon it as a great success, well knowing from many years' experience that it is next to impossible to get the type perfect. Our next sowing was made on August 6, the varieties being Nonpareil, Ellam's Dwarf, and Heartwell. I have this evening, April 11, taken a careful survey of these sorts and find them as follows: Nonpareil and Ellam's Dwarf are excellent, but of Heartwell at least one half has bolted. My belief, however, is that seed of this and of Imperial both came out of one bag. I know of nothing so annoying as half a crop of spring Cabbages bolting. In gardens where £ s. d. is not a great consideration, the matter is not so important; but where these three letters have to be studied, it is vexing in the extreme.—R. GILBERT.

Do Potatoes degenerate?—This question is sometimes asked, and very properly too, for if Potatoes do not degenerate, it would be I think a difficult undertaking to account for the spurious varieties which get mixed up with them even under the most painstaking manage-

ment. I have a particular variety of the Ashleaf type which I found cultivated here nearly twenty years ago, and which I have only kept true by carefully digging out any that did not bear the likeness of the type. I have always made it a rule to set apart a certain number of rows for seed, and these have been carefully looked over for rogues with a view to their removal as soon as detected. The number of these is not many—never more than 5 or 6 per cent.; that would, however, be enough, if left alone, to render the whole lot use-

gardens. It is quite reasonable to suppose that the more excitable the conditions under which they are cultivated the more likely are they to degenerate, and this they certainly do, for the rogues which we find amongst our stock are inferior in every respect to the original.—J. C. C.

IPOMÆA PANDURATA.

WRITING from the Eastern United States, Mr. Falconer says—"This *Ipomœa* is one of the hand-

are usually heart-shaped, but sometimes fiddle-shaped; hence the specific name. It grows in sandy fields and on banks from Connecticut to Illinois and southward. It blooms from June to August and its flowers only open in bright sunshine. Its fleshy root often weighs from ten to twenty pounds. It is called by the North American Indians Mechameck, and is also known as Wild Potato Vine and Man-of-the-Earth. Perhaps some of our readers may be able to furnish some addition to the somewhat scanty informa-



THE MECHAMECK OF THE NORTH AMERICAN INDIANS (*IPOMÆA PANDURATA*).

less in a few years as a reliable type. I, therefore, feel convinced that there are some sorts which degenerate. Some may, perhaps, be disposed to say that the sorts get mixed in the store, but that in our case did not happen, for with the exception of new introductions for trial I do not grow any other sort in the garden, only having sufficient room for a few early kinds. It appears to me many of the hardier sorts grown in the fields are not so liable to degenerate as the finer garden kinds, for we sometimes see many acres of one variety and scarcely a rogue amongst them. The more tender sorts seem to be influenced by the rich soil of our

somest and most profuse-flowering of hardy creepers, and is as hardy as a Willow. Its blooms are white with a deep purple eye and are larger than those of the common Morning Glory, and produced on one to five-flowered peduncles." Is it not singular that such a beautiful hardy perennial plant is so rare with us, if, indeed, it is in cultivation at all in this country? Our illustration is reproduced from a photograph taken in the Botanic Gardens at Naples. *I. pandurata* is the only perennial species, which is a native of the United States, the other species *I. lacunosa*, being an annual. Dr. Asa Gray states that the leaves

tion which we possess regarding this very beautiful plant.

Cutting Rhododendron flowers.—

There ought to be a standing order in every garden that young plants of Rhododendrons should not be mutilated for the sake of their flowers. Old plants it is possible to cut without doing mischief of any moment, but every truss of flowers cut from young plants does considerably more harm than a superficial observer would detect, as, in removing the truss with only an inch or two of

stem, the buds which would start into growth after the flowers are faded are removed; therefore, before the branch can make new growth it must form fresh buds, which it will take all the summer to do, one season's growth being thereby lost. I hope this reasonable caution may be of service in saving choice Rhododendrons from so great a check to their progress.—J. C. C.

GARDEN IN THE HOUSE.

WINDOW GARDENING.*

AN old friend of mine who has travelled among the Japanese tells me that their love of flowers and young plants is in reality an absorbing passion. In the smallest of dwellings there is an altar-like niche in or upon which flowering plants are arranged, but they have in some districts a most remarkable custom in connection with window gardening, which I will describe to you.

In houses wherein reside one or more daughters of a marriageable age an empty flower-pot of an ornamental character is encircled by a ring, and suspended from the window or verandah by three light chains.

Now, the Juliets of Japan are of course attractive, and their Romeos as love-sick as those of other lands. But instead of serenades by moonlight and other delicate ways of making an impression, it is etiquette for the Japanese lover to approach the dwelling of his lady bearing some choice plant in his hand, which he boldly, but, let us hope reverently, proceeds to plant in the empty vase. This takes place at a time when he is fully assured that both mother and daughter are at home, and I need scarcely say that neither of them are at all conscious that the young man is taking such a liberty with the flower-pot outside their window. It is believed that a young lover so engaged has never been seen by his lady or by her mamma in this act of sacrilege; at any rate my friend tells me that during his long residence in Japan he never heard of anyone being detected in the act or interfered with in any way.

The fact is, this act of placing a pretty plant into the empty flower-pot is equivalent to a formal proposal to the young lady who dwells within. The youthful gardener having settled his plant to his mind retires, and the lady is free to act as she pleases. If he is the right man, she takes every care of his gift, waters it, and tends it carefully with her own hands, that all the world may see and know that the donor is accepted as a suitor. But if he is not a favourite, or if stern parents object, the plant is removed from the vase, and the next morning finds it withered on the verandah or on the path below. In a word, if you are not the right man, it is quite evident that this phase of window gardening must be a difficult and disappointing one to carry on in Japan.

But one really might go further, and say that all kinds of window gardening must be carried on under difficulties. I know somewhat of the troubles of gardening in town, and shall not deceive you by saying that window gardening is easy; there is, however, so much pleasure mixed up with the difficulties, that if once those of you who have not done so will try it, you will never rest contented until you succeed.

But how to begin, that is the question. Flower-pots, seeds, plants, and even soil or earth in which to plant them cost money—not much, perhaps, but still sufficient to deter some from making a commencement. Now, a bit of turfy sod from the road-side is all you will at first want. If flower-pots are not obtainable, no one need be disheartened; an old tin can, a cigar box, anything in fact which will hold earth and allow waste water to run away will do. Of course, I know that you will do better than this, but even if some of you actually do resort to these homely makeshifts you will not be the first to do so, and it is better to grow a few pretty plants or sweet Musk

and Mignonette in an old starch or blacking-box than to have no flowers at all near your home in the town. This question of materials is our first difficulty, and there are several ways of meeting it. The first and best way is for each individual to do the best he can for himself or herself, and devise some successful plan of operation; but this or any other association interested might do much to give facilities for self-help.

One of the greatest of all the difficulties experienced by window gardeners in large towns would be removed if a dépôt or central store for simple gardening material could be formed on some self-supporting plan. No doubt it is true that those really anxious to grow plants may and will find out ways and means to gratify their tastes, but I am sure a great impetus would be given to plant culture in towns if artisans and others could purchase good potting earth and healthy plants and seeds at a cheap rate. It seems to me that the formation of local dépôts of this kind would do more than anything else to encourage window gardening or domestic floriculture.

One of the great charms of window gardening is the interest it excites in us, and the amount of pleasure a window gardener obtains during his rambles, for I need scarcely say he will be most anxious to see the plants grown in other windows besides his own. Then at holiday times every excursion into the country is doubly attractive, for of course a few common Ferns or trailing bits of rooted Ivy will be carefully dug up and carried back to town for the little garden at home. A few Primrose roots from a mossy hedge bank, or five or six bulbs of the common yellow Daffodil from the fields will make the smallest window interesting in the spring. Of course I do not advocate the wholesale collection and destruction of our prettiest wild flowers in the way now common near most towns, but I feel sure no intelligent proprietor would begrudge the removal of a few roots if he were sure they really were not to be carried away wholesale and sold. In questions of this kind, again, a society or association would be allowed to collect and distribute wild plants by those who might reasonably object to what might be the individual abuse of the privilege. Apart altogether from the decorative or beautiful aspect of flowers and green foliage in windows, such things have a teaching power peculiarly their own, and this is especially so where there are children. One of the best of lessons to instil into the minds of children is that all flowers are beautiful, even the most common ones, for it is these that our greatest poets have most delighted to honour. Daisies, Bluebells, Primroses, Daffodils, Snowdrops, and Violets, wild Roses and Woodbine have all been woven into song and story from the time of Chaucer to the days of Tennyson.

The one great charm which lingers around our garden blossoms is their beautiful reality. They are essentially genuine. If you put wax flowers or fruits into your windows or on the tables of your rooms, no one with any taste will waste a second glance on them; even the child who at first was taken with their bright colours will soon forget them, but this is never so of real flowers; in fact, the only thing I know that wins a child's attention from toys and toffee is a windowful of real Fuchsias, Geraniums, and Musk plants all in full bloom.

THE BEST SOIL or earth for Fuchsias and Geraniums—indeed, for all the ordinary kinds of plants grown in windows—is what a gardener calls "fibrous loam." This is obtained from npland pastures and sheep walks, and consists of a mellow, friable, nut-coloured earth rich in vegetable fibre. This should be cut into turves or layers about 3 inches in thickness, and may be stacked up until wanted for use. The best earth of this kind costs from 6s. to 10s. per ton or load. Broken up into rough pieces the size of Hazel nuts, this sort of earth contains all the elements really necessary for a plant's existence. As before mentioned, a few sods of fibrous earth of this kind may often be obtained from a grassy roadside. When prepared for pots it should not be too finely pul-

verised. One of the most common of errors into which inexperienced window gardeners fall is that of using finely sifted earth for plants—that is to say, soil destitute of fibrous rootlets and other organic material. It is from this fibrous matter, when acted upon by water, heat, and air, that the plants derive their food. The tips of the tiny roots of a Fuchsia or a Myrtle, for example, are really hungry little mouths eager to suck up nitrogenous matter soluble in water, so that the soil, apart from its mechanical use of retaining a plant firmly in an erect position, must contain organic or manurial matter easily dissolvable in water. But if any ordinary earth be taken, you may safely leave your plants to manage their own chemistry if you place good drainage material below the soil and water regularly and keep their leaves free from dust and insects. As is well known, rain water is best. Every gallon of fresh rain water contains about half a grain of ammonia salts, and Liebig, the great agricultural chemist, calculated that this quantity per gallon is amply sufficient to nourish a forest of Oaks. Thus rain water is the best you can use for your pet plants, and in towns it is rendered still more nourishing, owing to the soot collected by it as it falls on the roofs ere it finds its way into your water tub below.

DRAINAGE.—Broken bits of earthenware or of flower-pots are most generally placed as drainage beneath the soil, but the action of these is mechanical only, and as a substitute for these oyster shells, broken bones, charcoal, nodules of common coal, or even cinders may be used, containing as they all do plant food in a soluble form. It is a good plan to put a layer of Moss over the drainage to prevent the soil washing down and blocking up the drainage hole in the flower-pot. For all strong growing plants old broken bones may be mixed with the soil with advantage.

WATERING.—Now, as to the watering of your plants, it is necessary to be methodical, and a little practice will teach you more than anything I can tell you here. The best plan is to look over your plants every morning. Thus you will perceive that the four great essentials of healthy plant life are heat, air, light, and constant moisture. That all plants like heat rather than cold is proved by their rapid growth during the summer as contrasted with their slow progress or absolute rest during winter. Air and light are as necessary for plants as for ourselves. I might even go a little further and say that when the plants grow up in your windows tall and thin, with wiry stalks and pale yellowish leaves, they indicate by their general appearance an insufficient amount of light and air. When this is the case more air and more light through clean window-panes would be beneficial. Moisture is necessary, since the roots can only absorb nutriment when in a soluble state. We now come to the question of

REPOTTING. If you take a few Turnip or Mangold seeds and plant them they increase in weight and size very rapidly, so that what in the spring time was a pound of seed may, after growth for some months, become changed into several tons weight of produce. This increase of substance and weight is mainly the result of root-action—that is to say, the plants have absorbed all this weight of material from the soil in solution. It naturally follows that the soil becomes less rich every time a crop is removed, and to supply the deficiency the farmer adds every year or two more plant-food in the shape of manures. Now what is true of the farm is true of the smallest plant in your window. The formation of every leaf and every blossom leaves the earth in your flower-pot poorer than it was before; hence, after some few months' growth, one of two things becomes necessary. You must either place the plant in a larger pot, adding at the same time more fresh earth, or you must add manure or plant-food to the pot in which you wish the plant to thrive still longer. Sometimes it is convenient to retain plants in small pots, and then a pinch of guano or sulphate of ammonia in a quart of water makes a first rate stimulant, adding new life and vigour to any plants which had begun to show signs of stunted growth, owing to their

* Lecture delivered under the auspices of the Rathmines Sanitary Association at the Town Hall, Rathmines, Dublin, on April 13, by F. W. Burbidge, F.L.S., Curator, Trinity College Botanic Gardens, Dublin.

soil having become exhausted. I have alluded to plants as being

PERFECT CHEMISTS in their way, selecting from the elements in the soil what they most require for building up their cells and fibres—their leaves and flowers. I have also alluded to some of our native wild flowers, and now I want you to distinctly understand that all the species or distinct types of plants, even most of the rarest ones of our hothouses, are also wild in the temperate and tropical countries of the world. Again, every known plant has a Latin name given to it by botanists. This name is given along with a description of the plant, and is often accompanied by a plate or drawing, and the reason the name given is a Latin one is because Latin is understood by all scientific men throughout the world. But there is no necessity for you to call your pet plants by their Latin names, although *Fuchsia*, *Geranium*, *Calceolaria*, and many other Latin names are now firmly fixed in our own tongue; but you can follow the example of the poets and call *Campanula*, Bellflower, *Primula sinensis* simply Chinese Primrose, and *Mimulus moschatus* will be none the less fragrant if you call it Musk plant, just as *Viola odorata* is quite as sweet under its more homely name of Violet.

THE PLANTS MOST USEFUL to window gardeners may be naturally and conveniently divided into two groups. First, such shrubs as *Virginian* and *Japan Creepers*, *Ivy*, hardy bulbs, annuals, and other plants, which will thrive outside a sunny window; and secondly, the little *Dragon Trees*, small *Palms*, *Acacias*, *India-rubber Plants*, and *Begonias*, which require more heat and shelter, and so thrive best inside the room.

For the outside or window-sill, a stout wooden box is by far the best receptacle for plants. It should have a few holes in the bottom to let out the waste water and an inch or two of broken crockery or bricks for drainage. Such a box, 2 feet or 4 feet long, may be a foot broad and 8 inches deep. Plants in boxes of this kind require far less attention than those in pots, which become parched up in hot or windy weather; besides which boxes of this size and weight are not so easily toppled over and broken by that most energetic of anti-gardeners in town—the domestic cat. Here and there in town you may now and then see whole windows quite full of healthy plants, but not often, for I notice that in most windows their health and beauty are in inverse proportion to their numbers. My advice is, do not grow too many plants; few and good is the best watchword, especially for a beginner. One of the

BEST EVERGREEN PLANTS for a room is *Aspidistra*, green and variegated. A specimen here has been grown in a shady window in the Haddington Road for the last three years, and when first brought into the house it had six small leaves only, and it has never been repotted or manured during that time. No other plant I know does better, and it is an especial favourite in France and Holland, where fresh and healthy evergreen room plants are highly appreciated. The *India-rubber* (*Ficus*) is another good room plant, as is also the graceful *Acacia lophantha*. Several kinds of green-leaved *Dracæas* are thoroughly reliable, as also are small plants of the Australian *Blue Gum* or *Fever Tree*. I have seen a fine plant of this in the window of a drawing-room in Clare Street for the past two or three years. Some small *Palms* grow well in warm rooms, and none better than the *Corypha australis*. Another favorite, especially at this season, is the *Arm Lily*, while the *Scarborough Lily* (*Vallota*) is very attractive when it throws up its cluster of scarlet Lily-like flowers in the autumn months just before the *Chrysanthemum* comes into bloom. Fortunately, there is a good deal of

Healthy emulation amongst window gardeners, and a little ingenuity will enable any of you who may so desire to become possessed of plants not generally to be met with in rooms or windows. Orange and Lemon trees are very easily reared by sowing the seeds in a pot of earth and watering them now and then with warm water not hotter than the tea you drink, if so hot. It is most interesting to watch the growth of seeds of all

kinds, and I recommend you to sow every seed you can obtain. I once saw a healthy little *Date Palm* which its owner, a dock labourer, had reared from a stone. It obtained a prize at a flower show in London, much to the delight of its owner, who had grown it in a dingy little room in East London for nine or ten years. The common *Grape Vine* may be grown either inside or outside a sunny window, and is easily reared from the seeds you will best obtain from the over-ripe or damaged berries, which too often bestrew the pavement near fruit-shops in town. An old lady living in an almshouse once asked me to name a plant she had grown for five years in her room, and it was none other than a real *Tea tree* (*Thea bohea*), the seed ("a little round thing," as she described it) of which she had accidentally found at the bottom of her tea-caddy. A few seeds of *Maize* or *Indian Corn* sown in a large pot or box at this season will form a most graceful ornament outside on the sill of a sunny window, and if you want to hide a bit of bare wall, the common *Scarlet Runner* or *Kidney Bean* sown now, and trained up sticks or twine, will do it effectively. The *Castor-oil Plant* makes an interesting specimen, and seeds or beans of it may now be sown in a pot indoors, and when they get 2 inches or 3 inches high, they may be placed on the sill outside. I may be a little too sanguine and enthusiastic on this subject, but my own opinion is that every window of every house ought to have a large window-box for plants and seeds on its outer sill. Moreover, I am glad to see that in some of the best of modern houses now being built in London and elsewhere this want has been solidly, permanently, and prettily supplied by the architect and builder rather than temporarily so by the carpenter, and I sincerely hope that those in authority will bear this want in mind when the construction of model dwellings for artisans and labourers is being carried out. It may be said, as has been said very often, that real wants must be first satisfied, and that it is next door to a sin to offer beauty to people who may be wanting in bread, but I do not fully agree with this view. One of the greatest privations that could be inflicted on cultured people of any town would be not to take away their bread or wine, but to take away the flowers with which they love to surround themselves, and I know the self-same love of real and beautiful flowers exists in the hearts of most of you here to-night, and I am further sure that some of you now present will be among the successful competitors at a flower show which has been, or is about to be, organised by the honorary members of this association. Last year I was one of those appointed to make the prize awards at a flower show at Litton Hall, Leeson Park, and the perfection to which *Geraniums*, *Fuchsias*, *Petunias*, *Cactus* plants, and annuals had been brought was really surprising when one remembers the difficulties and makeshift contrivances under which they had been grown. What most surprised me, however, was the little garden belonging to an inmate of the Blind Asylum—a little sunny corner gay with flowers and creepers. This little plot had been made, planted, and tended by a blind woman, a Mrs. or Miss Morgan, and nothing could well be neater or show more loving care than did her flowers. She knew the position of every plant, and could actually tell me, by means of the tips of her fingers, the names of them, and could show me each treasure almost as well as if she had had her sight. Now, great as your difficulties may be, you will own that those which this blind gardener surmounted were greater than any you may expect to encounter. It would not be quite fair to conclude a lecture given under the auspices of this association without making some reference to the sanitary or health question in relation to window gardening. I am sure I need not tell you that plants in reality belong to Nature's scavengers, and benefit us by eating up decomposing matter, which if left unutilised by them would become a source of extreme danger to ourselves. Apart from such direct gifts as corn and wine, or fruit and timber, we must not forget the draining and disinfecting value of vegetation.

TREES AND SHRUBS.

NEW FOREST SCENERY.

ON looking into a map of the New Forest and drawing an imaginary line from Ringwood on the Avon to Dibden on the bay of Southampton, the whole forest easily divides itself into four parts. That district which lies north of this imaginary line we may call one part, the river Avon and Lymington River mark the boundaries of a second, Lymington River and Beaulieu River of a third, and the country between this last river and the bay of Southampton may be considered as a fourth. I have spoken of forests in general as consisting in large tracts of heathy land and carpet lawns interspersed with woods. The scenery of New Forest is precisely of this kind. Its lawns and woods are everywhere divided by large districts of heath. Many of these woods have formerly been, as many of the heaths at present are, of vast extent, running several miles without interruption. Different parts, too, both of the open and the wooded country are so high as to command extensive distances, though no part can in any degree assume the title of mountainous. Along the banks of the Avon from Ringwood to the sea the whole surface is flat, enclosed and cultivated. There is little beauty in this part. Eastward from Christchurch along the coast as far as the estuary of Lymington River we have also a continued flat, with much heathy ground, but no wooded scenery, except in some narrow glen through which a rivulet happens to find its way to the sea. In two or three of these there is some beauty.

Here the coast, which is exposed to the ocean and formed by its violence, is edged by a broken cliff, from which are presented grand sea views, sometimes embellished with winding shores. As we leave the coast and ascend more into the midland parts of this division the scenery improves; the ground is more varied, woods and lawns are interspersed, and many of them are among the most beautiful exhibitions of the kind which the forest presents.

In the next division, which is contained between the rivers of Lymington and Beaulieu, we have also great variety of beautiful country. The coast, indeed, is flat and unedged with cliff, as it lies opposite the Isle of Wight, which defends it from the violence of the ocean, but the views it presents are sometimes interesting. It is wooded in many parts almost to the water's edge; and the island, appearing like a distant range of mountains, gives the channel the form of a grand lake. As we leave the sea the ground rises and the woods take more possession of it, especially along the banks of the two rivers just mentioned, which afford on each side for a considerable space many beautiful scenes. There are heathy grounds in this district also, but they occupy chiefly the middle part between these two tracts of woodland.

In that division of the New Forest which is confined by Beaulieu River and the bay of Southampton the midland parts are heathy, as in the last, but the banks and vicinity both of the river and the bay are wooded and full of beautiful scenery. This part is perhaps on the whole the most interesting of the forest, for besides its woods there is greater variety of ground than in any other part.

Here also are more diversified water views than are exhibited anywhere else. Those along the banks of Beaulieu River it has in common with the last division, but the views over the bay of Southampton are wholly its own. One disagreeable circumstance attends all the sea views which are opposite the Isle of Wight, and that is the oozeiness of the beach when the sea retires. A pebbly or sandy shore has as good an effect often when the sea ebbs as when it is full, but an oozy one has an unpleasant hue. This shore, however, is one of the best of the kind, for the ooze is generally covered with green seaweed, which, as the tide retires, gives it the appearance of level land deserted by the sea and turned into meadow. The northern division of New Forest contains all those parts which lie north of Ringwood and Dibden. As this district is at a distance from the

sea, and not intersected by any river which deserves more than the name of a brook, it is adorned by no water views except near Dibden, where the forest is bounded by the extremity of the bay. The want of water, however, is compensated by grand wooded scenes, in which this part of the forest equals, if not exceeds, any other part. Here the ground swells higher than in the more maritime parts, and the distances which these heights command consist often of very extensive forest scenes. Besides the heaths, lawns, and woods of which the forest is composed there is another kind of surface found in many parts which comes under none of these denominations, and that is the bog. Many parts abound in springs, and as these lands have ever been in a state of nature, the moisture drains itself into the low grounds, where, as usual in other rude countries, it becomes soft and spongy and generates bogs. These in some places are very extensive. In the road between Brokenhurst and Ringwood, at a place called Longslade Bottom, one of these bogs extends three miles without interruption, and is the common drain of all those parts of the forest. In landscape, indeed, this bog is of little prejudice; it has in general the appearance of common verdure. But the traveller must be on his guard; these tracts of deceitful ground are often dangerous to such as leave the beaten roads and traverse the paths of the forest. A horse track is not always a mark of security; it is, perhaps, only beaten by the little forest horse, which will venture into a bog in quest of better herbage, and his lightness secures him in a place where a larger horse, under the weight of a rider, would flounder. If the traveller therefore meets with a horse track pointing into a swamp, even though he should observe it to emerge on the other side, he had better relinquish it. The only track he can prudently follow is that of wheels. Such was the New Forest at the close of the last century, and although here, as in every other of our sylvan retreats, the march of "civilisation" has made itself felt, and these limits have from time to time been greatly curtailed, and such areas as are reserved have been "improved," many vestiges of its ancient beauty still remain. For the brief description given above we are indebted to the pen of a person who lived for many years within the boundaries of the forest of which he writes.

Variability in Rhododendrons.—I observed with interest the great variability of the Rhododendrons within a limited area (but with variety of level and aspect) on Sundukphoo. The common species there, *Rhododendron campanulatum*, varies from white to mauve and pink, two shrubs close beside each other differing greatly in colour; moreover, the corolla varies in size and shape, some of the trees at lower levels having smaller and wider-mouthed corolla. *Rhododendron cinnabarinum* is in general rather a dull-coloured



IN THE NEW FOREST.

species, the brick-red shading off into a tawny yellow; but there were particular trees of this species, at various levels, on Sundukphoo of extraordinary brilliant colour, the red having become a scarlet and the orange entirely disappeared. For gardening purposes I can see that we must look to individuals, not to species. The cultivators of Rhododendrons must send men to these upper levels to mark particular trees in spring, and the men must come again in autumn and collect the seed of the marked trees.—C. B. CLARKE, in *Linnean Society's Journal*.

SOCIETIES.

ROYAL HORTICULTURAL.

APRIL 21.

THE Auricula show being held in conjunction with the ordinary committee meeting, there was quite a large display in the conservatory. The exhibits, however, placed before the committee were singularly devoid of novelty, and only two plants were certificated; these were the following:

PHALENOPSIS MARIE a pretty Bornean species, reminding one of *P. Luddemanniana* as regards the size and shape of the flowers. Their colour, however, is different, being brighter and altogether more attractive. The flowers measure over an inch across, and each sepal is heavily barred in carmine-crimson on a white ground. A plant of it was shown by Mr. Ballantine, from Baron Schroeder's garden, at The Dell, Egham.

TULIPA OCLUS-SOLIS MERVENSIS.—An extremely fine form of this variable Tulip, collected at Merv and shown by Mr. Elwes. The flowers are quite as large as those of *T. Greigi*, of a brilliant red, with a heavy blotch of black at the base of each sepal.

In the various collections of plants exhibited we singled out the following as being of exceptional interest. A new tropical Balsam, under the name of *Impatiens Episcopi*, was shown by Mr. R. I. Lynch, of the Cambridge Botanic Garden. It is similar to *I. Sultanii*, but the flowers differ somewhat in colour, and Mr. Lynch considers it distinct in other particulars. If as floriferous and as easy to grow as *I. Sultanii*, it is bound to become popular. The plant shown was hardly in a condition for the committee to judge of its merits. Mr. Bull showed some finely-flowered plants of *Crinum giganteum concinnum*, a noble species from Tropical Africa. It bears large fragrant white flowers in umbels on tall

stems. *Hæmanthus Kalbreyeri* was again shown by Mr. Bull, this brilliant bulbous plant having been in bloom now for some weeks; also a new Lily (*Lilium elegans guttatum*) with orange-yellow spotted flowers. Mr. Sidney Courtauld sent two handsome *Odontoglossums*, named respectively *O. mulus* and *Wilckeanum*, both remarkable in their way for richness of marking. An uncommonly fine specimen of *Maxillaria Turneri*, a huge plant bearing hundreds of flowers, came from Sir Trevor Lawrence's garden, and to the grower of it the committee voted a cultural commendation. It

was quite a pleasure to see such a well-grown plant as this exhibited, being so different from the small imported plants which are generally shown. Messrs. Low showed a profusely flowered Dendrobe under the name of *Dendrobium anosmum* Dayanum. It is uncommonly like a dark form of *D. macrophyllum*, even to the Rhubarb-like perfume peculiar to that species. Accompanying it was a plant of the Frontino variety of *Cattleya gigas*, a very fine Orchid, not large, but splendid in colour. Two beautiful double-flowered hardy Azaleas of the viscousa narcissiflora race came from Messrs. Veitch. One named M^{me}. Van Houtte was yellow; the other, named Louis Van Houtte, was a soft salmon-pink. The flowers of both were very double and profusely borne. One of the most remarkable exhibits was *Magnolia Campbellii*, the noble Himalayan species of which Mr. Crawford sent some flowers from his garden at Lakelands, Cork. The flowers are as large almost as those of *M. grandiflora*, and are the colour of those of *M. conspicua*. Mr. Crawford seems particularly successful in flowering this fine species, for we believe he bloomed it last year. Among an interesting collection of hardy bulbous plants from Mr. Elwes were the following, all grown in the open air: *Tecophylaea cyanocrocus*, a lovely little Chilean bulb about which very little is known at present; *Fritillaria Forbesii*, like the yellow Californian *F. pudica*; *F. græca*, *F. obliqua*, almost black; *F. delphinensis*, in the way of *F. latifolia*; and forms of *F. Meleagris*. There was also a flower of the rare Californian Dog-tooth Violet (*Erythronium propullans*), which reminds one of a pale *E. dens-canis*, but more slender. Among a series of Narcissi from Mr. Elwes was a bloom of the delicate little *N. calathinus*, grown under protection, and some fine spikes of bloom of *Primula obconica*, which Mr. Elwes considers unsurpassed by any *Primula* for floriferousness. Messrs. Paul, of Cheshunt, again sent a most interesting group of hardy plants, principally alpine, chief among which were some rare Saxifrages. These included fine tufts of *S. valdensis*, *aretioidea*, and its varieties *præcox* and *primulina* with primrose-tinted blooms; *S. biflora*, *S. marginata* and one of the mossy group named *Lindisiana*. Conspicuous also were beautiful healthy tufts of *Androsace Chamæjasme* which is seldom seen in good health; also *Polygala Chamæbuxus* and its purple variety. Of special interest were *Ranunculus montanus*, a dwarf Crowfoot from Lapland, only an inch or so high, but with flowers as big as a shilling and bright yellow—quite a rock garden gem! Other uncommon plants were *Dielytra cucullaria*, *Ficaria ranunculoides alba*, *Stylophorum diphyllum*, *Fritillaria pallidiflora*, *Adonis vernalis*, *Anemone vernalis*, and *Corydalis bulbosa*, of which there was the finest potful we ever remember seeing. Mr. Ware and Messrs. Barr exhibited extensive displays of Narcissi, quite an exhibition itself, and their flowers seemed to show to much greater advantage than hitherto. Besides a rich collection of the Narcissus varieties, Mr. Ware had a large number of hardy perennial plants, none being more beautiful or more admired than the *Anemones*, particularly *A. apennina* and its white variety, and *Robinsoniana*, the delicate mauve form of *A. nemorosa*. These charming plants being so finely flowered were greatly admired. A brilliant group of a fine strain of *Cinerarias*, all well-grown plants, came from Messrs. Carter, and an interesting group of New Holland plants was shown by Messrs. Cuthush, of Highgate, who make such a speciality of these favourable plants.

MEDALS AWARDED.—A silver-gilt medal was taken by Mr. Ware for his fine group of Narcissi and other flowers, silver medals by Messrs. Paul for alpine plants, Messrs. Barr for Narcissi, Messrs. Cuthush, Messrs. Carter for *Cinerarias*, and Messrs. Hooper, Bath, for a fine collection of Pansies.

FRUIT.—A few well preserved Apples were the only exhibits submitted to the fruit committee, and none of these call for comment. We omitted to mention last week that Mr. Ross, of Newbury Park, took a medal for a large and very fine collection of Apples consisting of the best sorts.

NATIONAL AURICULA SOCIETY.

THE annual show of Auriculas, Polyanthuses, and Primulas, held on Tuesday under the auspices of this society, was hardly equal to some previous displays of these spring flowers, either in regard to numbers or quality. The season generally is credited with these demerits, but it was noticeable that the fancy section of the Polyanthuses and the Primroses were not less beautiful than usual, and were even in better form than at some previous shows. The comparatively backward character of the season made it possible to show these remarkably early spring flowers in good form so late as April 21. Even the alpine Auriculas, usually so much more amenable to cultivation than are their show congeners, seemed to be somewhat lacking those rich hues and singular charms the which sometimes stand out so boldly. Possibly the exceeding glare of sunshine and great heat combined with the dust which prevailed so largely early in the day assisted to bring about these results.

SHOW AURICULAS.—The large class for fifty plants brought only two collections, those from Mr. Douglas and Mr. Turner. This is a class which enables many large and effective flowers to be shown, the which would hardly find a place in the smaller classes, and duplicates are largely shown also, as only twenty varieties are essential. Amongst so many edged flowers such fine selfs as *Sapphire*, *Pizzaro*, *Duke of Albany*, and a showy bluish purple seedling stood prominently; whilst of edged flowers Mr. Douglas had *Frank Simonite*, *Acme*, *Miss Prince*, and *George Lightbody*, bold and good; and in Mr. Turner's lot were his favourite *Colonel Champneys*, *Beauty of Stapleford*, *Hero*, and *Conservative*, of edged; and *C. J. Perry*, *Miss Wilson*, *Lord of Lorne*, and *Topsy*, of selfs, all good. The greatest interest in the competition in these showy flowers naturally laid in the smaller classes, the which brings Mr. Horner to the fore. That enthusiastic cultivator was again *facile princeps*, easily taking first prize in the section for twelve plants, his flowers showing exceeding finish and refinement under the influence of patient care and a little artificial heat. His collection included *Greyhound*, finally selected as the premier Auricula of the show; *Nigella*, *Greenfinch*, *Thetis*, and *Monarch* of edged flowers, all his own raising; also *Headley's Geo. Lightbody*, *Mellor's Reliance*, and *Simonite's Redoubt*, *Dr. Horner*. Specially striking of self flowers were *Lynette*, *Heroine*, and *Mrs. Horner*, all his own raising also. In other collections in this class *Lady C. Dumaresque*, *Acme*, *Frank Simonite*, *Silvia*, *Lancashire Hero*, and *Conservative* were good; of edged flowers and of selfs, *Bessy Bell*, *Lord of Lorne*, *C. J. Perry*, *Brunette*, and *Douglas's Perfection* were excellent. In the class for six kinds Mr. Horner was again leading, having *Florence* and *Heroine*, the latter perhaps the very best dark self in the show; also of edged flowers *G. Lightbody*, *F. D. Horner*, *Albatross*, and *Monarch*, the two latter being seedlings of the exhibitor and of fine quality. *G. Lightbody* and *Conservative* were very good in Mr. Douglas's lot. The competition was limited to six exhibitors. The classes for four kinds and two kinds were in the interest of smaller growers, and brought some half dozen competitors; *Mrs. Wilson* (*Bolton*) and *Prince of Greens* were amongst sorts not previously named. A couple of exhibitors from Reading were in good form in this class, and also for the two plants, thus showing that amongst the small growers may be some excellent cultivators. *Acme*, *Mrs. Heap* (*Mellor*), *Lord Rosebery*, *maroon self* (*Brockbank*), *G. Lightbody*, and *C. J. Perry* were amongst the best flowers in this class. The classes for single specimens were difficult to comprehend, the plants being jumbled up in extreme confusion. As far as we could make out, Mr. Horner came first and second with *Monarch* and *Conquest* in the green-edged flowers; Mr. Turner had *Justus Corderoy*, and *Prince of Greens* came in with others. Of grey-edged kinds a seedling of Mr. Brockbank's came in first followed by *Lancashire Hero* and *G. Lightbody* in no less than three cases. White-edged flowers were represented by Horner's *Miranda*, *Magpie*, *Acme*, *F.*

Simonite, and in the self class Horner's beautiful *Heroine*, *Negro*, and *Othello* took the chief honours.

ALPINE VARIETIES.—Mr. Turner's first prize collection of twelve plants included *Duncan*, *Sunrise*, *J. J. Colman*, *Troubadour*, and *Viscount*, gold centres; and *Edith*, *Selina*, *Placida*, *Mabel*, and *Philip Frost*; of cream centres Mr. Douglas had *Ada Hardwidge*, *Diadem*, &c. The class for six plants had *Pallas*, *Mrs. Lumby*, *Tennyson*, *Unique*, and *Edith*, good; Mr. Douglas showing a fine showy flower with gold centre in *Prince of Waldeck*. In the classes for singles Mr. Turner had the best in *Rosalind*, *Love Bird*, and *Lucretia*; *Diadem* was also good. In the cream centres the best were *Philip Frost*, *Ada Hardwidge*, and *Chastity*.

FANCY AURICULAS.—These were represented by two collections of twelve plants only, Mr. Douglas having chiefly show forms of yellow and buff grounds very curious to look at, and Mr. Dean had chiefly some charming laced flowers that are very beautiful. Gold-laced Polyanthuses were not in good form, Mr. Douglas having the best six in *John Bright*, *Lancer*, *George IV.*, *Formosa*, *Prince Regent*, and *Red Rover*; others had *Blackbird*, *Exile*, *Cheshire Favourite*, and *Sanderson's Beauty*. In the class for four, six, and single plants almost the same kinds were repeated, *Cheshire Favourite* proving to be the best single specimen in four classes, *Prince Regent* and *George IV.* following.

HARDY PRIMULAS.—Only two lots of twelve kinds were put up, Mr. Douglas showing several forms of *P. Sieboldi*; *P. obconica*, in a wonderfully flowered clump; *Nelsoni intermedia*, a curious variety, the latter called because of its hue; *Primrose League*, another well-known form. Messrs. Paul & Son's collections were largely shown in pans, and included *P. rosea*, *ciliata purpurea*, *pulcherrima*, the curious little *Wulfeniana*, and *glutinosa*. Mr. Dean had twelve charming fancy Polyanthuses, good solid clumps showing fine form and quality in colours of white, cream, yellow, red, purple, and crimson. Another lot were of finer plants, but lacked quality and compactness. The favourite Primroses were beautifully shown by Mr. Dean also, whose clumps were dwarf, compact, and exceedingly bright. Mr. Douglas had fine plants, but had been rather drawn under glass. Messrs. Paul's collection included some fine double forms, but was not held admissible, as the pans contained several plants each.

NEW VARIETIES.—Knowing what a successful raiser the Rev. F. D. Horner has been, it is not surprising he should have exhibited several varieties of his own raising. Mr. J. Douglas had a few also, as did Mr. R. Dean; and Mr. Brockbank has some fine varieties raised by the late Thomas Mellor, of Ashton-under-Lyne. As might have been expected, Mr. Turner had a fine lot of his latest seedling alpiners. Mr. Horner showed the following show Auriculas of his own raising: Green edges—*Monarch* and *Greenfinch*, both excellent varieties; grey edges—*Greyhound* and *Thetis*; white edges—*Reliance* and *Nigella*; and selfs—*Heroine*, *Lynette*, a fine violet self; *Mrs. Horner*, rich magenta-purple; and *Sapphire*. *Greyhound* appears to be a perfect grey edge, pip finely formed, large, flat, and stout, golden tube, fine paste, and rich body colour. This was selected as the premier Auricula in the exhibition, and had it competed in the seedling classes would have taken high honours. *Simonite's* the Rev. F. D. Horner, a bold and useful green edge, was shown in good condition both by the Rev. F. D. Horner and Mr. Douglas. In the class for six Auriculas, Mr. Horner had *Albatross*, a chaste white edge, and *Florence*, a very pretty magenta-violet self, both of his own raising. In Mr. Douglas's collection of twelve flowers were grey edge *Mrs. Moore*, a good useful variety, his new white edges *Sylvia* and *Conservative*; and of selfs, *Duke of Albany*, a rich dark flower, and *Perfection*, a shaded plum variety of good properties.

In the class for the best green edge Mr. Horner had *Conquest*, a promising new variety of undoubted merit, and Mr. C. Turner *Justus Corderoy*, an attractive flower, the edge of a very bright tint of green, and likely to develop into a good

useful flower. In the grey edge class Mr. W. Brockbank was first with William Brockbank (Mellor), a very fine grey tube, paste, body colour, and edge being of the best character and well proportioned. It commanded universal admiration for the life and expression it manifested. In the white edged class Mr. Horner was first with Miranda, and second with Maggie, both chaste and promising flowers in this section.

In the classes set apart for seedlings the Rev. F. D. Horner was first with Redwing, a charming green with gold tube, white paste, black body colour, and good edges. Mr. R. Dean came second with Criterion, a flower of excellent character, but too young; the judges expressed a wish to see this again another year. In the grey class Mr. Brockbank was first with Mellor's William Brockbank, also awarded a first-class certificate of merit. Hyperion (Horner), a good useful variety, was placed second. No new white edge of high class merit was shown, but in the class for selfs the best was Mary Grainger (Bolton), a fine rich deep plum-coloured self, requiring a denser paste to make it perfect; a variety named Blue Bell being second, of a distinct blue-purple colour and very promising.

All the honours in the classes for new alpine went to Mr. Turner. In the class for golden centres the best was Rosalind, Chastity being placed second, both having dark grounds and light rosy salmon edges. In the class for white-centred flowers Mr. Turner was to the fore with Albion and Marion, both charmingly shaded with mauve. Other fine new alpine raised at Slough were Viscount, Sunrise, J. J. Colman, Duncan, Mrs. Kingston, Pallas, Teanyson, Rosalind, Lucretia, and Mrs. Lumby.

Of new gold-leaved Polyanthus the only one with any pretensions to high-class quality was Red Rover (Douglas), a flower of excellent properties, and, in addition to being awarded the first prize as the best new red ground, it also received a first class certificate of merit.

ROYAL BOTANIC.

APRIL 22.

It was generally considered that last Wednesday's show at Regent's Park was below the average of April shows held there, the exhibits being fewer and inferior on the whole, and, moreover, there were but few new plants. The most prominent features were the extensive collections of Narcissi from Messrs. Barr, Ware, Veitch, and Collins & Gabriel; the Roses from Messrs. Paul, of Cheshunt; the groups of Rhododendrons and Azalea mollis from Messrs. Lane, the Auriculas from Messrs. Turner and Douglas, and fine collections of alpine plants from Messrs. Paul, Messrs. Carter, and others. Without the aid of these non-competing exhibitors the show would have been poor indeed, for the exhibits in the majority of the prize class were very inferior. It seems a pity to offer prizes year after year for such as stove and greenhouse plants and Azaleas, with no better result than the miserable display that one sees at these spring shows. Better by far offer prizes for the kinds of plants that the flower-loving public would be likely to find represented in a creditable condition. By-and-by, at the summer shows, when the Orchid flowering season is on the decline, valuable Orchid prizes will be offered by this society, whereas not a shilling is offered in prizes for these plants at either of the spring shows.

A cheerful surprise to the visitors was a group of uncommonly fine Pelargoniums from the Slough Nurseries. These plants, for size and quality of flowers, would compare favourably with July Pelargoniums, so perfect were they in every respect. The sorts Mr. Turner showed were chiefly what are called market kinds, such as Duchess of Bedford, Mme. Thibaut, Rosy Morn, Mrs. Ashby, and Duchesse de Morny. Fortitude was the only show variety shown. Messrs. Lane's group of Azalea mollis was particularly admired, their subtle gradations of tints, from yellow to salmon-pink, being in beautiful harmony with the surrounding

greenery. These Azaleas, as well as the Rhododendrons, were admirably placed in a recess in the conservatory and showed to advantage. Messrs. Paul's Roses, of course, came in for a fair share of attention. The nine prize pot plants were, indeed, fine for April. Innocenti Pirola, Duke of Edinburgh, Céline Forestier, Mme. de St. Joseph, Beauty of Waltham were prominent sorts in the group; and in a large miscellaneous group also from Cheshunt was Merveille de Lyon, whose large white flowers fascinated everyone. Mr. Walker, of Thame, showed some Maréchal Niel blooms, as fine as we have seen in April. Mr. Perry, of Cheshunt, also showed pot Roses well. Auriculas were much the same as those shown the day previous at Kensington, apparently the same plants. Cinerarias were good, particularly the group from the well-known Cineraria raiser, Mr. James, who is unapproachable. The Amaryllises from Mr. Douglas were excellent. He was the only competing exhibitor, and all his dozen plants seemed to be seedlings from Empress of India, one of the very best. The group of Amaryllids from Messrs. Veitch included such beautiful kinds as Storr's Beauty, John Heal, and Adolphus Kent; also some fine seedlings, among which the best were Victorine and Jesamond. Mr. B. S. Williams had two seedlings, the finest being that named Mrs. Walford. A group of hard-wooded plants from Messrs. Cutbush contained many interesting plants, as did also one from Mr. Bull, some of which were certificated, the new *Alocasia Sanderiana* with its handsome and singularly shaped leaves being the centre of attraction. The hardy plants from Messrs. Paul attracted, as at Kensington, a deal of attention, and Messrs. Carter also contributed an interesting display of alpine. Among the large collections of Narcissi shown there were many new kinds, but most of them have been hitherto alluded to in our columns. We thought that Messrs. Barr's collection on this occasion finer than ever, and Mr. Ware added greatly to the interest of his group by showing a multitude of other showy hardy plants.

BOTANICAL CERTIFICATES were awarded to Messrs. Carter and Co. for *Saxifraga Vandellii*, Mr. Bull for *Alocasia Sanderiana* and *Vriesia janeirensis variegata*.

FLORICULTURAL CERTIFICATES to Messrs. Barr and Sons for Narcissus M.M. de Graaf, Mr. Turner for alpine Auriculas, Sunrise, Rosalind, and Chastity; Mr. James for Cinerarias The Bride, Amy Robsart, and Countess; Messrs. Collins and Gabriel for Narcissus *spurius coronatus*; Mr. W. Nicholl for Azalea Princess of Wales; Messrs. Veitch for Amaryllis Prince George of Wales; Mr. Douglas for alpine Auricula Alvine.

A list of awards of the foregoing shows will be found in our advertising columns.

Daffodils from Cork.—I send you a couple of blooms each of Emperor, Empress, and Horsefieldi to show how Irish soil can grow Daffodils. For the last week or ten days we have had a cold easterly wind against them. The bulbs were planted last July, and Horsefieldi flowered ten days before the others.—W. B. HARTLAND, *Cork*.
* * * Extremely fine blooms, Horsefieldi being much larger than Empress in the trumpet, but of thinner texture.—ED.

Lloydia serotina.—This scarce British plant is now in flower at Floore, a rare occurrence, as it is not only very difficult to cultivate, but to keep alive. Not having heard of its flowering before in cultivation, perhaps some of your correspondents may give us some information in regard to it.—S.

Scillopus Bigelowii.—This very curious and rare plant has been in fine flower for some time. Few hardy spring flowers are more worthy of cultivation. Its quaintly formed brown blossoms close to the ground in a rosette of light green leaves are sure to attract attention. Frost appears to have no effect on it.—S.

Iris tuberosa.—The following letter enclosing a flower of this Iris was sent to an artist: "Do you know this wonderful little Iris, made of green satin and black velvet? Was it not Ruskin who wrote of Velasquez that his black contains more colour than many another painter's whole palette—not perhaps in those words, but with that sense? I think this little Snake's-head Iris must have taught Velasquez."—G. J.

GARDEN DESTROYERS.

BIRDS AND FRUIT BUDS.

MR. FISH (p. 311), in alluding to fruit prospects for the present year, says that birds, meaning, I suppose, bullfinches, do not eat fruit-buds, but simply knock them off at a very rapid rate—an assertion which hardly accords with my experience. I have known bullfinches to nearly wreck the entire crop of a wall of Apricot trees before the disaster was observed; and to make sure as to the fact of their eating the buds, I have shot them while so engaged, opened their crops, and found them full of buds. They appear to pick off the buds, rapidly divest them of outside scales, and then swallow the central portion. They also serve Plum buds in the same way, more particularly those of standard trees, and their depredations upon the Gooseberry and Currant crops are too well known to admit of doubt. I have, however, seldom known them to attack the Peach, the Apple, or the Pear, although doubtless they sometimes do so. The small blue tomtit is also suspected of picking off buds, and it is quite possible that it may do so. I have seen them under very suspicious circumstances, and have more than once shot them and examined their crops, but never found them to contain buds. I therefore came to the conclusion that they were in search of scale or larvæ, and while so engaged may not unlikely displace buds more or less. One thing may, however, be said in favour of these lively and pretty little birds; they will, and frequently do, clear Roses and other plants of aphides most effectually. The picking off of the buds of fruit trees and Gooseberry and other bush fruits is among the many charges not unjustly brought against the common house sparrow; I have, however, frequently examined their crops, but never found buds in them. Why they pull the flowers of Crocuses to pieces, as they frequently do, I am unable to say. They may possibly swallow some portion of the flowers, scattering the petals on the ground. Strange to say, it is only in towns and their immediate neighbourhood where they do this; at least I have no recollection of having seen them attack such blooms in country places.

P. GRIEVE.

SULPHUR V. THE HOLLYHOCK DISEASE.

LAST September I had the pleasure of seeing nearly a hundred varieties of Hollyhocks finely in bloom in the nurseries of Mr. Forbes, at Hawick. They ranged up to 9 feet in height, and were quite free from disease—a freedom obtained by the prodigal use of flowers of sulphur. This dusted over suspected or infected plants does not allow the germs of the disease to find a fitting and congenial resting-place. Sulphur in almost any form is detrimental to fungoid growth. Nor can it in its powdered form be injurious to plants. It is only as sulphuric acid, sulphurous acid, and sulphides that vegetation is hurt by it. The Barberry is supposed by some to smut cereals, and as the common Marsh Mallow and others of that tribe are infested with their own peculiar fungus in common with the Hollyhock, it may not be wise to plant the latter extensively where such wild forms luxuriate, but if the Hollyhock be properly planted and due precautions taken to avert fungi, there need be little fear of mischief. Plants should be put in now, well below the surface, just as they are turned out of the pot; if pot-bound the ball must be broken up a little. The ground should be well trenched and manured with strong cow manure, the manure *par excellence* for the Hollyhock. A 4-foot stake should first be driven well into the ground, and to this the plant must be tied as it grows up. In dry weather a thorough drenching must be given in the evenings, and also an overhead syringing, so as to keep down red spider. When the plants reach 7 feet high it is advisable to pinch out their tops. This keeps them from drawing and throws strength into the bloom. Where Hollyhocks are left out all winter some little protection should be given them in the shape of

loose litter, or, better still, dead Bracken, though this will only be requisite in cold districts. On the first symptoms of disease in the form of warty excrescences on the under surfaces of the leaves, the latter should be cut off and burnt, not thrown on the rubbish-heap, or the spores will mature and spread the pest over the remaining plants. The adjacent leaves should also be thickly dusted with sulphur, as in the case of mildew on Roses. It is now rather late for propagating. In February, where plants are already established, small shoots with a heel should be got from the stools and planted in heat, and as a preventive of disease the young plants should be given a thick dusting with flowers of sulphur. R. A. H. G.

Horsforth, near Leeds.

SULPHIDE OF POTASSIUM V. MILDEW.

I AM glad to see Mr. Edmund Tonks's important communication, narrating his experience with this chemical as a remedy for mildew and other diseases of plants reproduced in THE GARDEN because so many gardeners, amateur and professional, in all parts of the kingdom will thus have the matter brought to their notice. If Mr. Tonks's experience should be confirmed by other observers, the gardening community will not be slow to appreciate the boon which Mr. Tonks's discovery has conferred. Knowing Mr. Tonks to be a scientific and careful observer, I no sooner read his paper than I determined, in the interest of the gardening community, to place a supply of the same kind of sulphide of potassium as he used in the hands of a number of our best gardeners, in order that it might be subjected to the severest tests, for if it has the merits claimed for it the sooner these are confirmed and widely known the better for gardening. I have also induced the manufacturers to send out small samples of it at a low price, and this I learn they have done to some considerable extent. I have just ascertained, on enquiry, that one firm of florists who applied for one of these small samples about three weeks ago have this week ordered a considerable quantity of it, so that it seems probable they have found it efficacious. The friends to whom I have sent some of the chemical have promised to test it carefully, and before long we shall no doubt have the results of their experience placed at our disposal. Since Mr. Tonks's communication first appeared he has made many additional experiments, and he tells me that he is more than ever satisfied as to the value of sulphide of potassium as a remedy for plant mildew and other hurtful fungi. I hope any of your readers who may use this new remedy will communicate the results after sufficient trial for the information of others. I may perhaps be allowed to add that a sufficient quantity of sulphide to make thirty-two gallons of solution may be had post free for one shilling, so that on the ground of expense no one need be deterred from giving it a trial. E. W. B.

False wireworm.—Kindly tell me the name of the enclosed worm which infests the Carnation bed in a friend's garden; it devours the roots of the Carnations wholesale and nothing seems to kill it; it is also very fond of Pansies. Is there any way of getting rid of it?—E. F. T.

*The so-called worms which you forwarded are specimens of one of the snake millipedes, or, as they are sometimes called, false wireworms (*Julus terrestris*). No satisfactory way of destroying these pests has yet been found; spreading soot round the plants or sprinkling nitrate of soda round them, and then watering has been suggested. Small bundles of damp (not wet) Moss buried in the ground where they are would probably prove good traps, and pieces of tile, slate, or board laid flat on the ground would most likely attract them, as they are fond of hiding under such things.—G. S. S.

Gooseberry caterpillar.—So much has been written in THE GARDEN about this pest—how to guard against it, and how to destroy it—that it is with considerable diffidence I refer to the matter. My excuse must be that the plan I

tried on our trees last season is cheap, effectual, clean, and safe. Fill a copper with Elder leaves and branches, fill up with water, boil for one hour, and after the liquid is cold syringe the trees with it or pour it over them from a rosed watering can. Should any of the readers of THE GARDEN be so unfortunate as to be troubled with caterpillars this season, and will give this remedy a trial, I am sure they will not regret having done so. The liquid does not in the slightest degree injure either leaves or fruit.—E. L. M'INTOSH, *Grimshy.*

Pheasants and Peas.—Living, as I do, in the centre of a large game preserve, I have for years past been annoyed by pheasants. It is a terrible thing to see half-a-dozen long-tails marching up and down and picking one's young Peas with the greatest complacency. I have battled hard with them, but still they return again and again to the charge with determined pluck. I have tried, I may say, everything, including lime, soot, and small ashes, but after the first shower of rain my foes, the pheasants, returned to their feeding ground. I was quite perplexed as to future action, when one day I fortunately came across one of my men distributing Pooley's tobacco powder on our Peach trees. I thought to myself here is my remedy at last. "Taking the bull by the horns," I straightway went to the Peas, and after damping them over with a fine rose, I gave them, by means of a large pepper-box, a good dusting with the powder. Well, the effect was magical, and to me most pleasing to see these beautiful birds putting their heads between the stakes immediately withdrawing them and flying off disgusted. I shall, therefore, use Pooley's powder for all kinds of plants which I put out this season, feeling sure that my old friends the slugs will equally dislike the application.—RICHARD GILBERT, *Burghley, Stamford.*

AMERICAN NOTES.

A late Chrysanthemum.—My attention was arrested by a clump of fresh-looking Chrysanthemums in a cool house, and which were in good bloom, not bedraggled, washy, up-too-late-like flowers at all, but clean, fresh, large, broad-petaled blossoms of a clear bright yellow colour. It was Golden Eagle, which is one of the best late bloomers we have. Chrysanthemum blossoms during the holidays bring four times the price they do in November.

Madame Salleron.—A white-margined leaved Geranium of dwarf, compact, bunch or cushion form. The variegation is not so deep and pronounced as in the case of Mountain of Snow; it is a different habited plant altogether, the leaves forming a little thicket. Its mission is in the flower garden; plants of it planted out of doors in a sunny place last summer were models of symmetry and beauty, and suffered no inconvenience from sunshine. "It grows as free as a scarlet, and retains its distinct variegation in the hottest weather."

Steam-heating.—During the past year Mr. Henderson has built a wide, roomy Rose house, over 300 feet long, and heated it by steam. So far he is very much pleased with steam-heating, and assures me that it is more economical, so far as fuel and labour are concerned, and fully as efficient as hot water in warming the atmosphere of the house, and the plants show no signs whatever of aversion to it. The old range of low houses on the ridge and furrow system, that used to be uncovered in summer and merely covered with sashes in winter, and the plants (mostly hardy and half-hardy) covered over with mats, sheeting, thatch, or other handy material, are also now heated by steam, just enough to keep out frost. This is an immense saving in labour and the mass of covering, and the plants are always under the eye and in a get-at-able condition.

New Rose house.—Anyone interested in greenhouses, and who can conveniently, should see this new building. It is one of the roomiest, lightest, and airiest structures I know of. The

sides are of wood, the roof framework wood and iron and without any of the heavy rafters and other thick woodwork that render greenhouses so unnecessarily dark. Within there are three benches, all of wood, and well raised off the ground, and the Roses are planted out on them. Along the front and quite near the glass is a bench for Niphetos and other slender Roses; then a cement walk, then a bench a little higher than the front one, back of that a board walk, and between that and the back wall another bench a little higher than the middle one. The troughs of the benches are far shallower than we usually find in Rose growing, in fact, no deeper than we use for Carnations or Bouvardias—a little rubble on the bottom, then some 4 inches deep of loam, and a dressing of manure on the top. I presume these shallow troughs will necessitate the annual system which New York Rose growers consider the most profitable, but the roots are always under complete control, and there is never any fear of soaking the ground to sourness.

Damp and dry fruit rooms.—Whether fruit rooms should be dry or moist is a subject that has created a good deal of discussion. On one hand it is asserted that dampness is adverse to the keeping of any vegetable matter, and on the other cases are cited where fruit has kept well with a foot of water on the cellar bottom. There is no difficulty in settling this question, so far as mere moisture is concerned, by examining the fruit which the apartment contains, Pears and Grapes being the best test. If they wither or shrivel after being in the room a few weeks, the air is too dry; if they decay soon without shrivelling, there is too much dampness. But dampness or dryness has much less to do with the keeping than temperature. If it is warm, the fruit will decay, whatever the hygrometer may say; if the temperature is about freezing, and is uniformly kept so, the contents of the apartment will remain sound, independently of other influences.

Boxes for young plants.—These are of different sizes—from 15 inches to 20 inches wide, 16 inches to 30 inches long, and 2½ inches to 3½ inches or 4 inches deep. I buy empty soap and other boxes at grocery stores at the price grocers are allowed by the manufacturers for returned empties. I cut these boxes lengthwise into three parts, and in this way get two complete plant boxes (one from the top and one from the bottom), and all except the bottom of a third one. The bottoms of these third boxes are supplied from factory strips, or a few boxes laid aside for furnishing bottoms only. Of course, the boxes got from the top and bottom cuts are close-bottomed, and that will not do for plants, but that is soon altered. When young plants are raised in pots, their roots become root-bound, or twisted into a tight mass; if at planting time we undo these balls of roots, it will for a short time materially check growth, and if we set out the plants without unfastening their roots, the roots never become uncoiled, and although the plants may wilt less at the time of setting out, they do not afterwards grow as thrifty as those do whose roots were not coiled into a mass; and they also are more susceptible to injury by drought. For all one-season plants, such as Geraniums and Coleuses, we should avoid pots. Plants in pots need less care in watering than do those in pots, and in moving boxes from one place to another, we move 100 plants with as much ease and as quickly as we would six or seven in pots.

Carnations.—No doubt Buttercup is the best yellow Carnation in the market. It is not altogether yellow; it is faintly pencilled, but not nearly so much so as Astoria, till now our best yellow. Among bright reds I was particularly well pleased with President Garfield, which is said to have originated in the west and to be grown there in considerable quantity. Its colour is good, bearing seemingly copious, and habit vigorous. Kaiser Wilhelm has deep violet-purple flowers. It is of American origin, was raised by a patriotic Prussian, and with those who like the colour will probably become a favourite. I saw a lot of it on Staten Island, where it eclipsed in

profusion any of the other sorts. But Carnations are very variable; some kinds that are highly satisfactory one year may be comparatively worthless the next; sometimes the blossoms open well, at others they burst badly, and so on. We should not confine ourselves to one variety, nor should we rely upon new-comers to the exclusion of old and tried sorts.—*Country Gentleman.*

ROSE GARDEN.

A FINE MARECHAL NIEL.

I MET with the other day the best specimen *Maréchal Niel* I ever saw—not the largest or the heaviest cropped, but the best in the way of health and vigour, and perfect freedom from disease in either wood or foliage. Not a trace of aphides was to be seen. The training and stopping had been judiciously done, with the result that there were buds countless in all stages of development and flowers for daily gatherings. The fortunate owner of this tree is Mr. R. Boston, of Burley Mount, Leeds, whose glasshouses are but a short distance out of town and quite near some of the largest iron and other works in the borough. This fact is not without some importance; here we have *Maréchal Niel* in the best state of health under glass in a part where many of the commonest trees and plants will not grow out of doors, owing to the impure state of the atmosphere. The age of this Rose may be a little over seven years. It is on its own roots; the bole is 7 inches in circumference and remarkably smooth and clean, though still furnished with a few prickles. It covers about 400 feet of glass, is growing in a pit made up with turves of a calcareous character. The surface will measure about 130 feet, and the soil is 2 feet or so in depth. For a year or so the plant was grown in a stove, where it was not satisfactory; it was moved into another house, kept at a somewhat high temperature, and it still failed to flower as it should do; then Mr. Fern, the gardener, wisely adapted the collection of plants in that range to a lower temperature, when the best results as regards the Rose were soon manifest; the growths became twiggy and short-jointed and the buds abundant and evenly distributed. The impression conveyed to my mind on seeing this specimen was that own-root plants, well grown for a few years before cropping to any extent, is the best course. In this case, as has been stated, a low temperature has been kept and air given at the top only. It may also be worthy of note that several 15-inch pots of *Eucharis amazonica* in the same house had flowered well. They averaged twenty scapes each, five and six flowers being on a scape. Taking into account the enormous pollution of the air of the district, these results are almost beyond expectation.

Kirkstall.

J. WOOD.

Profitable Rose growing.—I have just been reading that a certain florist in New York purchased two years ago a single plant of one of Mr. Bancroft's new Roses for 3s. From this single plant he has multiplied the stock so fast, that he holds a sufficient number of plants to realise £1000; and either the value of that particular Rose must have immensely increased, or they multiply Roses faster in America than we do in England.—J. C. C.

Maréchal Niel under glass.—Anyone who has grown this finest of all golden Teas at different temperatures must have noted how greatly the colour varies. As a rule, the higher the temperature, the lighter; the cooler, the darker and more full of colour. But I hardly remember to have seen the *Maréchal* so deep and dense in its rich golden fulness of colour in cool houses as this spring. The flowers have also been abnormally large and heavy with substance. There is no other word so expressively true as one that conveys a vivid idea of weight, and I doubt whether, as a fact, any other Rose can match *Maréchal Niel* in specific gravity. The fragrance of the *Maréchal* partakes of the prodigality of its

other qualities. Scarcely enough has been made of this quality. There are hardly any other Roses that can equal the satisfying fragrance and fulness of its sweet odours—both rich and sweet. Another point which can hardly be made too much of is the earliness of the *Maréchal*. Flowering freely on warm walls in the open in May, it flowers with equal or greater freedom in unheated glasshouses through March and April. There is no other Rose that blooms so early under the same cool conditions, among the first to follow it being *President*, *Gloire de Dijon*, and *Safrano*. The first is without doubt one of our finest pink Roses, and the other two are useful as buds. But none of them are to be compared for colour, size, form, substance, fragrance with the most magnificent and earliest of all Roses, the *Maréchal Niel*.—D. T. FISH.

PRUNING ORCHIDS.

IF "J. S. W." imagines that those who have read what he has previously advanced in favour of Orchid pruning will take that which he has now to say in his renewal of the subject as in any way strengthening the case in favour of pruning, he must assume that their perceptions are somewhat hazy. A comparison of the ground which "J. S. W." first took up with that to which he has now retreated shows tolerably plain who it is that has faced about in the matter. From first to last I have never deviated from unqualified condemnation of the practice, my own experience satisfying me of its injurious effects, and my views have been supported by all good Orchid growers. In fact, the supposed new discovery in reference to pruning is an obsolete practice tried long ago and found to be injurious. Pruning, according to "J. S. W.'s" first assertions, was to have been beneficial in its results in the case of numbers of species; in his concluding communications on the subject a short time ago it had dwindled down into such infinitesimal proportions, that he simply recommended it for one or two kinds of *Dendrobium*. As I have already said, the best way of settling the matter is bringing the pruned plants before a tribunal competent to judge what the result of pruning is, and "J. S. W." may rest assured that until he does that, Orchid growers will have no faith in what he has advanced on the subject. So far as I am concerned until "J. S. W." gives practical effect to his pruning theories by bringing his plants forward as suggested, I must decline to further discuss the matter with him. T. B.

QUESTIONS.

5347.—*Tecophylæa cyanocrocus* (p. 303).—Will "C. J." say where this is to be had at a reasonable price?—A. R., *Windermere*.

5348.—*Heating*.—I have a greenhouse which I want to make into a stove. The cubical content is 2000 feet, and the glass surface 400 square feet. How many feet run of 4-inch pipe would be required? I should add the house is a lean-to, facing almost due west. If any of your readers will answer this they will very much oblige me.—J. G.

5349.—*Bulbous plants from seed*.—Will anyone who has had successful experience in raising from seed Crown Imperials, Irises, *Chionodoxa Lucilie*, and similar bulbous plants kindly inform me of the mode of treatment? I do not find that the seeds germinate if left to sow themselves in the open border, and though Crown Imperials have come up from seed under glass, the young plants damp off after a few weeks.—WEST HIGHLANDS.

4350.—*Nicotine insecticide*.—Will your correspondent who some time ago recommended the boiling of "nicotine fourteen degrees of strength" in greenhouses to destroy blight kindly tell me more exactly what this means? I find some difficulty in getting the liquid, and a leading London chemist writes that they have no such standard of strength in this country, but suggests that I should obtain pure nicotine and dilute it with water to the necessary strength. Would this be effective, and what quantity of nicotine should be put, also a given quantity of water say two gallons?—L.

5351.—*Ranunculuses*.—Can anyone tell me why my *Ranunculus* roots have done so badly? I planted them under the direction of a friend who is a very successful grower of bulbs and tubers of all sorts. My soil is rather heavy and dark coloured—good soil, I am told. I find that the tubers are nearly all rotten, and in every case they have come up very badly; the leaves become pale and spotted with white and look frost-bitten. They have had litter over them for fear of frost, and were planted last October. Tulips, Lilies, Anemones, Colchicums, and Narcissi are all doing well. They are planted in a situation where there is not too much sun—not sun all day.—S. M.

Fruit prospects.—Like most people, I greatly enjoy the sight and taste of well ripened fruit, and am therefore anxious that the coming crop should be both good and plentiful. Making enquiry on this matter of an old and experienced Sussex grower the other day, I received the following reply: "April 19. The fruit crop in this locality is quite safe at present. Peaches are going out of bloom; Pears, Plums, and Cherries are just opening. I never remember a more promising prospect for a good fruit season, though it is not yet late enough to wholly remove all anxiety."—ROBERT MARNOCK.

Bedded-out Hyacinths.—We have had rather an unusual occurrence amongst our bedded-out Hyacinths this year; the spikes of nearly all the blues (Baron Van Tuyl) have by some means become detached from the bulbs, whilst the reds and whites are not affected. There are no traces of injury from birds, mice, or other vermin. During the latter part of March and early in April we had severe frosts nightly, the thermometer on the morning of April 4 registering 12° of frost. The spikes of the blue Hyacinths were just showing above ground at the time. Can it be that the expansion of the surface of the ground by the frost lifted the spikes from the bulbs? I may add that the beds were not covered with cocoa fibre or any other non-conducting material. The red and white and a few of the blue Hyacinths were not above ground at the time, and, if my theory is correct, that may explain why they escaped injury. If any of your readers have had a similar unfortunate experience I shall be glad if they will record it in the pages of THE GARDEN.—P. COWBURN, *Halifax*.

Colonising rooks.—Many methods of doing this have been suggested, but in most cases they have turned out failures; I would therefore be extremely grateful if any of your correspondents who know something about this matter would give the result of their experience in reference to it. Rooks' eggs have been placed in the nests of large birds, such as jays, magpies, jackdaws, &c., the suggestion in this case being that by hatching rooks upon the estate they would be the more likely to return to it in the nesting season; secondly, young rooks have been caged with a view to their cawing attracting others; thirdly, corn has been freely spread upon the ground; fourthly, various kinds of animal offal have been suspended upon the branches of trees; fifthly, rooks' nests have been placed in large trees in positions in which they appeared perfectly natural; and I might enumerate many other methods which have been tried each and every one resulting in failure. Any practical hints therefore on the subject would be most acceptable.—C. D.

LATE NOTES.

Cattleya Trianae (J. Speed).—A pretty pale variety. We see nothing remarkable about the *Odontoglossum*.

Cinerarias (H. J. G.).—Your strain is remarkable more for size and variety of colour than for perfect form. Your show of these plants must have been a fine one.—L. P. and Co. Very fine blooms; good as regards size, form, texture, and colour.

Book on alpine flowers (H. B).—"Alpine Flowers," published by John Murray, would probably suit you, but it has no plates. Wooster's "Alpine Flowers" has coloured plates, but is a bulky volume.

Judas Tree (W. E.).—The botanical name of this tree is *Cercis Siliquastrum*.

Diseased Epiphyllum (G. P.).—We are unable to account for the condition your *Epiphyllum* is in. It looks as if it had been either scalded or frozen.

Dendrobium Dalhousianum.—I send you a spike of this *Dendrobium*, one of three on one bulb; the other two spikes are nearly equal in size to this one sent.—C. LUCAS, *Belmont, Taunton*.

* A very fine twelve-flowered spike of this beautiful Indian *Dendrobium*.—ED.

Naming plants.—Four kinds of plants or flowers only can be named at one time, and this only when good specimens are sent.

Names of plants and trees.—F. B.—1. *Asclepias curassavica*; 2. *Allium subhirsutum*.—E. C.—1. *Narcissus incomparabilis*; 2. *N. pseudo-Narcissus*; 3. *N. p. n. major*.—J. C. C.—*Abies* (*Picea*) *lasiocarpa*.—T. B. H.—*Allium neapolitanum*. Flowers in warm situations in May; the flowers imported in April are chiefly from the south of France.

WOODS & FORESTS.

THE BHOTAN PINE.
(PINUS EXCELSA.)

ALTHOUGH a native of the mountains of Northern India, this handsome and valuable Pine has been found perfectly suited for the climate of this country. It is a tree of rapid growth and great beauty, approaching very nearly in general appearance the Weymouth Pine (*P. Strobus*), from which, however, it may be readily distinguished by the leaves, cones, and bark, the two former being larger and longer and the latter rougher than on that species. Extending along the whole of the Himalayan range, except in Sikkim, at elevations varying from 5400 feet to 12,000 feet, this tree attains an average height of about 80 feet, although in a few places and under exceptionally favourable circumstances specimens of 150 feet in height are to be found.

THE BHOTAN PINE, as usually seen in this country, forms a regular and well-branched tree, the lowermost branches being somewhat pendulous and those further up distinguished by their semi-erect tendency, more particularly the tips of the branches, but this is not recognisable in all, although it certainly is in the majority of specimens. The reverse of this, I have heard, is, however, the case in its native woods, where the branches have all a slightly drooping inclination. The silky, silvery leaves, arranged in fives, are from 4 inches to 6 inches long, tufty, and, although in construction remarkably delicate and fine, are yet flexible and by no means easily broken. Cones 6 inches in length, cylindrical, smooth, and slightly recurved and pointed at the apex. The seeds, which are ovate and about the size of a small Pea, ripen in October or November of the second year, and are then shed, although the cones remain persistent for many months afterwards. When newly formed the cones are erect and of a purplish or violet-rose colour, but at an early age they become pendent and of a dull green and ultimately of a rich bronze.

Although found by Dr. Francis Hamilton in 1802, and described in his "Account of Nepal" under the erroneous name of *Pinus Strobus*, this tree was not introduced into Britain until about 1827 by Dr. Wallich. Since that time it has been pretty extensively planted, more perhaps as an ornamental tree than for general plantation purposes, the light, silvery foliage rendering it very desirable for contrast, especially when interspersed with our other Pines, the generality of which wear a rather dark and sombre appearance. To appear in its native beauty and glory, this tree, when planted in the British Isles, requires a rather sheltered position, as on exposed ground the foliage generally becomes somewhat scanty and the tree stunted in appearance. The soil best suited for its growth is light, gravelly loam well drained, although not a few examples of rapid growth in rather damp situations have been recorded. Here, at Penrhyn, the finest specimen is growing on a rocky eminence near the castle, the shallow soil being of a fine sandy loam. It is nearly 50 feet in height and girths $4\frac{1}{2}$ feet at a yard from the ground. Another of smaller dimensions, but an infinitely finer and more rapid growing tree, is also on light soil with an open bottom. Both trees are well sheltered from the prevailing winds of the district. As a timber tree, *Pinus excelsa* has not met with much favour in this country, but when we consider that only little more than half a century has elapsed since its introduction, such criticism can only be taken for what it is worth.

A. D. WEBSTER.

Penrhyn Castle, North Wales.

Pinus insignis.—I find that this is often planted in too sheltered positions, and consequently gets much injured from making spongy growth. Being about one of the first to commence growing in the spring, it is liable to be injured by frost in May, and again early in winter; vigorous young plants often make a

second growth, which rarely ever gets matured, and the consequence is, that if the winter be severe they succumb. There is at Ashburnham, in Sussex, a very fine plantation of this tree which was planted about the year 1840, and, with a very few exceptions, all have survived. The position is a northern one, on a stiff clay previously well drained. These trees cannot be termed perfect specimens, owing to their being planted too thickly, but, taking the plantation as a whole, they are very fine, and have a pleasing effect when viewed from a distance; many of them are from 40 feet to 50 feet high, with good trunks. The exposed situation occupied by this plantation has a tendency to check luxuriant growth and to encourage compact, well-ripened wood, and, moreover, abundance of cones, from which large numbers of plants have been raised. Young trees of this Pine are so frequently "coddled" in pots for years after being raised from seed, that it is almost impossible to disentangle their roots; and if they be planted with the balls entire, they will not stand a strong gale. When grown in pots or boxes when young, the roots should be shaken out thoroughly every season, with as little damage as possible to the rootlets. By this method they will be found to flourish much more satisfactorily than when planted permanently, because the roots will be more pliable, and readily spread out without injury.—A. H.

ORNAMENTAL COVERTS.

THERE are various ways of making coverts of ornamental shrubs in parks, pleasure grounds, or in home woods that would be effectual for game shelter, besides doing away with the expense of mowing Grass. In arboreta, pinetums, and other plantations of choice trees something more than mere game protection may be desired, and then we should throw in groups of dwarf evergreen shrubs, so arranged as to produce a pleasing effect. Plants suitable for this purpose are plentiful, but the following are a few of the most popular:—

<i>Aucuba japonica</i>	<i>Juniperus prostrata</i>
Box, common	<i>tamariscifolia</i>
<i>Berberis dulcis</i>	<i>Sabina</i>
<i>empetriolia</i>	<i>S. variegata</i>
Darwin	<i>Laurustinus</i>
<i>Aquifolium</i>	<i>laurel</i> , common
<i>Cotoneaster microphylla</i>	<i>Lycasteria formosa</i>
<i>acuminata</i>	<i>Ligustrum ovalifolium</i>
Simonsi	<i>japonicum</i>
Holly, green and variegated	<i>Tamarix gallica</i>
kinds	Gorse, common and double-
<i>Hypericum calycinum</i>	flowered
Ivy of sorts	Yew, common

Then among what are called American plants I may name *Andromeda*, *Erica*, *Gaultheria Shallon*, *Kalmia*, *Ledum*, *Pernettya*, *Vaccinium*, and *Rhododendron*. There is a wide field of evergreen shrubs, to which might be added a number of berry-bearing plants, foremost among which I would name, for its delicious odour, the Sweet Brier and numerous climbing Roses, and, above all, the Blackberries. Then there is the Snowberry (*Symphoricarpos racemosus*), which is grateful food for pheasants I am told, though it is not a covert plant—at least not for winter.

One of the most useful plants that can be planted is the Jerusalem Artichoke. Pheasants are specially fond of this, but of these plants, or rather I should say shrubs, the arrangement must depend upon the taste of the planter. For example, I would not plant a light foliage plant under a Deodar, neither would I plant a dark one under the Cedar of Lebanon or *Cedrus atlantica*, but I would so diversify the planting as to produce an agreeable whole with something of the picturesque about it. For example, the *Aucubas* and Golden Box and Hollies would give a fine patch of the palest green, or green and gold, while the *Berberis* would give dark green or, in the case of the most beautiful of all of them, *B. Darwini*, a very light tinge. Then of *Cotoneaster*, what can be so beautiful as *C. microphylla* studded with its bright scarlet berries?

At Holkham many of the plantations are car-

peted with St. John's Wort, which grows to the height of a foot, and, intermixed with Fern and Brambles, form a capital summer covert for birds. At Claremont scores of acres of the shrubbery walks are covered almost exclusively with common Laurel, which is pruned down to a certain height, say from 18 inches to 3 feet, and forms an admirable covert, through which beaters or sportsmen may pass with comfort. When interspersed with dwarf *Rhododendrons* and other American plants, such a covert may be made exceedingly ornamental. The pinetum at Basing Park, when planted more than thirty years ago, was intersected with various gravel walks, and nearly the whole of the ground was planted with *Berberis Aquifolium*, which the keeper pronounced a capital covert, inasmuch as the berries afforded food and the bushes themselves shelter. These may be considered the simple methods of forming game covert, and there are scores of plants besides those I have mentioned which may be used for the same purpose, the cheapest of which undoubtedly is Evergreen Privet. W. P.

MANAGEMENT OF THE RED-WOOD.

THE *Sequoia sempervirens*, or Red-wood, is indigenous to the north-west coast of America, and was introduced into this country about the year 1843, yet proprietors have never planted it to the extent which its merits as regards ornament and utility deserve. This may arise in a great measure from the difficulty of procuring seedling plants of it at a cheap rate. It is generally propagated in this country by means of cuttings made of the side branches, and as these are naturally flat they require a great deal of pinching and pruning to induce them to assume a conical growth; such trees likewise have a great tendency to produce a plurality of leaders which must be pinched or cut off, always leaving that which is best and most central for the permanent leader. When this tree is cut over at the surface of the ground the root retains its vitality, and produces a succession of young shoots around the margin of the stump, and as these assume an upright pyramidal shape they make superior young trees, and seldom produce rival leaders. I have raised a good many fine young trees from these shoots, and have found them to be in every way as good as seedlings. This Conifer bears almost any amount of pruning. Several trees I planted about 20 years ago were stem pruned by gradually cutting off the branches close to the stem for a distance of some 5 feet from the ground: others were allowed to grow in their own way, with the exception of pinching or cutting back several of the branches near the top where the leaders had been lost by frost, so that a new leader had to be supplied by tying up one of the side branches. The bark of the stem of this tree constitutes one of its peculiarities, being a thick spongy substance, and as soft and pliable as a piece of chamois leather. This, when the tree is stem-pruned, is exposed to view and shown off to good advantage. Of course, pruning is, in a great measure, a matter of taste; however, we may say this much, that when this tree is stem-pruned and the straggling side branches pinched or cut back in order to balance the top, the result is finer and more tree-like specimens than such as have not been pruned, the latter having merely the appearance of large bushes. This handsome Conifer is well adapted for planting among deciduous trees in places where it is desirable to get up cover and procure shelter, and in such cases they should be allowed to grow their own way, with the exception of cutting off or repressing any rival leaders at the top. In general appearance this *Sequoia* has a resemblance to the common Yew (*Taxus baccata*). It is of course quite a distinct species, and produces its seed in the form of a small cone, whereas that of the Yew is contained in a berry. When the timber is cut up for use it is found not to be so elastic as that of Yew, yet it is of good quality, and although the concentric rings of the trunk are of a large size owing to the rapidity of growth, yet the wood is firmly packed and capable of taking on a fine polish. The tree is not in the least degree fastidious as regards soil; it is equally at

home on deep peat bog, strong clay, and inorganic fragments of rock mixed with but with a small portion of soil. When planted in deep Irish peat bog of a reddish colour and light in texture, I have found it a capital plan to mix a little clay soil with the bog at the time of planting. This gives weight and firmness to the bog, and gives the tree a satisfactory start. Of course in such cases it is necessary to have the ground thoroughly drained, but when once the trees are well established it is astonishing how they perform that operation for themselves by pumping up the superfluous moisture and rendering the ground firm and the surface drains in their immediate vicinity quite dry. In its native habitats this Sequoia is said to attain a height of some 270 feet, and a girth of stem of from 20 feet to 40 feet, and although I do not expect it to attain such dimensions in this country, yet from what I have seen I consider it worthy of being planted to a greater extent than it has hitherto been.

J. B. WEBSTER.

VALUING STANDING TIMBER.

THERE is no dispute between "New Forest" and myself as to professional valuers being able to value timber by the eye. What I took exception to was the assertion that there is nothing so reliable as the eye for anybody—experts or novices, which is the meaning conveyed in "New Forest's" first letter. He despises the use of the rods, but his alternative is a confession. The learner, he says, is to go into the woods before the timber is felled, measure it with the eye while standing, and correct the eye "with rod and string to ascertain the true measurement" after it is felled! The string we do not use here; it is too much trouble; although there is an old prejudice in its favour among some valuers. The tape is better. If this method of "New Forest's"—that of valuing by the eye and felling and measuring to see if you are right afterwards in order to learn—is not the most cumbersome plan for people who have timber to set out and work to do, I am beaten. I tell him that by my plan any ordinary practical and careful man may value timber as correctly as an expert, and numbers do so every year. I know woods where I could value the timber without going near it if I had the number of the trees furnished me, but that is because I know their average dimensions pretty accurately. The difficulties in the way of valuing standing timber by the eye are enumerated by "New Forest" himself. The learner, we are told, is to mind whether he is standing on the upper or lower side of the tree, otherwise he is sure to over or under-estimate its dimensions. He may "easily miscalculate" if he views the tree from one side only. If the tree to be valued is standing among large trees "you have not given its full measure, and there are many other little things that will vitiate a true result." These difficulties, he adds, the learner can only overcome by practice, which "practice should be sustained, for although the knowledge thus gained is never entirely lost, if the eye is not kept in training, the results will be more or less inaccurate." If this catalogue of difficulties in the way of using the "only really reliable organ"—the eye—is not of itself sufficient to make valuers hesitate to use it, I do not know what would. My advice is, disregard all this, train your eye as you go on, but get to work by the readiest practical means at your disposal and learn while doing work.

As for using the tape as high up as a man can reach, I admit it only gives one an approximate idea of the girth at the right place, but it is better than guessing only, because it gives one an idea how much the girth recedes on an average. The practice is almost universal. As "New Forest" says, trees are not always round, but the tape tells the girth and gives the proportion.

Summed up, "New Forest's" case is just this—that a man can tell the height, girth, and general dimensions of a standing tree more accurately by the eye than by any other means, which is perfect nonsense, and as any man may soon extemporise some simple plan of ascertaining the dimensions

by measure, and not take so long about it as, according to "New Forest," he will with his eye, there is actually no need for him trusting to that organ more than can be helped. There are two kinds of valuers by the eye, viz., the man who values for the buyer and the man who values for the seller. One estimates on the minimum and the other on the maximum scale, and it would amuse readers if they knew what a gulf too often separates their valuations. When this happens the two "eye" measurers lay their heads together in the end, and a compromise is effected. Rather than trust to such valuation, I would prefer to send a man to measure two trees in the lot, viz., the smallest and the largest, and work the average out at the fireside. I am sure I would be nearer the mark, and be able perhaps to act as arbiter between the two.

WOOD AGENT.

THE PITCH PINE.

(PINUS RIGIDA.)

THE Pitch Pine tree (*Pinus rigida*) attracts the attention of the traveller from Wilmington, N.C., southward to Florida. The lands for long stretches are almost worthless, and the only industry, beyond small patches for Corn and Cotton, is the "boxing" of the Pitch Pine trees for the gum, as it is called, and the manufacture of turpentine and resin. There are several kinds of Pine trees, but the Pitch Pine only is valuable for "boxing." It differs but little from the yellow Pine, and is sometimes confounded with it in the north. The owners of these Pine lands generally lease the "privilege" of the business, and receive about £25 for a "crop," which consists of 10,000 boxes. The boxes are cavities cut into the tree near the ground in such a way as to hold about a quart, and from one to four boxes are cut in each tree, the number depending on its size. One man can attend to and gather the crop of 10,000 boxes during the season, which lasts from March to September.

About three quarts of gum is the average production of each box, but to secure this amount the bark of the tree above the box must be hacked away a little every fortnight. Doing this so often and for successive seasons removes the bark as high as can be easily reached, whilst the quality of the gum constantly deteriorates and yields less spirit, as the turpentine is called. When the limit is reached in this respect, the trees are abandoned. The gum is scraped out of the boxes with a sort of wooden spoon, and at the close of the season, after the pitch on the exposed surface of the tree has become hard, it is removed by scraping, and is only good for resin, producing no spirit. The gum sells for about 6s. a barrel to the distillers. From sixteen barrels of the crude gum, which is about the average capacity of the stills, 80 gallons of turpentine and ten barrels of resin are made. The resin about pays for cost of gum and distilling, leaving the spirit as the profit on the business.

Immense quantities of resin generally await shipment at the stations along the line, and the pleasant odour enters the car windows as the traveller is whirled along. After the trees are thus depleted, they are not suitable for cutting into planks for use, but are sometimes used to manufacture tar. This business, however, is not very profitable, and is only done by large companies who can thus employ their surplus labour. The trees are cut up into pieces, which are piled in a hole in the ground and covered with earth, and then burned the same as charcoal is burned elsewhere. The heat sweats out the gum, which, uniting with the smoke, runs off through a spout provided for the purpose. A cord of wood will make two barrels of tar. The charcoal is sold for cooking purposes.

J. D.

Soil for Black Walnuts.—I have come to the conclusion that this tree, about which so much has been written, must have good and stiffish soil in which to grow well and to a large size quickly. A dry, light, poor soil is quite unsuited to the Walnut. Wherever Apple and other

fruit trees abound and prosper there the Walnut may be planted with a tolerable certainty of success. Cannot our American cousins supply the trade with a stock? To show there is a demand becoming general I have had several letters inquiring where plants can be had, but I have been unable to refer the parties to anyone who has them for sale.—B. G. L.

THE AMERICAN YELLOW CYPRESS.

(CUPRESSUS NUTKAENSIS.)

THIS noble tree in its native habitat sometimes attains a height of 150 feet and a diameter of 3 feet to 5 feet. The branches are pinnate, drooping, feathery, dividing into beautiful light green sprays, like those of the *Libocedrus decurrens*, but with finer foliage and more delicate plumes. The wood of this tree is undoubtedly one of the most valuable to be found on the Pacific coast. It is pale yellow, close grained, tough, durable, and takes a good polish, and to these qualities is added a pleasant fragrance like that of Sandalwood. The only Californian wood that resembles this is that of the *Torreya*, which has the same delicate yellow colour and texture, but the pleasant scent is wanting. Some few ships have been built of the yellow Cypress, and small quantities have from time to time been sent to Portland and San Francisco. Some little goes to China, and is made into fancy boxes, which it is said are returned as Camphor-wood. The Indians make their paddles of it, and weave matting and coarse cloth from the inner bark of the tree, which is quite durable and of a fine brown colour. It is also the favourite firewood of the coast region, burning very freely, though it does not last long. A yellow Cypress fire to anyone witnessing it for the first time is quite a notable phenomenon. The flames quiver and rush up in a multitude of ragged edged lances, while the burning surfaces snap and crackle and explode, and throw out a shower of glowing coals with such a noise, that conversation in an ordinary pitch of voice is at times impossible. Every open hearth in which this wood is burned has to be closely screened with a framework of wire netting, else the floor would be strewn with cinders. The durability of this timber is forcibly illustrated by the fallen trunks lying in the damp woods. Many of the largest of them last for centuries, retaining even the delicate colour and fragrance unimpaired. Soon after they fall they are overgrown with Moss, in which seeds lodge and germinate and grow up into vigorous saplings, standing all in a row on the backs of their ancestors. As they grow larger they stand astride, sending their roots down and out on both sides. After they have reached an age of several hundred years, the downtrodden trunk, when cut into, will almost always be found as fresh in the heart as it was when it fell. Decay goes slowly on from the outside, never commencing in the heartwood, so far as has been noticed. Many of the living trees, however, are injured by a fungus which produces a dry rot similar to that found in *Thuja* and *Libocedrus*. Although the range over which this tree is found is extensive, it does not seem to be very abundant in any one place or to occupy any considerable area to the exclusion of other species.

T.

Forest trees and rabbits.—It is amusing to read of that solitary Corsican Pine in the centre of a rabbit warren at Tortworth Court, and which "until the ground was quite covered with snow, the teeming population of the spot did not touch." The real facts are that rabbits are only less fond of the Corsican Pine than they are of the Austrian Fir, the common Spruce, and other trees, but when pressed they will eat it rump and stump down to the ground, and many examples we could show you. They not only bark the Corsican, but they eat the branches of young trees right off up to the stem. Small credit to the vermin for not attacking the tree "until the ground is covered with snow." So far as my experience goes, it is in severe winters, and especially when snow is on the ground, that they do any damage worth speaking of to forest trees generally. At other times

other and more natural food is abundant, and they leave the trees alone, but late in winter, when the herbage has died down or when snow falls, then look out for Mr. Bunny. Then he eats every green thing, including Rhododendrons and Privet, and a plantation of the Corsican in a deep snow would just be eaten straight off like a crop of corn. I notice, however, that the rabbit prefers newly planted trees to those that are older, and it is during the first year or two it is most destructive, and autumn-planted trees always suffer worse because of the winter following close upon planting. I have seen a plantation of Privet eaten almost clean off the first year and escape the second, and afterwards grow into a good cover in a regular rabbit warren. Another point to be taken into consideration in the case of the Corsican Pine is its liability to go off when transplanted; hence it should be planted thickly.—YORKSHIREMAN.

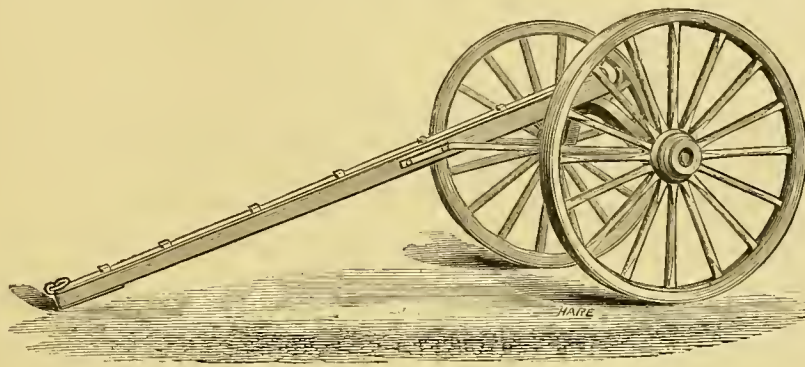
A VALUABLE AFRICAN WOOD.

IN some notes in the *Indian Forester* on indigenous and naturalised trees in South Africa a very interesting account is given of the African Stinkwood (*Ocotea (Oreodaphne) bullata*), from which the following interesting notes are taken. The name Stinkwood is derived from the fact of the disagreeable odour that is emitted when the wood is freshly cut. The tree grows to a height of from 50 feet to 60 feet, and a diameter of from 4 feet to 5 feet. It has a smooth bark, silvery grey when young, and nearly black when old. In the African forests where the tree was formerly abundant it has of late years become very scarce, in consequence of the wood being so much in demand. It only exists now in any quantity in the unworked forests of the Zitzikama; young plants have, however, been found in the forests of Isidenga, near King William's Town. It is satisfactory to know that the Government are now taking this matter up, and by enforcing a stringent code of regulations and working the forests in a systematic manner, they are preventing the ruthless destruction of any species of timber. In the forests the tree is very seldom found quite upright, the reason of which is that most of them are produced from coppice shoots. The extension of the trees in the African forests is said to be due to the swallowing of the fruits and the voiding of the seeds by birds.

The Stinkwood seedling is endowed with a hardy constitution. As soon as it reaches a

the old trunk, and eventually reach the soil, where they take root. Thus gradually these young shoots become independent of the old stump and stand alone, though somewhat weakly established, on their own roots.

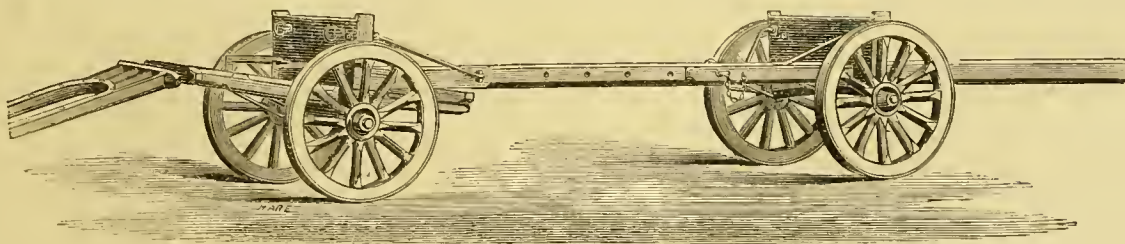
Young trees produced in this curious way are very liable to become windfalls. Sound Stinkwood occurs up to 3 feet in diameter, but it is reported that large sound logs are getting scarce every day. The breadth of a Stinkwood tree crown is difficult to estimate, because the different shoots spreading upwards from the old stump might almost be considered as different trees, and leaning outwards they extend over a large amount of ground; but as the leaves are not very abundant, except at the summit, the actual amount of "cover" thereon is not great. A mature Stinkwood tree has an irregular and unhealthy appear-



The Two-wheel Timber Carriage.

ance. At an early age the crown becomes disfigured and deformed by the presence of large dead branches, and eventually the tree dies gradually to the ground. The wood is very highly prized in the colony for its great strength and durability; indeed it is considered to be almost if not quite equal to Teak. It is used for nearly every kind of building work, as well as for waggons and cabinet making. It is stated that the railway departments of the Cape have used Stinkwood in places, such as sharp curves, where greater strength and resistance were required. Three distinct varieties of this wood are known: white, mottled, and one

when the load is suspended in this way a perfect balance cannot be maintained. The usual practice, therefore, is to allow a sufficient preponderance of weight behind to cause this part of the log to trail on the ground and form a rough-and-ready kind of brake, which serves to steady the whole concern. To the uninitiated this may appear rather a peculiar and dangerous method of carting timber, but when properly managed we know no better or quicker means of performing the work for which the carriage is intended. The plan is sometimes developed by using two pairs of wheels. When this is done it is usual to have



The Four-wheel Timber Carriage.

ligneous state, it requires plenty of air and to be allowed to participate freely in the various atmospheric influences, such as light, dew, &c. Stinkwood cannot stand dense shade for any length of time. Its young shoots are soft and succulent, and are easily injured if bruised or rubbed against. Stinkwood prefers damp, cool localities, and up to a certain point is not injured by excessive wet. It reproduces itself by a process of natural coppice, which is extremely curious. The trunk of an old tree will die from the top downwards, and then from the base will be produced a sheaf of young shoots growing up around the trunk of the original tree, now become an old dead log. These dead logs remain standing a long time before they decay, and are frequently in great part utilised and sawn up into good, sound, seasoned timber. Again, as the old trunk decays the young shoots may be observed, especially at Zitzikama, sending out young roots, which run down outside

that is almost black—differences that are attributed to the different conditions under which the trees are grown.

A full-grown Stinkwood tree of 3 feet diameter will generally yield on an average about 17 cubic feet of timber for planks and beams, and about 50 cubic feet which may be used as small wood for furniture, &c. The sapwood averages about 2 inches, the bark is about an inch thick, and there is often a central core $1\frac{1}{2}$ inches thick of partly decomposed wood. The average weight per cubic foot is 54.168 lbs. Stinkwood grows from the sea level (and within a mile of the sea on a southern aspect) up to an elevation of about 3000 feet. In the forests of the Knysna Conservation there were marked for cutting in the open sections during 1884 2051 Stinkwood trees, measuring 46,923 cubic feet of square timber, and valued at £2297 12s.

JOHN R. JACKSON.

Museum, Kew.

one pair with shafts for the front part of the load, the pair under notice being then used to take up the hinder part clear of the ground. The second illustration gives the four-wheel timber carriage, which is so well known as to render description needless. The principle of loading this is by the inclined plane, which is formed by two stout sapplings placed with one end resting on the ground and the other on the framework of the carriage; up this the trees are drawn.

A good fence.—A post and rail fence, cheap and strong enough to keep out horses and cattle, may be made as follows: Set the posts 9 feet apart, or 2 feet less than the length of the rails used. Bore $1\frac{1}{2}$ -inch holes through the posts 1 foot from the ground and at right angles with the direction of the fence. Bore three holes above this, about 9 inches apart, one above the

other, and drive in wooden pins in all four holes to project 4 inches on each side of the post. Lay the rails on these pins close to the posts on each side. Bore a 3-8th's hole above the top rail, and another one 1½ inches below the bottom pin. Take a piece of wire 10 feet or 11 feet long and pass half its length through the top hole, and cross it under the top rail; cross it again under the second rail from the top; cross it again under the third rail, and finally cross it under the bottom rail by slipping the ends of the wire through the small hole, and bring them round in front of the post and twist them together. If sheep are kept a board should be nailed at the bottom, or a fifth rail added.—A. A.

Lichen on trees.—How far does the growth of this parasite affect the health of timber trees, and what species does it grow upon most? It prevails more on the west than on the east coasts, and several common species of Lichen cover stones and trees alike. I believe the common grey Lichen of woods prevails more in Devonshire than anywhere else. Last autumn a gentleman forwarded to me quite young and slender twigs from the woods near South Molton that were hoary with Lichen that completely concealed the branch, forming a dense mass of what looked like a bunch of grey Moss and nothing else. In the south-west of Scotland trees are similarly affected, especially the Larch, which does not thrive, and the Oak, but it infests Gooseberry, Currant, and many kinds of small bushes as well, growing freely on the Sloe and the like. The Lichen lives on the bark, but does not, I believe, penetrate the tissues deeply, if at all; hence, probably, the reason why it does not do as much mischief as one might suppose.—YORKSHIREMAN.

Conifers in boggy soils.—I believe it is not generally known that many of the best Conifers are quite at home in a well-drained bog, some growing with a luxuriance that cannot be met with in any other soil. I have many times felt surprised that they are not recommended when "Can you advise me what to plant in a boggy soil?" is asked. Such land should be thoroughly drained, and then there are few plants or trees that will not thrive well in it. I have planted scores, from three to four tons in weight down to seedlings, and all are growing with freedom; but the Deodar and Wellingtonia do not flourish so well as many others. Cupressus macrocarpa, Lambertiana, Goveniana, Lawsoniana; Retinospora obtusa, pisifera, squarrosa; Cephalotaxus drupacea and Fortunei; Thuja borealis and dolabrata; Thuja gigantea and occidentalis; Juniperus thurifera, virginiana, pendula, hibernica, chinensis, &c.; and, lastly, the much-abused Cryptomeria, seem quite at home in bog; the last-named Conifer will grow, do what you will to it.—J. T.

Warm coverts.—I am afraid that the stumbling-block of many keepers, and not a few woodmen, in the matter of providing shelter for game, especially pheasants, the most expensive to rear, is the want of a little knowledge of the natural history of the subjects they have to provide for. I believe that on gentlemen's estates where pheasant rearing is carried on extensively the success attained varies very greatly, all things being equal, except covert, and perhaps soil and situation. There is not much difficulty in keeping pheasants and other game in any wood in the summer time, but when the deciduous trees shed their leaves the game will not stay in it of their own accord, unless it has plenty of evergreen shelter in the shape of Spruce, Holly, Yew, and other evergreen trees, nor will they remain long in a wood lying in a northern aspect. At this season of the year it is warmth the birds are in search of, and where they find that they will find also most natural food. In planting for covert, therefore, evergreens should always form a large portion of the wood, and it should be well distributed throughout its extent, and occupy the warmest spots as well as shelter the cold ones. The birds come to the sunny margins of the coverts at this season to bask in the sun when there is any and to seek warmth, and whole

coveys may often be found at such places when few are seen anywhere else in cold weather.—Y.

The Corsican Pine for timber.—Though a good deal has been written already with regard to the Corsican Pine as a timber tree, I think that too much cannot be written in favour of it. I strongly recommend its being extensively planted in woods and plantations with a view to profit, for it is really one of the most valuable of all the Coniferae, and succeeds well where many others would fail. Near the seacoast, for instance, it grows with a vigour equalled by few, but in such situations there should be plenty of other things planted with it to assist in breaking the force of the winds, and when thinning is done, it should be gradual, as those left get cut about through sudden exposure, and sometimes completely uprooted. It seems a pity that so much ground should be occupied about the country by the growth of so many trees that are quite worthless for their timber, and more particularly so as we are dependent, in a great measure, for all we use on the supplies we get from abroad, but, somehow or other, Spruce appears to have been the favourite with our foresters, but why this should have been so I am at a loss to conceive, as it has no special merit beyond its symmetrical shape in an ornamental point of view, and in other respects it is almost worthless, except for fuel.—D. S.

White American Oak.—I have read with interest "G. W.'s" letter in favour of the American White Oak (*Quercus alba*). I agree with him at least as regards the best classes of it. This qualification is not unnecessary, for besides the fact there are many varieties of this Oak which differ more or less from each other, the strength and toughness of the wood also depends much upon the soil, situation, and altitude where the trees are grown, and it must be admitted that the inferior grades predominate. White Oak of the class exhibited at the International Forestry Exhibition in Edinburgh last year, to which your correspondent alludes, is not by any means easily got even in the best Oak-producing States in the Union. By the way, this collection of White Oak was not exhibited by "one of the large railway wagon building firms in America," but by Messrs. James Kennedy & Co., timber merchants, Glasgow, who have a branch of their business in the United States, from which they supply White Oak, sawn to the sizes required for wagon building, to the principal railway companies in this country. In the exhibit referred to there was a number of pieces which had been subjected to a series of bending and crushing strains with the results shown in tables exhibited. For their collection of White Oak Messrs. Kennedy received from the jurors the highest award granted for timber used for railway purposes.—J. R.

Growing pit wood in South Wales.—It is a remarkable fact that, notwithstanding the enormous quantities of pitwood used here every year, very little effort is made towards producing any of it on the spot. To one who sees the shipments of wood for this purpose constantly arriving from France and other places it seems incredible that land almost at the pit's mouth, which is apparently well adapted for growing this class of wood, should be allowed to lie waste and unproductive. It is further a well-known fact that colliery owners will willingly give a higher price for suitable home-grown wood, as its qualities are of a more lasting nature. Planting has been undertaken by a few landed proprietors with good results, and there is undoubtedly at the present moment a wide field open for such enterprise.—CONIFER.

Value of Engleth timber.—In this part of the country, where, perhaps, as great a variety of timber can be disposed of as anywhere, the value per foot for many years back, as shown by the books, runs in the following order, beginning at the highest—Oak, Ash, Larch, Beech, Elm, Sycamore, Poplar, Birch, Scotch Fir. The Scotch Fir is the cheapest, the trees not being of large dimensions. I hear of sales being effected

lately at 3d. per foot felled. Elm is the next worse to dispose of. Small Spruce is hardly saleable. Of course, in estimating the profit on a crop of any of the kinds named, the age and size of the trees would have to be taken into account. Oak at present prices does not pay so well, for example, as Sycamore, although the last is perhaps 6d. per foot cheaper. The Ash and Larch also pay better than the Oak. I cut down Black Poplar lately about 60 years of age that contained more feet tree for tree than the Oaks three times the size at least did, and fetched more money.—Y.

PESTS AND DISEASES.

Trees that rabbits like.—My experience is that rabbits are extremely fond of the Laburnum, and I believe it is sometimes planted or sown extensively in woods for the very purpose of diverting rabbits from other trees. I think they are, next to the Laburnum, fondest of Hollies, young plantations of which they destroy wholesale. On one estate I know, a nurseryman planted the different varieties of Hollies upon an extensive scale; the rabbits which swarmed in the park had not been reckoned upon, and in one year they nearly ruined every plant. Cupressus Lawsoniana is eaten up by them here during hard winters as far as they can reach.—S.

Protecting trees from insects.—With regard to protecting trees from the ravages of insects, which climb up the trunk from the ground and destroy the leaves, blossoms, and fruit, some paint a ring of coal-tar or liquid gum on the trunk, and in some cases paint the whole of the trunk. This is more or less ineffectual, as some of the insects settle upon this adhesive substance and perish, but in doing so form a bridge for others to pass over. A more effectual and permanent protector was said to have been invented by a German some time since. The method which he adopted was to use a metal collar, which contained in its lowest part a rim forming a kind of dish, while the upper part supported a screen which protected the lower part from the influence of the weather. It was made in two halves, which when attached to the tree were joined by two pins. The apparatus is slightly larger than the tree and the space between it is then caulked with hemp or cotton. This is afterwards saturated with tar or petroleum to prevent birds from picking it out. In the upper part there was a small opening closed by a cork; through this hole a liquid consisting of glycerine, tar, mineral oil, by itself or mixed with poison, was poured and the cork replaced. When properly adjusted it was stated that insects could not ascend, and that the apparatus would remain effective during the whole season without attention.—D.

Rabbit netting is more efficient if, instead of being buried vertically in the ground, it is bent at right angles and placed just beneath the soil, say 2 inches deep. Take galvanised netting 3 feet high. Have 2 feet 6 inches above the ground, and 6 inches bent at right angles, towards the side where the rabbits are, just beneath the soil. The rabbits, if they begin to burrow close to the netting, are at once stopped by the wire. It never occurs to them to start a foot or so away from the wire fence. This method has been proved to be superior to burying the wire perpendicularly. The height above ground that I name is, I think, sufficient, provided ordinary supervision is exercised. My experience has shown that hares are far more destructive to young Larches than rabbits. Even in the summer time a hare will go from tree to tree and bite off the leading shoot, presumably for play; and the mischief that two or three hares will do in a plantation of Larch recently planted is astonishing. Rabbits, on the contrary, will generally leave the trees alone except during snow—then look out for dire disaster. I could show, I grieve to say patches swept bare by them near their burrows. Those who have young plantations should kill off early before snow time; they would then not have much to complain of.—G. H. C.

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"This is an Art
Which does mend Nature: change it rather: but
THE ART ITSELF IS NATURE."—Shakespeare.

NOTES ON RECENT NUMBERS.

Crown Imperials (p. 362) at Woodville "for the first time in seven years promise to yield a full complement of bloom." I should be sorry to have to be responsible for the doings of these most capricious of bulbs. Some clumps which I have watched for some years appear most unreasonable in their behaviour; because in some gardens they never seem to fail only makes it the more provoking that in others they fail entirely. There is one thing left for those who cannot get them to bloom successfully, and that is, that they can plant the varieties with variegated foliage. Both silver and gold forms are most handsome and effective in herbaceous beds, and the variegation is both distinct and constant. Most of the Fritillaries seem to increase rapidly, but in this point again the Crown Imperials are stubborn. One of my greatest favourites among native plants is the little Fritillaria Meleagris in its varying shades of white, rose, and purple. There is a charm in the graceful snake's-head flowers which never fails to please. Though very abundant in some spots in England, it is not common in gardens and by the generality of people is but little known. Of the newer or rarer sorts I can only say they are difficult to get in good condition; none of them like being out of the ground any length of time, and the miserable, half-dried, flabby bulbs with which one is supplied either take some years to recover their vigour, or else decline to prolong a miserable existence, and quickly make up their minds that life is not worth living. It is curious that both *F. pyrenaica* and *Lilium pyrenaicum* should possess the same repulsive odour. I wonder what is the moth or insect specially attracted by it?

Irises (p. 367).—"Veronica" speaks of failure with many Irises "through having fancied they liked moist places." There seems to be a general impression that all of them prefer swampy spots, but as regards the germanica group, at all events, this is a mistake. Anyone who has seen *Iris florentina* growing in Italy cannot have failed to notice how it revels in hot sunshine. They require rich food as well as moisture for the roots, or else the flowers are starved and small, but the tubers themselves will stand a good deal of baking, and are then better able to resist the damp of our climate, and also the disastrous attacks of slugs. Unless the weather should be very dry just when the flowers are being developed, we ought to have a fine display this season after the hot summer of last year.

Pinus excelsa (p. 381).—Our largest specimen girths 7 feet 9 inches a yard from the ground, and it is needless to remark that it is not an old tree. For general effect it is scarcely so handsome as the Weymouth (the timber of which is most serviceable), though doubtless a quicker grower. The large cones of *excelsa* are picturesque, clustering along the branches, and being thickly covered with turpentine, are invaluable for lighting fires. How is it that in England we make so little use of Fir cones for this purpose? They are easily collected and stored, and either for lighting a fire in a hurry, or for drawing one up, especially in sick rooms, they are most handy. Those of the Weymouth are perhaps the best which we have in quantity, whilst those of the Stone Pine, though good, are apt to be too large, and do not ignite quite so readily.

Sequoia sempervirens (p. 381) is stated to be "not in the least degree fastidious as regards soil," and, no doubt, it will grow in very different positions, but there is a great difference between

a well-grown tree with thick green branches down to the ground and some of the miserable, scraggy specimens one often sees. Our largest now girths 8 feet 6 inches a yard from the ground, but the spongy bark is at least 6 inches thick; whereas another which was planted, I believe, at the same time is not half the size; the one is certainly handsome, the other is not. Was the nature of the wood for timber described by Mr. Webster from British-grown or foreign specimens?
Sussex. C. R. S. D.

SOME GARDEN TOPICS.

FIRST, there is the question of the capital punishment of our old enemy the slug, and let me remark *en passant* that if the grand old gardener had only known his business, he would have found some means, in default of boots, to squash him then and there, and so have saved his descendants any further trouble in that direction. I am myself a humble disciple of the late Mr. Carlyle (as expounded by Mr. Froude), and having no sentimental tenderness for the criminal classes, am disposed to sympathise with Mr. Wilks' feelings of triumph over the fallen foe. Mr. Wilks, however, confines himself, I think, too exclusively to the æsthetic point of view, and omits to call attention to the most important practical consideration in favour of decapitation, which for the benefit of a soft hearted, but utilitarian, age I desire to point out. The fact is, that by decapitating a slug and leaving him where he lies, you not only relieve the defunct from the necessity of dining at all, but you provide his surviving friends and relations who happen to pass with a dinner that they prefer to most things they are likely to find even on a well selected rockery. Not even for

will they
Two boobies and a noddie
Leave off eating the dead body;
and although this may seem a melancholy proof of the depravity of slug nature, yet from an economical point of view, especially in these days of high income tax, it must be admitted to be well worthy of consideration.

I have myself one of the finest collections of slugs in the south of England, including many rare species and varieties, but I do not seem to recognise the amiable carnivorous mentioned by Mr. Wilks, though I found a monster somewhat answering to the description hard at it on a fine plant (*Onosma tauricum*) the other evening. There can be no doubt, however, that the large slugs, of which there appear to be five distinct sorts in this garden, are by no means so mischievous as the smaller kinds. They mostly seem to prefer the Grass, especially when newly cut. The two most voracious appear to be the common soft whitey-brown sort before alluded to and a kind known in Kentish Hop gardens as the brown roach-back slug, an ill-favoured brute with a large appetite and a tough skin.

My diplomatic relations with the zoological world are not, I fear, sufficiently established to warrant my proposing a conference on the subject, but if any one of your readers who may be possessed of a little knowledge of natural history is able and willing to give us a short article on the subject, including the proper names and habits of the various species, it might be interesting and useful to many others besides myself, and might, moreover, prove a wholesome little alternative to

The everlasting Daffodil. This is not a new species (*N. sempervirens*), but merely the well-known old stag who has afforded so much sport for so many seasons in succession. I was struck the other day by some remarks on *N. maximus* by Mr. Douglas, unless my memory deceives me, for I have not the last few numbers of THE GARDEN at hand to refer to. Mr. Douglas is evidently well satisfied with his specimens of *N. maximus*. He alludes to the twisted foliage, which is said to be the distinctive mark of the variety, and he appears to have no doubt that he has got the right thing. But he goes on to tell the delighted public that these "right things" can be had for 35s. per 100. *Credo equidem*. But then I want to know why did I pay a shilling apiece for some bulbs of *N.*

maximus (true) last October? Is the answer really "A fool and his money, &c.?" or has Mr. Douglas got hold of an inferior variety? or do the trade really make a reduction of 65 per cent. "on taking a quantity?" I got three bulbs, of which one did not flower at all, the second produced a fine bloom which I desire still to hope and believe was true, and the third had a contemptible flower about the size of and generally inferior to a small pseudo-Narcissus. I obtained the bulbs from an "undoubted source"—I shall not buy any more.

Chionodoxa Lucillæ.—Some one has been asking about seeds of this plant. Seeds sown in autumn germinate in the spring, but in my soil, which is cold and wet and bad enough, it is perfectly useless saving the seed, as seedlings come up by hundreds round the parent plants.

J. C. L.

PLANTS "DYING OUT."

"DIED OUT" is an expression not unfrequently used to account for plant losses that have occurred in a rather mysterious way. During my experience I have had many opportunities of knowing that plants do die out, but I cannot believe, as is often stated, that it is a perfectly natural sequence resulting from degeneration. What I want to make clear is that if plants die out, it is because the conditions under which they are cultivated are not what they require; therefore, cultivators should not accept the degeneration theory without proof, but should endeavour to find out the cause. Fortunately, dying out commonly occurs with plants grown in the open air, and there are few gardens that cannot furnish examples. If we make enquiries amongst growers of Pansies we shall find instances (not many, perhaps), but sufficient for the purpose of showing that they have given up growing them because, as they tell us, the plants died out, and they accept this theory with a complacency that does not speak well for their discernment. That the plants have died out under a restricted course of management I do not doubt, but I maintain that they would not have done so under a more liberal system of cultivation, by which I mean a change of soil and a sufficiency of the necessary shade and root moisture. When plants of this class die out, it is caused by exhaustion brought about by an unsuitable soil and other adverse conditions. The Pansy is a spring and early summer flowering plant, but it is of such a floriferous character, that in a fairly good soil it will continue to produce flowers all the summer if allowed to do so. It will, in fact, to use a common phrase, flower itself to death, and then the cultivator says it has died out. The fact is plants die because they have been allowed to exhaust themselves, and I contend that it is as much the business of the cultivator to prevent this by the timely removal of all the flowering shoots as it is to get them to flower at the proper time; when we have to deal with choice varieties of this or any other class of plants all these details must be properly attended to. I know from experience that if I cut off all the flowering shoots from choice Pansies at the end of July I have no difficulty whatever in keeping the old plants alive if I give them sufficient root moisture. Plants so treated will early in the autumn be bristling with young and vigorous shoots springing up from the crown, so that I have no difficulty in increasing the stock to any extent. Cultivators have often told me that their stock of the beautiful old *Polyanthus* has died out, and that their soil will not grow them. As regards soil, they may be right, but that is not sufficient to my mind to account for failure altogether. In dealing with more tender plants the same growers would doubtless consider a change of soil necessary, but in the case of hardy plants that does not enter into their calculations. Moreover, when we see collections of these plants struggling for existence in hot, dry corners fully exposed to the summer sun, and the foliage eaten up by thrips and red spider, we cannot sympathise much with those who have experienced losses from such a cause. The truly careful cultivator I can feel for when misfortunes of this

character come, and come they certainly do to most of us under the most painstaking management, but let us acknowledge this and endeavour to trace our troubles to their proper source.

Double Chinese Primulas afford another example of the dying-out theory. These are said to be gifted with a wonderful power for dying out, and die they certainly do. Many handsome varieties have been raised, and a good many have tried to grow them and have failed. Here, again, the free-flowering properties of the plants are against them. The cultivator obtains small plants of them, and being anxious to see what they are, they are allowed or rather, I should say, encouraged, to flower, and they will do this so freely that they soon become exhausted and die out; then they get the character of being miffy subjects to deal with, and so they are until we take the trouble to study their requirements. In the case of old plants, at least such as under more favourable treatment reach to the second season of growth, they will, if left alone, continue to flower for six months, with the result that at the end of that time they are worthless. They have been allowed to flower beyond the time that Nature can bear the strain, and then they dwindle away and die; whereas if all the flowers had been picked off at the end of two months the plants would have had sufficient vigour left to go on for another season. The Cineraria is another plant liable to die out unless specially treated. I, of course, allude to those which it is desired to perpetuate by means of offsets. If we wish to preserve plants for that purpose, they must not be allowed to exhaust themselves. On the contrary, the flower-stems should be cut off as soon as the plants have got beyond presentable condition, and then there will be sufficient vitality left in the roots to restore lost power, and if otherwise liberally dealt with they may be expected to produce a supply of offsets, but if allowed to flower until all the leaves are dead or dying the plants themselves invariably die. We shall not find in any other plant which we cultivate a better illustration than the Cineraria affords of the difference between pursuing a right course and a wrong one, and which will more plainly show that there really is no excuse for plants dying out if treated in a rational manner.

I am prepared to admit that under certain circumstances plants will die out naturally, but that is another phase of the question. I am here speaking of plants badly treated, and of which Primroses, Daisies, and Polyanthus, when used for making a display in flower-beds in spring, are examples. Their having to be taken up and replanted in a fresh position just as they have done flowering, and when under proper management they should be quietly going to rest, is sadly against them. If under such treatment plants get into a weakly state and ultimately die, the fact of their doing so does not affect the validity of my argument, that under rational treatment plants do not die out. In many other instances plants die out because they have been planted in an unsuitable soil, or, being shade-loving subjects, have been planted in positions in the full sun; others die because they have been left undisturbed in one position too long. Losses from causes such as these must not be accepted as in any way establishing the fact that plants degenerate, die out, as some would have us believe.

J. C. C.

Fritillaries.—The Fritillaries on the Liliaceous border at Kew, owing doubtless to the genial season which we have had, are unusually well coloured and plentiful; they include the following: *F. delphinensis* var. *Moggridgei*, a very fine dwarf variety with greenish yellow flowers, spotted or blotched inside with light brown; it seems to flower freely and makes a good border plant; involucre, green or brown, with deep brown markings, about 1½ feet high, very free; *pontica*, yellowish; *pallidiflora*, very fine, dull yellow; *ruthenica*; *tenella*, dark purple, good; *latifolia*, usually large and richly marked; *lusitanica*, very good; *pyrenaica*, the little glaucous purple *armena*, *Ehrharti*, *tulipifolia*, *dasyphylla*

græca, *Meleagris* and its white variety, various forms of *imperialis*, and many other kinds.—K.

NOTES OF THE WEEK.

Statue of Linnaeus.—On the 13th inst., a statue of the celebrated Swedish botanist Linnaeus will be publicly unveiled at Stockholm. The day will be the 178th anniversary of his birth.

The Orchid conference.—The arrangements in connection with the great gathering of Orchids to be held at South Kensington on the 12th inst. are, we are glad to learn, progressing favourably; there is every reason to hope that it will be highly successful, and that it will be the means of concentrating the whole of the Orchid-growing community. As may be seen by a notice in our advertising columns, a banquet will take place on Tuesday, the 12th, at "The Albion," Aldersgate Street, at which Sir Trevor Lawrence will preside.

A new locality for *Nelumbium luteum*.—In a swamp a few miles to the west of Osterville, Mass., a village on the southern side of Cape Cod, *Nelumbium luteum* grows more or less abundantly: Probably this is the most eastern locality of the species. One cannot say whether it originally grew here, because the swamp is near the reservation of the Marshpee Indians, and it is quite possible that the *Nelumbium* was introduced by them. The swamp is visited by summer visitors at Osterville, but the existence of the *Nelumbium* so far east was, as far as can be ascertained, unsuspected by our botanists.—*Torrey Bulletin*.

The largest Apple tree in the United States.—What is supposed to be the largest Apple tree in the United States stands in the yard of a Mr. Hotchkiss, at Cheshire, Conn. Its shape is symmetrical, the trunk being round and without scar or blemish upon it. There are eight large branches, five of which bear in one year and the other three the next year. Mr. Hotchkiss has gathered in one season from the five branches eighty-five bushels of fruit, but his predecessor harvested a crop of 110 bushels from the same five branches. The circumference 1 foot from the ground, and above all the enlargements of the roots, is 13 feet 8 inches. The girth of the largest single limb is 6 feet 8 inches. The top limbs reach a height of 60 feet, and the spread of the limbs is 100 feet. The age of the tree can be traced by a family tradition to 140 years at least.—D.

INDOOR GARDEN.

GARDENIAS IN BLOOM.

I HAVE never seen better flowered or healthier Gardenias than some which are now in full bloom in Mr. Dobree's garden at Byfleet. They are in 10-inch pots, are about 2 feet in height, and are simply perfection as regards size and purity of bloom and colour of foliage. Truly, Gardenias are very lovely when really well grown, when the plants are well clothed with abundant foliage bearing the hue of perfect health, and every shoot tipped with large flowers of pearly whiteness. The contrast between flowers and foliage is so striking, and yet so harmonious, as to undoubtedly place the Gardenia next to the Camellia in the list of evergreen flowering shrubs; and, then, what a succession of lovely flowers for cutting can be had from strong healthy specimens; it is cut and come again for a long period. What pleased me very much in the plants above mentioned was their natural appearance, the branches being allowed to grow at will without training, staking, or pruning of any description, in this way representing what one would imagine to be the true habit of the Gardenia. Mr. Kirk, the gardener, tells me that they were wintered in an average temperature of 55°, but stood on a bed of fermenting material, which probably kept the roots in a more than usually active state during that time, and that lately they have had liquid manure twice a week, so that the vigour of the plants and the way in which they bloom is apparently due to the constant feeding of abundant roots in an active condition. Many, although blooming Gardenias fairly well, fail to preserve

the foliage in its natural condition, so that moderate sized specimens become unsightly from this cause, but Mr. Kirk's plants are clothed to the base of the shoots and down to the pots, and this enhances their beauty and renders them very pleasing objects. Gardenias in this condition are ornamental even when out of blossom.

J. C. B.

Primula Sieboldi.—Though this *Primula* is hardy, it is impatient of too much wet, and the blooms are easily disfigured by rough weather; a sheltered nook should therefore be chosen for it, except it is grown in pots, as we grow ours, removing them under glass before the flowers expand. This plan offers several advantages, inasmuch as the plants can be utilised for various purposes, beside which, the various tints that occur in the different varieties are purer and more decided when protected than when in the open air. We keep ours in pots throughout the year, and treat them as follows: After flowering, all that need it are shifted into larger pots, and the whole are placed in a frame so situated that it is shaded during the greater part of the day. Here they are kept throughout the summer in a fairly moist condition, the ample and healthy foliage affording proof that their requirements are well supplied, while good stout rhizomes are formed for next year's blooming. In winter, when dormant, all are turned out of their pots, and the stoutest crowns—that is, those that are certain to produce good spikes of flowers—are potted either in small pots (in which, when in bloom, they are useful in many ways), or grouped together in larger ones. They are again returned to the frame and kept there till the flowers are on the point of expanding, when they are removed to a greenhouse. After flowering any that need it are potted, and the treatment just mentioned commences anew. Apart from division of the crowns, these *Primulas* can be increased to an almost unlimited extent by means of root cuttings; if the stoutest of the roots are cut up into pieces about an inch long, dibbled thickly into pots or pans in sandy soil, and protected by a frame, young plants will make their appearance in spring in quantity. The following is a good selection: *Clarkæflora*, rosy magenta; *lilacina*, lilac; *Pink Beauty*, pale pink; *lacinata*, bright red; and *rosea lacinata*, pink. In these the petals are all beautifully fringed. The following have smooth-edged flowers: *Alba grandiflora*, white; *Ilermia*, purplish lilac; *lilacina marginata*, white, edged with lilac; *Ophelia*, bright lavender; *vinæflora*, violet, white centre; and *cerulea alba*, white, shaded with blue.—ALPHA.

5345.—**Brownea coccinea.**—Allow me to inform "J. H." that *B. coccinea* and *B. grandiceps* are quite distinct and different the one from the other, the first named being much the more brilliant in colour of the two, and also much more free-flowering, and producing its deep orange scarlet bunches of flowers on much smaller and younger plants. On the other hand, however, the flower-heads of *B. grandiceps* are from five to six times as large of those of *B. coccinea*, but in colour, which is a somewhat dull deep rose, they are by no means so showy as the smaller bunches of the other variety named. Both varieties flower freely enough in a roomy stove house mostly during winter and the early spring months, from November to the end of April.—W. E. G.

Caladium esculentum.—Planted out in a warm house, the leaves of this plant have developed to an enormous size. I measured the largest to-day, the dimensions of which are as follows: length 4 feet 6 inches, width 3 feet 5 inches. It would be interesting to know if it is usual for this *Caladium* to produce such large leaves.—JOHN A. HALL (Foreman), Trinity College Gardens, Dublin.

QUEEN ANNE'S DAFFODIL.

They say Queen Anne is dead,
But it may not be amiss
To say she lives again in name
In capax, or sweet Narciss.

So writes Dr. W. B. Browne, of Aldbrough, Hull, who sends us some fine bloom of this pretty Daffodil, certainly one of the best of the doubles. He also sends *N. Macleanii* and flowers of the tiny fragrant *N. rupicola*.

NARCISSUS NAMES.

THERE is one point in connection with the resolution that was passed at the congress last year which was not expressly considered at the time and to which I should like now to draw attention, because it is clear from recent discussions that different people understand the matter in different senses. The resolution that was passed unanimously ran as follows, "That in the opinion of this conference uniformity of nomenclature is most desirable, and that garden varieties of Narcissus, whether known hybrids or natural seedlings, should be named and numbered in the manner adopted by florists, and not by botanists," and upon this basis we proceeded to class out the different types into species, sub-species, varieties, forms, and monstrosities.

The question which arises now which we did not expressly consider at the congress is, how does this resolution bear upon the names of a number of types which have been duly described and characterised under Latin names by botanical authors, but which we do not consider distinct enough to rank even as well marked varieties? Such are the scoticus form of pseudo-Narcissus, the spurius and maximus forms of major, the major, media, and minor forms of Jonquilla and the Campernelli, trilobus and rugulosus forms of odoros. For my part I never for one moment understood the resolution as implying that such names as these were to be abolished and replaced by vernacular names. All those which I have just cited were employed and defined in Haworth's "Monograph" in 1838. They have also been adopted and defined in Roemer's "Monograph of the Amaryllidaceae" and in Kunth's "Enumeratio" and without definition in the two editions of Steudel's "Nomenclator," three books which have been universally circulated amongst botanists. To get rid of them after they have had such a wide circulation, however desirable it might be in the abstract, is in practice perfectly impossible. The only chance there is of getting our resolution carried out is to understand it (as for my own part I understood it at the time of passing) as applying to all forms not distinct enough to be worth regarding as varieties in a botanical sense which had not already received Latin names, accompanied by a definition according to ordinary botanical usage. If we draw the line at this point, I think there is a fair and reasonable chance of the resolution being carried out, and that it will set an excellent precedent in the naming of other garden plants.

Kew.

J. G. BAKER.

MAY FLOWERS.

THE sunshine and showers of the past week have created quite a change in the open garden, and now quite a glow of colour is seen in all richly stocked borders, such as those of the Hale Farm Nursery, Tottenham. With such a profusion of beautiful things around us, it is hard to select the best; but if there is any class that deserves attention more than others it is certainly the Anemones of the apennina and nemorosa race. These alone are worth the journey to Tottenham to enjoy. The blue apennina may be seen in broad masses, and as the flowers look all one way their beauty is intensified. The forms of apennina, the white (alba), the pale blue (pallida), and blanda, by their delicate tints, serve as a contrast to the richer toned original. Then, again, there are the forms of A. nemorosa, and one hardly knows which to admire most, the apennina or the lovely Robinsoniana, whose soft mauve tint fascinates all who see it. These are all in perfection in the rock garden, spreading over square yards of the undulating mounds and creating charming pictures of flower beauty. In some parts of the nursery the Robinsoniana variety has quite naturalised itself, and at various parts little colonies may be seen peeping out from beneath a shrub.

The TRILLIUMS are in great beauty, grandiflorum and erectum, the first pure white the other maroon-crimson, being the finest. Large peat beds of these, containing hundreds of flowers, are pretty sight. Another American plant flowering

profusely is the Virginian Cowslip (Mertensia virginica). It delights in a partially shaded peat border along with such plants as Erythroniums. Among these the finest is undoubtedly E. grandiflorum with racemes of turban-shaped sulphur flowers and its variety albidum, which is white instead of yellow. Similar to these, but finer, is E. giganteum, the Dog's-tooth Violet of Vancouver's Island. It has larger flowers, more mottled leaves, and rarely produces more than one flower on each stem.

THE EARLY IRISES create a glow of various hues, none being brighter than the little pallida with sky-blue flowers. The interesting little I. arenaria, with small yellow leaves, is blooming in a frame along with I. iberica, whose singular flowers attract everyone. These early flowering plants are obtained by planting out in a cool frame and protecting the plants. Various rare Fritillaries may be seen, such as F. armena, recurva, and others. The Crown Imperials (F. imperialis) make a grand show here this season, as they are doing in most other gardens. Being grown in such large masses of various colours they have a very fine effect.

TULIPS are just in the height of the flowering season. The Turkestan species, T. Greigi, is the finest of all, its flowers, as large as a breakfast-cup, being of the most brilliant scarlet imaginable. T. Celsiana, a small form of T. florentina, makes a good show in the rock garden, the clear yellow of its flowers being very attractive. It is an excellent bulb, quite hardy, and rarely fails to flower well. Various other Tulips of second-rate quality are in bloom also.

AMERICAN COWSLIPS (Dodecatheons) will in a few days add quite a new feature to the nursery, and already D. Meadia is in bloom. Among other interesting flowering plants which would attract the visitor are Podophyllum Emodi (the Himalayan May Apple), fine both in leaf and flower; Gentiana excisa, like G. acanthis, but different in foliage and paler in colour; Tritoma media, an almost perpetual flowerer; Viola gracilis, one of the very best of the Viola species; Arabis aubrietoides, delicate pink; Muscari Maweanum, a new Grape Hyacinth the colour of Hieldreichi, but longer in the spike and much later; Pancratium illyricum; Lachenalia rubida, true, very distinct; Zephranthus Treatiae, the new Atamasco Lily; Hyacinthus fastigiatus, interesting to a bulb fancier; Helonias ballata, Viola pedata, the new Heuchera sanguinea, Aquilegia glandulosa, and Arnebia echioides, flowering profusely in the open border. These, besides large quantities of Narcissi, make this nursery both gay and interesting.

PLANTS IN FLOWER:

Himalayan Rhododendrons.—These have flowered splendidly this season in the grounds of the Earl of Annesley, at Castlewellan, Co. Down. One plant of R. Thomsoni has had 135 trusses of flowers open on it at one time, eight flowers being the average to the truss.—J. RYAN.

Polemonium confertum.—This scarce plant is now in flower in the collection at Floore. Very few have had the opportunity of seeing this species in bloom. It is very dwarf, seldom exceeding 6 inches in height; the foliage is very finely cut, and the flowers large for the size of the plant and the darkest blue in the genus.—S.

Helleborus argutifolius.—Of this handsome Helleborus Mr. Burbidge sends some uncommonly fine specimens grown in the Trinity College Botanic Garden, Dublin. The stems range between 2 feet and 3 feet high; the leaves are unusually large and numerous, and each stem is terminated by a dense cluster of green flowers. It is not a showy plant, but its fine leafage and noble port make it desirable.

Vilmorin's Mignonette.—If this strain of Mignonette always yields such massive spikes as those which Mr. Harris sends us from Munstead, it must be ranked among the very finest of Mignonettes. The spikes in question are very dense, long and conical, and deliciously scented. Our correspondent grows four plants of it each in 6-inch pots, and those from which he sends the present spikes were sown in August.

Narcissus verbanensis.—I send you blooms of this Narcissus, a gem amongst the poeticus section. You will see that one resembles

poeticus ornatus, while another is more of the form of poeticus recurvus, though in size it ranks with N. juncifolius and N. rupicola; its perfect form, colour, and perfume make it worthy of more extended culture. A flower of poeticus ornatus is sent for comparison.—J. T. Poë, *Riverston*.

Passiflora Constance Elliott.—Messrs. Lucombe, Pince, & Co., of the Exeter Nursery, have again sent us some flowers of their pretty white Passion Flower (Passiflora Constance Elliott), a variety which was awarded a first-class certificate by the Royal Horticultural Society last May. All the parts of the bloom, excepting the styles, are white, the fringed corona and the petals being of ivory whiteness. The plant is as hardy as the common Passion Flower.

Doronicum Clusii and austriacum.—One cannot have in the spring garden two brighter plants than these; they give a golden sheen to the borders for some weeks, for as soon as the earlier austriacum is on the wane Clusii is in full beauty. They are very much alike, but seen side by side some difference is apparent. Both are in great demand, and Mr. Ware is endeavouring to meet it, judging by the breadths of it one may see now in his nursery.

Daffodil Sir Watkin.—Of this now famous Daffodil Messrs. James Dickson send us from their Newton Nurseries, Chester, a fine gathering of blooms, each of which measures over 4 inches across, and has broad overlapping petals and a bright orange cup quite $1\frac{1}{2}$ inches across the mouth. This is indeed a noble Daffodil, a transition link, so to speak, between the Trumpet and the Chalice Daffodil, and by far the finest sort that has been distributed of late years.

Flowers at Hurworth Grange.—This garden, though so far north as Darlington, must be particularly rich in bloom just now, judging by a long list of names of plants said to be in full bloom, sent to us by Mr. Simpson, the gardener at Hurworth. This list comprises over a hundred distinct kinds and numerous varieties, and includes numerous choice plants, such as Fritillaria recurva and F. Moggridgei, Narcissus Sir Watkin, Erythronium albidum and grandiflorum, Primula ciliata, and a host of others.

Diplacus glutinosus.—Mr. Scrase-Dickins who sends us some fine blooms of this from his garden at Coolhurst, Horsham, remarks: "Why does not everyone grow this? It is almost always in bloom and lasts so well in water." Though the shrubby Monkey Flower, as this is popularly called, is not a scarce plant, it might well be oftener seen than it is. An easier plant to grow could not be, and as it is almost hardy, it does not need artificial heat. There are several varieties of it with flowers varying from a deep maroon-crimson to almost a clear yellow. As Mr. Dickins states, no flowers endure so well in water, and being elegant and showy, they are worth growing for that purpose alone.

Chrysanthemum The Khedive.—Flowers of this variety come to us from Mr. Crump, Madesfield Court, who states that it has been in continuous bloom for some months past. It is an extraordinary occurrence to see such fine Chrysanthemum blooms as these are at the end of April; in fact, they seem out of place, and remind one more of November than May. It is a Japanese variety with long, narrow florets twisted and curled in a curious way, and deep rose with silvery backs. Mr. Crump also sends some admirable flowers of seedling Tree Carnations, which are quite as fine as the generality of named sorts. A brilliant scarlet, Clove-scented flower is particularly remarkable, as is also one very much like Mary Morris, but darker.

Iris lacustris.—A flower of this charming little American Iris comes to us from Mr. Archer-Hind. It is closely allied to the Crested Iris (I. cristata), also an American species, but is dwarfier and has smaller flowers, these being of a light mauve-purple. It is a little-known plant and not easy to grow and flower well. The best success seems to be attained when grown in sandy soils in

imitation of the gravelly soils in which it grows wild on the shores of lakes Huron and Michigan.

Two beautiful Rhododendrons.—Mr. Burbridge sends us two of the prettiest little Rhododendrons we have seen for a long time. One is *R. virgatum* from Sikkim, the sprays of which are crowded with small white flowers, bell shaped, and almost transparent; being such an early flowerer, it deserves attention; the other is named *R. glauco-hybridum*, and is presumably a cross between *R. glaucum* and *R. præcox*, the features of both these species being perceptible in the hybrid. The flowers are larger than those of *glaucum* itself, but bell shaped and of a delicate rose-pink. The leaves are not so glaucous and seem to be larger. It is one of the most charming flowers that has been sent to us this spring.

Pyrus (Cydonia) Maulei.—This bright flowered shrub is again the chief attraction in Mr. Joseph Stevens' garden at Byfleet, which contains more of it than any private garden we know. There are even hedges of it, and what a beautiful fence it makes! Just now every bush is smothered with bright orange-red flowers, and later on these will be succeeded by rich yellow, rosy-cheeked fruits as large as small Plums. A hedge of this shrub glowing with flowers is indeed a rare sight, and one that Mr. Stevens is justly proud to show people. He also sends flower sprays of the old *Cydonia japonica* in several colours, pure white and deep crimson, with various intermediate shades.

Jersey Roses.—Some uncommonly fine Roses have been sent to us by Mr. H. Elliott from his Springfield Nursery, Jersey. One is *Celine Forestier*, now a mass of bloom in the nursery in question, and Mr. Elliott considers it one of the very best of Tea Roses for growing under glass. He has cut hundreds of flowers off it during the past fortnight. *Niphetos*, also among the flowers sent, is a most continuous flowerer. Mr. Elliott also sends his first flower of *Chrysanthemum Précoce*, which he says will yield abundance of blooms in a few weeks hence. A bunch of flowers of double *Cinerarias* are without exception the finest that have been sent to us, the flowers being large, very double, and varied in colour.

Spring flowers and shrubs.—Judging by a beautiful gathering of flowers, Mr. Stevens' garden, at Byfleet, must be very attractive and interesting just now, crowded as it is with such a wealth of shrubs and flowers of every kind. From amongst those sent we pick out the Virginian Cowslip (*Mertensia virginica*), *Doronicum Clusii* and *austriacum*, both good; *Leucojum æstivum*, *Ribes aureum*, the golden-flowering Currant, various *Epimediums*, *Spiræa prunifolia* and *lævigata*, the latter very interesting, being so different in appearance from all other shrubby *Spiræas*—little spikelets clustered together of tiny white flowers, each with a small garnet in its centre. The finest specimens of all, however, are of *Crown Imperials*, which seem to be flowering better everywhere this season than usual.

Saxifraga Boydi.—Flowers of this beautiful new Saxifrage and a photograph of the plant have been sent to us by Mr. Robertson Munro, of the Abercorn Nursery, Piershill, Edinburgh. Respecting it Mr. Munro writes: "This new Saxifraga was raised by Mr. John Boyd, of Cherrytrees, Kelso, from seed saved from *S. Burseriana*. It is much more easily grown than the type. It has from three to four flowers on each stem, and from this circumstance is much superior to the species. It is primrose-coloured, and is undoubtedly the finest among alpenes of recent introduction." We regard this novelty as quite a gem amongst Saxifrages, and it is very remarkable that a yellow-flowered variety should have sprang from *S. Burseriana*—another proof, however, of what may be done in the way of seedling raising and selection. Mr. Munro tells us that he has the stock of this little gem to distribute.

Saxifraga peltata.—This noble Californian Saxifrage is now in flower, and it cannot be seen finer about London than at Mr. Ware's, Tottenham, where at the foot of the rockery are some

large specimens of it blooming freely. This plant flowers before the leaves come, so that it has a rather naked appearance. Its stout, erect stems, about a foot high, rise direct from the large creeping rootstock, and bear massive and dense clusters of rosy pink flowers. As soon as these are withered the leaves begin to unfold, at first small, then gradually larger and larger until they reach a foot or more across. When fully developed this plant has indeed a noble appearance. It likes a partially shady nook where the roots can get plenty of moisture; indeed, being a water-loving plant, it should be planted when practicable on the margins of streams or lakes, and it has a decided partiality for a peaty soil. It is a native of the Sacramento Mountains, in California, and other regions of the Far West.

Spring flowers at Wisley.—There is great satisfaction when we see a plant we have taken pains with looking thoroughly happy and at home. I had this satisfaction at Oakwood the other day with three plants. Of *Primula ciliata*, given me by a neighbour who brought it from Switzerland in 1882, I planted several plants near the bottom of a mound at the side of a piece of sandstone facing about east; these have grown over the stone and have a mass of beautiful flowers. Another is *Andromeda fastigiata*, a small plant in the bog garden; every shoot has a number of its pretty white bells. *Gentiana acaulis*, a bed about a yard square in full sun, had about 300 flowers out; the rich blue of these showed a long way off. I might add *Anemone Robinsoniana*; I think this requires to be in a large clump covered with flowers to show its full beauty. I never saw it as fine as it is this year; *Gentiana verna* is blooming well.—GEORGE F. WILSON, *Heatherbank, Weybridge Heath.*

Alpine Auriculas and Polyanthus.—As showing what an amount of quiet beauty and interest can be had from small packets of seeds of Auriculas, Polyanthus, and Primroses, I herewith forward a boxful of flowers, containing about forty distinct varieties of Auriculas and about thirty kinds of Polyanthus. The plants that produced them were raised from seed sown in shallow boxes last August twelve months and placed in a cold pit until the seed germinated and the young plants were fit to prick off. They were then pricked off into more shallow boxes, using a mixture of mellow loam and leaf-soil for the purpose, and putting the plants about 2 inches apart. In the spring they were planted out in the borders, where they now are. Many of the Auriculas are clumps 1 foot in diameter, and have from twelve to twenty trusses of bloom on them. It is necessary to get the seed from a reliable source, otherwise the variety of colour might not be so satisfactory. Seed sown now would produce plants that would flower next spring.—H. J. C., *Grimston, Tadcaster.*

*** A charming collection, comprising many first-rate sorts, but also, as is usual in the case of seedlings, some undecided in colour, which it would be well to get rid of. Such beautiful seedlings cannot be too extensively raised, but care should be taken to select the finest and most decided tints, and increase the sorts so as to be able to create definite effects. Whether in small patches or large masses, a mixture of seedlings as they are raised has a spotted and variegated effect.—ED.

A new Fritillaria.—What appears to be a new Californian Fritillaria is now flowering in the Hale Farm Nursery, at Tottenham. It is so much like *F. recurva*, that all who know that plant would say there was no difference between the two at first sight. But the new one does differ materially; first, it is much earlier in flower—by a week or ten days; the bulb and root leaves are more like *F. lanceolata*, another Californian species, with which it was imported; the stem leaves are flatter than in *recurva*, narrower, and not glaucous, and the whorls ascend higher on the stems; the flowers are longer, but of the same colour as *recurva*. It is, therefore, practically an early form of *recurva*, and as the new form and *recurva* are planted side by side, there can be no mistake in this. It

flowers at the same time as *F. lanceolata*, while *F. recurva*, of which Mr. Ware has some fine strong plants, will not expand for a week. It was imported under the name of *F. gracilis*, but, according to Mr. Sereno Watson, this name applies to a variety of *F. lanceolata*, which has green flowers, spotted with brownish purple, and smaller than those of the type. These Californian Fritillaries, which puzzle a good many to manage successfully, are grown admirably at Tottenham in raised beds of sandy soil, and protected slightly during winter.

Akebia quinata.—This pretty and interesting climber is commencing to flower profusely here in Surrey. This plant is on a wall facing due south, and it does not seem to be particularly fastidious as to soil, ours being somewhat poor and on a tenacious clay subsoil. This *Akebia*, however, makes very rapid and luxuriant growth in it, having covered many square yards of wall in a few years; indeed, except for pruning, the space covered would have been much greater. It produces an abundance of long graceful shoots clothed with pretty five-lobed leaves, as indicated by its name; the flowers, too, are not only curious, but handsome. As this climber flowers on the old wood, my experience is that it should be pruned well back, that is, spur-pruned. It is perfectly hardy here and starts into growth early. The best season for pruning I find to be December. It may also when desired be pruned with shears in summer. I would not, however, recommend this method, as its graceful pendulous character is much injured thereby. It is in every way a most desirable plant, and when properly managed cannot fail to give satisfaction. A little mulching given early renders the foliage robust. It does not seem to dislike being somewhat crowded, which, being deciduous, is of great advantage; the whole of the lower part of the wall where ours is grown is covered with *Hedera Cænoxodiana*, and the flowers of the *Akebia* peeping out amongst the foliage of the Ivy have a very pleasing effect.—C. D., *Dorking.*

Grape Hyacinths and Daffodils.—I send blooms of various *Muscari*, amongst them the handsome *M. Argæi*, with a longer spike of bloom than others, the pure white form of *M. botryoides*, and the curious *M. paradoxum*. The sky-blue form of *M. botryoides* has been very beautiful for some time past, and is an invaluable flower at this time of year; and how delicious is the perfume of *M. moschatum majus*! *Leucojum pulchellum majus* is, as you will see, a good form of this pretty plant, and a thick clump of it, with its lovely drooping bells, is most ornamental. The Fritillaries sent are seedlings, and these charming plants well repay the trouble of raising them, from the variety the seedlings show both in colour and form. *Tulipa Greigi* has been very handsome, and the orange variety particularly so, from the rich satiny texture of its petals. *Doronicum Harpur Crewe*, described by Mr. Wolley Dod in your columns, deserves all that he has said about it; with me it is quite a stately plant, over 2½ feet high, and with handsome flat blooms, more than 3½ inches across. I send a few Daffodils, *Sulphur Kroon*, as usual, conspicuously beautiful, and *Leedsii amabilis* and *Barr's Mrs. Syme*, with large cup, both of great value in a Daffodil garden. The great Sir Watkin appears to be a very free-blooming variety. Six bulbs have given me fourteen fine flowers, but for beauty of form and delicacy of colour *tortuosus* and *moschatus* seem to me to bear away the palm. In the section of *Polyanthus Narcissus* the following three seem to me by far the finest: *Bazelman major*, white, orange cup; *Jaune Suprême*, yellow, orange cup; and *Grand Monarque*, white, lemon cup. The last I have to mention are the pretty *Ornithogalum nutans*, worthy of a place in every garden, and *Erythronium albidum*, a very charming bulb, quite in my opinion worthy to rank with *E. grandiflorum* and *americanum*.—H. STUART-WORTLEY.

*** With this note Colonel Stuart-Wortley sends us a large gathering of charming Daffodils, Grape Hyacinths, and Fritillaries, in numerous variety. These are the more remarkable, coming as they do from a London garden.—ED.

DUNKELD PLEASURE GROUNDS AND GARDENS.

THE small cathedral city of Dunkeld, in Perthshire, is a place of great interest. Situated in a hollow of the hills which surround it on all sides in romantic beauty, and with a majestic river constantly flowing at its feet, it has long been regarded as one of the most delightful summer retreats in Scotland. It is also of great antiquity, and is said to have been the capital of ancient Caledonia. In 1127 King David I. of Scotland erected Dunkeld into a bishopric, and the cathedral—the stately ruins of which still remain—was built at various times between 1318 and 1501. The long line of bishops of Dunkeld, even in that rude and barbarous age, to do them justice, were ever careful to preserve the amenities and beauties of their renowned see. But the greatest benefactors of Dunkeld have undoubtedly been the noble family of Athole, who deduce their descent from the Plantagenets, Tadors, and Stuarts, and whose

jurisdictions and regality courts, Stanley Hill may have been used as the seat or mound where justice was dispensed. A short distance behind this hill, and about five minutes' walk from the entrance gate, is the ancient cathedral, and nestling close beside it, but nearer the river, is the delightful residence of her grace the Duchess-Dowager of Athole, with its elegant conservatory and flower garden, bowling-green, &c. It is here that, strictly speaking, the grounds commence, and from whence they extend in a series of terrace walks of matchless interest for about a mile and a half westward, along the banks of the Tay, which is here a stately river flowing in a deep dark mass overshadowed by ancestral trees, which frequently, in playful dalliance, mingle their branches with its waters. The river walks all differ in character and style, and at every step one takes they present new and varied scenes of attractiveness and beauty, while the background is broken up into pleasing alternations of wooded

About the centre of the grounds and near the river bank is situated what is termed the American garden, a most lovely and secluded spot embowered in foliage of the most gorgeous kind. On an eminence overlooking this garden are the ruins of a small fort, which give variety to the scene.

The garden itself is filled with Rhododendrons, Azaleas, Syringas, Kalmias, and other flowering shrubs and plants, and in the leafy month of June it presents to the refined and educated eye a *tout ensemble* which for delicacy and beauty of colour, and richness, and variety of bloom, and careless profusion defies description. The beauty of the whole of the walks is greatly enhanced not only by the wild flowers which spring up spontaneously in all directions, but also by the forest trees and evergreens and shrubs which everywhere abound and which afford so refreshing a shade in the hot days of summer. As regards Conifers, there are few places that can boast of such noble specimens as Dunkeld grounds. In



DUNKELD HOUSE.

history, in interest and renown, is second to none in the annals of Scotland. This family have had a seat at Dunkeld from time immemorial, and under their fostering care the pleasure grounds and gardens have gained a world-wide reputation. They are annually visited by travellers from every clime and country, who have been unanimous in regarding them, when arrayed in their full summer glory, as of unparalleled beauty. After passing through the lodge gate, the park on the right, with its delightfully green sward and lovely trees, will attract attention. This park is bounded on the north by a bank of shrubbery, behind which are the gardens, vineries, and green-houses. To the left of the entrance, and separated from the drive, leading to the residence of the Duchess-Dowager of Athole, by an exquisite lawn, is Stanley Hill, a wooded and terraced mound of great beauty, on which a few guns have been mounted for the purpose of firing salutes, &c. This place is said to have been formed or shaped to commemorate a matrimonial union between the houses of Athole and Derby, by which union the former attained to the supremacy of the Isle of Man. It is also probable that in former times, and more particularly in the days of the heritable

heights, green slopes, and lovely glades, closed in in the farther distance by hills and rocky serrated ridges of Swiss-like aspect, presenting to the eye the utmost possible variety of contour. The great charm and fascination of the whole grounds is their naturalness. On this point a competent authority says: "With respect to the disposition of the grounds, it is necessary to say that they are disposed on no special system, nor, with the exception of a few remains of the ancient formal arrangements, is there any trace of artificial design beyond that which is necessary for use and comfort. Even these formal fragments of art disappear in the predominance of careless Nature, and such as yet remain are ornaments instead of defects. It might not have been easy to deform Nature here by art, and yet these magnificent grounds might have been rendered absurd by garden artists of King William's time. They have, however, escaped all such, and after art has done all it can, and all in truth which has been done, we imagine that we see no other hand in the woods and the lawns than that Hand which founded the mountains and taught the rivers to flow." It is, indeed, true that everywhere in these grounds Nature is paramount.

the park are fine Weeping Horse Chestnuts, one of which is 16 feet 2 inches in circumference at 3 feet from the ground and about 70 feet in height; several Copper Beeches, one of which is 10½ feet in circumference and about 50 feet in height; there are, too, some magnificent common Beeches, one being 17 feet 8 inches in circumference and about 80 feet in height, and two or more fine evergreen Oaks. Near the cathedral are what are called the two parent Larches. They were brought from the Tyrol and planted by the fourth Duke of Athole in 1738, and were at first treated as greenhouse plants. The measurement of the largest one in 1872 was at 3 feet from the ground 17 feet 2 inches in circumference, 98 feet 10 inches in height, and it contained 423 cubic feet of timber. These trees are still in good preservation, and the neighbouring forests are now filled with millions of their progeny. Near these Larches is an Oak which measures 13½ feet in circumference and 85 feet in height; also a beautiful variegated Plane or Sycamore (*Acer pseudo-Platanus albo-variegatum*); a fine Douglas Fir 10 feet in circumference and about 75 feet in height; a magnificent Spanish Chestnut 16½ feet in circumference and about 60 feet

in height, and a splendid gnarled old Wych Elm which must have seen many generations of men come and go. Near the residence of the duchess-dowager is a fine healthy Cedar planted by the Queen on the 13th of October to commemorate her visit in 1865. It measures at 1 foot from the ground 2 feet 2 inches in circumference and is about 17 feet in height. To the west of the Bishop's Hill on a beautiful green walk are two majestic Silver Firs (*Picea pectinata*), one of which is 16½ feet in circumference and about 100 feet in height, and on a lower walk are some fine old and romantic-looking Scotch Firs (*Pinus sylvestris*), one of which is 12 feet in circumference and about 60 feet high. To the west of the American garden is a splendid Oak which is probably 500 years old, as well as a series of handsome Silver Firs. Here is also the Duke's Oak, a tree of great and unknown age, and a favourite seat of the fourth Duke of Athole, and facing it on the opposite bank of the river is a venerable and wide-spreading Oak, under whose shade the famous Niel Gow, the great Scottish violinist, was in the habit of sitting. There are besides interspersed here and there throughout the grounds numerous other grand trees, including some fine Cedars of Lebanon, Wellingtonias, &c. In what may be termed the outside pleasure grounds on the south side of the Tay and about 2 miles from Dunkeld are the Hermitage Falls. These falls are on the River Braan, a rocky tributary of the Tay, and, although of no great height, are very romantic in all their surroundings.

On a high rock or precipice overlooking the falls an elegant building in the Grecian style has been erected, and the interior being elegantly fitted up and lined with mirrors, which reflect the troubled and seething mass of waters in a variety of forms, the effect to a stranger is very delightful as well as startling. Such is a brief outline of Dunkeld pleasure grounds. To describe them in detail would require a volume. As already stated, Dunkeld gardens are situated not far from the entrance lodge behind a bank of shrubbery. They occupy a delightful slope, having a southern aspect or exposure and overlooking the park and old grey cathedral. On the north and east they are sheltered by a well-wooded range of romantic heights, known as Craigiebarns, which rise to an elevation of about 900 feet above the level of the sea, while to the south Birnam Hill, rendered classic by the genius of Shakespeare, raises its bulky form and venerable head at the distance of about a mile. The gardens, which were planned and formed by the fourth Duke of Athole, who died in 1832, are about five acres in extent, and are surrounded on all sides except the south by high walls disposed in such a way and at such angles as to secure the best possible result as regards exposure or aspect. The site of the gardens is not only excellent, but the original plan and disposition of the ground has also been very ably conceived and carried out. The ground is intersected from east to west by a high wall, which divides the gardens into two parts. There is also a handsome walk, bordered by flowers and having a fountain and steps near its centre, running north and south through the gardens. At the lower end of the ground there is likewise a sloping bank filled with a great variety of herbaceous plants disposed in the most artistic manner as regards height and effect, and fully labelled. The duchess-dowager, as well as Miss Murray Macgregor, takes a deep personal interest in the culture and arrangement of these plants. At the summit of the ground there is a summer house or temple, from which a delightful view is obtained of the ground below. Close to and on the south side of the intersecting wall already alluded to there is an elegant and well-constructed Peach house 123 feet in length, and considerably farther down, in an isolated angle shut out from the gardens by a high laurelled bank, are the vineries, greenhouses, and other buildings and offices. There are six vineries ranging from 30 feet to 40 feet in length. Nos. 1 and 2 are filled with Black Hamburghs, White Frontignans, and Muscats of Alexandria; 3 is a Hamburg house, and in its warmer

end are two rods of Madresfield Court Grapes; this Grape is a favourite of the duchess-dowager; 4 is a Muscat house, and contains Muscat of Alexandria, Tynninghame Muscat, Bowood Muscat, and other varieties requiring warm treatment; 5 is devoted to Lady Downes and Alicante Grapes; 6 contains Gros Colman; this Grape appears to suit the place well, and is excellent in flavour about the new year. The whole of the Grapes enumerated are cultivated with great care and on the most approved scientific principles, and bunches of such depth and richness of colour have from time to time been obtained as to take first-class places in local, and even international, exhibitions. There are two half-span greenhouses, which are used chiefly for growing and maturing plants for the duchess's conservatory. There are four Melon and Cucumber houses, which keep up a good supply during the season. There are also a Fig house and small Peach house, which are each very useful in their way. Recently two Orchid houses have been added, and these popular plants are now cultivated with the most successful results. A house has also been set apart for the cultivation of the beautiful *Maréchal Niel* Rose, and the place being furnished with seats, it has become a favourite resort. In a lovely flower garden in front of the vineries Roses and other flowers have long been cultivated and brought to great perfection. Here there are also some fine examples of carpet gardening. At the north side of the kitchen garden are two ranges of pits for wintering bedding plants, &c. In the cultivation of hardy fruits grown in the open air, such as Peaches, Plums, Nectarines, Apricots, Pears, &c., Dunkeld garden, considering the variable nature of the climate, has long occupied an unrivalled position, and at every exhibition during recent years these fruits have outstripped all others that have been brought into competition with them. Apples are also successfully cultivated in the gardens, no fewer than upwards of a hundred varieties being grown in them. They are famed not so much for the extent under glass as for the attention and care bestowed on every point of detail, and the high state of efficiency and perfect order in which they are at all times maintained.

Dunkeld pleasure grounds and gardens, as they now stand, owe much of their beauty in the first place to the fourth Duke of Athole, a high-minded and far-seeing nobleman, who did great things for his property. He was styled the "planting duke," from having clothed the bare and rocky hillsides and dreary moors with the noble trees which now give such a charm and variety to the landscape. The seventh duke also effected many improvements and judicious changes in the grounds, and since his death, at Blair Castle, in 1861, the duchess-dowager, with the assistance of Miss Macgregor, has bestowed upon the grounds and gardens the most loving and watchful personal care.

J. R.

White Grape Hyacinths—I have never succeeded in establishing these satisfactorily. The imported bulbs disappear mysteriously, coming up in decreasing numbers each year. So in order to get the same effect as Mr. Wood rightly commends, I have recourse to the Blood-root (*Sanguinaria canadensis*), whose pearly white blossoms mingle delightfully with the rich blue of the Grape Hyacinth. No one knows of what the common Grape Hyacinth is capable until it has been treated as Mr. Wood recommends for the *Sisyrinchium*. It multiplies bulblets to such an extent, that the clump in which it is usually grown in mixed borders become so crowded, that vigorous bloom or foliage is out of the question. This evil is aggravated by the annual trimming with the spade. Let a clump be taken up and every tiny bulb planted in a well prepared border of light soil, and the result for three or four consecutive seasons is charming. Strongly grown in this way, it is a most useful flower for cutting. I have large bunches of it sent up to London, where it lasts in water for a week, opening the unexpanded blooms and lengthening its spikes. Last month I saw a

railway embankment near Clamecy thickly spriekled with Grape Hyacinths in beautiful bloom.—SALMONICEPS.

FLOWER GARDEN.

ANNUALS AND THEIR CULTURE.

ANNUALS are the cheapest and most showy of all flowers. They are easily cultivated and always satisfactory. There is no garden, no matter of what size, which may not be embellished with them in summer, and they will grow freely and bloom profusely in every part of the country. Their value cannot be estimated in the innumerable instances in which there are no means of preserving plants throughout the winter, as such gardens can be made as gay and attractive by annuals sown in spring as it would be possible to make them even with bedding plants. Pelargoniums, Calceolarias, and similar plants stand no chance against a good selection of annuals in any way, as there is not half the trouble and expense with the latter as with the former. Annuals will bloom as long as Pelargoniums, and they are more interesting individually. In my opinion, they are not grown so much as they should be in large gardens, and their culture might be extended in many small ones; only let the best forms of them be introduced, and there need be no fear that they will not go on increasing. All who love beautiful and sweet-scented flowers only require to see a few annuals at their best in summer to at once grow them extensively. Little patches of different varieties here and there in beds and borders in the flower garden, pleasure grounds, or kitchen garden, or even in a small front or back garden, are showy; but where space will allow large masses should be grown. The trial grounds of some of our seed firms show what can be done by annuals in large masses arranged so as to harmonise in colour.

With regard to their culture, the best way is to buy small packets of seed of the best varieties some time before the beginning of April, and as soon as the soil is dry and the weather fine after that, sow them. Moderately light, rather rich soil suits most of them best. The soil should be forked or dug over before beginning to sow, and the majority of them should not be placed more than half an inch below the surface. Thin sowing should be the rule, and a knowledge of the height of each, as well as its colour, should be in the possession of the sower. In borders, tall kinds should be kept to the back and dwarf ones to the front. It is a mistake to have colours of the same description following each other; but all this may be avoided by consulting a good list, which generally accompanies the seeds. Whole beds may be filled with annuals, and any kind of design may be worked out by the use of different varieties. Annuals are well adapted for mixed borders. Patches of them may be sown in between the herbaceous subjects. In our kitchen garden borders we have many *Phloxes*, *Pentstemons*, &c., growing, and these when in bloom are very attractive; but the whole effect is wonderfully enhanced by annuals which are introduced between them. In sowing the seeds it is a difficult matter to sow thin enough. Fear is usually entertained that they will not all come up; the majority, therefore, sow thickly, and the result is that the plants are much too close—a circumstance which causes imperfect development. Thinning out masses early is always beneficial. It is often better to have six plants in a group, or the plants 6 inches apart in the masses, than to have them only 1 inch or 2 inches apart.

The above cultural remarks apply chiefly to early sown annuals—those put in to bloom during the early part of the summer. There are some kinds which will bloom on until cut off by frost in autumn, but there are others which should be sown twice or three times at intervals during the season, and early in May will be found a most suitable time to make a general sowing to produce plants to bloom in July and onwards. The more tender kinds, or what might be termed half-hardy annuals, which could not be sown with success in March or early in April may be put in now with

perfect safety. Sow as already recommended; break the lumps and make the surface smooth with a rake; then sow and cover over with some fine sandy soil. Should the weather prove dry they may require to be watered, and this ought to be done thoroughly if done at all. I have seen sheets of paper, mats, old bags, and similar protectors placed over the seed to keep it moist after sowing in hot weather, and these were kept on until the plants came in sight, but I do not approve of the plan, as the young plants are thereby made tender, and it is generally more of a loss than a gain. Plants blanched and tender through being in the dark receive a severe check when exposed to light. If shade or covering of any kind is put on, it should only be during the hottest and driest part of the day, and should be removed every night. In shallow poor soils and in dry, warm seasons many kinds of annuals will prove very disappointing unless a little extra attention is given them. The flowers open out very small; they are soon over, and the plants wither up in a much shorter time than they would do in spring or autumn. The best way by which to avoid this is to dig plenty of manure into the soil for summer annuals before sowing them, but where this has not been done, or cannot be done, extra watering must be given them. I am not now referring to watering them while small, but when they are almost full grown and beginning to bloom. Frequent saturations then will increase the quantity and quality of the flowers, and greatly extend their blooming period. Manure water may be used with advantage on very poor soils. Late annuals are very interesting; therefore a few should be sown in July to bloom in September, October, November, and later if possible. Sweet Peas, Zinnias, and Mignonette succeed admirably when sown late. Many kinds of annuals are apt to produce a large quantity of seed, and some of the flower-spikes will be clothed with seed-pods at the bottom when the top will be in bloom, but seed-pods have a tendency to bring the flowering period to a premature close, and where the plants are required to bloom as long as possible they must be gathered immediately they are formed. This is important, especially in dry weather. As yet, annual growing in pots has not become a general system of culture, and it is not necessary that it should, as all the best kinds succeed excellently well in the open ground in summer, and the only advantage of having them in pots is that they can be conveniently taken from place to place. They may, for instance, be in the flower garden to-day, in rooms to-morrow, and at an exhibition the following day; but most varieties are seen to greatest advantage when growing and blooming in masses, and the pot plants have not that appearance. However, where pot plants are desired, they may be had. A number of 6-inch pots should be filled three parts full of good soil with drainage underneath. Sow the seeds thinly, cover them over lightly and place them in a cool frame; water when necessary; keep them near the glass and give abundance of air, and robust plants will soon be produced. Many fine bushy plants may be grown in 6-inch pots. If close together part of them should be drawn out when small, and those which grow tall may require stakes or twigs to prevent them from falling over and breaking. During the best of the summer weather the lights need not be kept over them, as they will succeed better in the open air either plunged in ashes or with nothing but the frames surrounding them. Some growers try to save their own seeds, and they grow annuals as much with the view of securing seed as flowers, but seed-saving in small gardens is not a profitable practice; the seeds are often inferior to those of foreign growth, and the time taken to collect them makes them much higher in price than when obtained from seed shops.

Of good annuals there are many; but I will only name a few. Stocks and Asters are too well known to require comment. The large-flowering German Ten-week Stock and the Victoria Aster are two of the best kinds which could be named. It is an advantage to be able to raise these under

glass in spring, but when sown in the open in April they will flower by July, and continue to bloom far into the autumn. Zinnias are a grand class of annuals, requiring the same treatment as the preceding. There are double and single flowering kinds, and all are very beautiful. Last year we had them in mixed borders, but this summer we are going to put them in the flower garden, as they are so very showy, and bloom freely from June until November. The recently introduced dwarf Nasturtiums are likely soon to be much grown as valuable annuals. Empress of India is a dazzling variety; *N. cœruleum roseum* is charming in colour, very dwarf and effective. Tom Thumb is very bright. The tall-growing or running varieties should never be put in borders. They are only suitable for scrambling over roots and screens. Sweet Peas are in every way excellent, and should be in all gardens. A mixture of colours is very pretty. The *Nemophilas* are good honey and bee plants, especially the blue one, but they are too soon over to be recommended for general culture. *Godetias*, though pretty, do not bear rain well, and are not very suitable for wet districts. Single Dahlias may be included as annuals, as, if sown in spring, they will bloom in autumn, and a few of them are acceptable; but in many instances they are over-done. *Antirrhinums* may be treated as annuals, and they are both lasting and pretty. Larkspurs, too, are valuable, and *Mignonette* is indispensable. Poppies are extremely showy, and the new feathery-flowered kind is admirable. *Phlox Drummondii* is a favourite annual. Its colours are very varied and showy, but we class it among tender subjects, and, therefore, not amongst the most desirable. The *Amarantus*, especially *A. Henderi* and *A. Princess of Wales*, are extremely handsome in foliage. *Mimulus* are interesting and showy when fully out, but they do not last well. The Canary Creeper is a good climber. Candytufts do well for edgings, and are compact and showy.

Annual Chrysanthemums are very hardy, robust growers and free flowerers, the blooms being very rich in colour and marking. *Clarkias* are profuse bloomers; and *Eschscholtzias* are lovely in dry weather, but in wet seasons they are disappointing. Amongst Everlasting Flowers, the *Helichrysms* are the most valuable, being showy when in bloom and useful long after they are cut. Last year we cultivated quantities of Japanese and Indian Pinks, but they ceased to bloom too early in the autumn to please us, or to induce us to devote much attention to them in future. The Virginian Stock is pretty, but soon over, and should be sown in succession. *Linums* are a fine class of annuals, being free-growing and continuous as regards blooming. *Lupines* are well known, and should always be grown. *Love-lies-bleeding* is old-fashioned, but showy. *Marigolds* have been vastly improved of late, but still there are many sweeter and prettier annuals. *Saponaria calabrica* is a dwarf-growing, free, rose-coloured flowering variety of much merit. The *Scabious* are amongst the finest of all; they may be treated as annuals or perennials; if sown in the open in April, they will begin to bloom in July and go on flowering until almost Christmas. *Sunflowers* are free-growers and in certain positions showy. The *Leviathan* grows the tallest, and often runs up to a height of 10 feet, with blooms 15 inches in diameter. *Sweet Sultans* are very fragrant and useful, and many of the *Tropæolums* are very showy,

CAMBRIAN.

Some fine Polyanthus Narcissi.—I have this season flowered a few of the best-known forms of *Polyanthus Narcissi*, all of them charming subjects for spring decoration in the greenhouse. They are easily grown, very free to flower, and exquisitely fragrant; and if, when the bulbs have done flowering, they are planted out in the open ground in suitable soil, they will bloom in the time to come. I have now four varieties in flower having white perianths, the most delicate being White Pearl, with handsome, well-formed flowers and a cup of the palest primrose; it might almost be termed a pure white variety. Queen of the Netherlands has a large,

well-formed perianth and a bright yellow cup. Her Majesty is a very fine variety, with a stout perianth, large and broad, and a deep golden cup. Then there is the fine old gloriosus, with its delicate creamy white perianth and striking golden cup. The foregoing four varieties are all in bloom at the same time, and the difference in the shade of the cup is readily seen. Among the newest varieties are Golden Era, pale yellow perianth with orange cup, large flowers and truss, and extra fine; Grande Soltana, white, with yellow cup, fine and striking; Princess of Wales, white, with orange cup; and to these may be added the scarce and always dear Bazelman major, with its pure white perianth and large yellow cup, one of the very best of a group of fine varieties.—D.

RAISING SEEDLING AURICULAS.

WHEN visiting Mr. Samuel Barlow, at Manchester, on one occasion I was much interested in noticing the manner in which he was raising seedling Auriculas. Some large pots were partly filled with drainage, and over this was placed some rough soil and the pots filled with fine ashes from a blacksmith's forge—the fine ashes that are blown to the back of the fire and congregate there. These were pressed down until quite level and the Auricula seeds scattered thinly over the surface. The pots were stood in a cold house in pans half full of water and a piece of glass placed over them. The seeds germinate with surprising quickness, but it is necessary they be pricked off into pots of suitable light soil as soon as they can be handled. I have since adopted this practice in a modified form, and that too whether I sow my seed in August as soon as it is ripe or in early spring. I take pots with something like 2 inches of crocks in them, placing on these some rough soil, and then filling up with a light fine sandy compost of a free nature. I sow the seeds thinly on this after the surface is made level, scatter over them the slightest coating of silver sand, stand the pots in pans of water, and place them in the sunniest part of the greenhouse, covering each with a piece of glass, and not attempting to shade unless the sun is very hot. The seeds germinate quickly, and as soon as the little plants can be handled they are picked off into medium-sized pots of similar soil, eight or ten in a pot, and again stood in pans of water, with glass over the pots, shaded until established, and then allowed to have the full sun so long as water is kept in the pans. I find this practice to answer well, but it is, perhaps, to some extent owing to the fact that I am much at home and can give the plants full attention. The plants soon get into a good size, time is thereby husbanded, and the blooming period to some extent anticipated. We are constantly learning something new about Auriculas. I mean, of course, those who cultivate them. Every lover of flowers should be a raiser of seedlings, at least of that particular flower that lies nearest their hearts. The peculiar enjoyment derived from raising plants from seed and then flowering them is so keen, that it is only those who give themselves to the practice that can rightly estimate it.

R. D.

DAFFODIL NOTES.

PROLIFICNESS.—Few people, I fancy, are aware of the rapidity with which the bulbs of many of the best garden Narcissi increase under favourable circumstances; let me give a few instances from my own garden. Three bulbs of Horsefield planted in 1880 have in this their fifth season, *i.e.*, in four and a half years from planting, so increased as to be at this moment carrying thirty-five flowers; six poeticus ornatus planted at the same time are bearing fifty-three flowers; two J. C. Backhouse planted in 1883 have in this their second season seven blooms; three Barri conspicuus, second season, eight blooms; three cernuus, second season, seven blooms; six double poeticus, second season, are already showing twenty-one bloom-stalks, and more will probably come; six Sir Watkin have in their first season given me thirteen magnificent flowers, so he bids fair to walk in the steps of

Horsefieldi. I consider that each flower at least represents one good available bulb if I choose to take the clumps up in July and divide them, and I should certainly find several smaller, but fair flowering bulbs also, which I should plant for a year in the nursery to produce flowers for cutting. Thus even if Daffodil bulbs should to some seem a little expensive, they very quickly reduce their own cost per head or per blossom, although from the great demand for them the selling price from bulb merchants keeps pretty stationary, and in some cases has even gone up. Thus, three Horsefieldi in 1880 cost me 9d. each, and my thirty-five bulbs (at least) are now worth by Barr's list 35s., besides the delight and actual value of the blossoms themselves in the five seasons gone by. I have only chosen a few instances as examples of the robustness and increase of some of the best of Narcissi. I could easily have cited more, but they could not, I think, have been more convincing. In honesty I must say a word of my

FAILURES OR COMPARATIVE FAILURES. Principles I can do nothing with; it blooms well the first year, poorly the second, and then not at all, but forms a lot of wretched little bulbs not worth replanting. Maximus remains with me pretty stationary, does not actually decrease; it blooms finely, but the increase of flowering bulbs is practically nil. Leedsi expansus and Burbidgei Model also stand still. Pseudo-Narcissus has hitherto almost died out in borders, but I am succeeding better with it in grass. Orange and Sulphur Phoenix are both comparative failures; they flower very sparsely and with such a weak stalk and heavy head, that unless supported with sticks they are always begrimed in the dirt; this is not the case with double poeticus if it has plenty of water.

INCREASE OF TULIPS.—Having spoken of the prolificness of Daffodils, let me just mention Tulips. In the midsummer of 1880 I had 50 bulbs given me which had been forced in the spring and placed out doors to dry off in the usual manner. They were planted here on November 9 in that year, have each year been taken up and sorted in June, and re-planted again in November. To-day I have roughly counted, by reckoning by rows and allowing for those given away, I have considerably over 3000 good flowering bulbs! Bulb growing ought to be profitable. W. WILKS.

Shirley Vicarage, Croydon.

SELECT NARCISSI.

N. INCOMPARABILIS LEEDSI.—This is much too good to be subjected to fierce storms and March blasts in the open border. I think there is evidence to indicate that it is a cross between N. albicans and poeticus, the rich orange-scarlet tinting of the crown being often nearly as deep as that of poeticus ornatus. Its chief feature is, however, its size; some blooms on a plant in a 4-inch pot measure slightly over 4 inches across the perianth segments without feeding or forcing. The scent is not unlike that of Cinnamon when fully developed. The miniature of this would seem to be N. i. aurantius, with even a deeper tinted cup and lighter shaded perianth. A medium between both, but with yellow cup, is N. i. albidus. All three are now in bloom together with me; they were started in a cold frame on September 19 last.

N. DICOLOR HORSEFIELDI.—(Grown side by side with N. b. Emperor and N. b. Empress, I give the preference to this. Planted two days before the date last mentioned, Empress expanded March 10, and Horsefieldi a week subsequently. Generally speaking, Dutch bulbs are much superior to English grown ones, but in this instance I merely lifted the plants out of the border and potted them up, and find them much finer than imported. Those who grow imported bulbs of such very fine flowers should, immediately decay sets in in the blooms, plant them out in the garden border, so as to give them fair play to grow and ripen. The trumpet of this is rich yellow in shade, wide, and curiously deflected and edged near the orifice; perianth almost white and of good substance.

N. TAZETTA GRAND MONARQUE.—Turning to the bunch-flowered Polyanthus Daffodils, they have now all nearly bloomed indoors or in the borders. I think I have twenty distinct types of the best varieties blooming, and without hesitation prefer this for size, beauty, and scent. A single stalk with twelve blooms, each slightly more than an inch across, forms a bouquet in itself, so strongly scented as to be perceptible on entering a room. Bazelman major only differs from this in having fewer blooms and with deeper orange cup, as contrasted with the pale lemon of Grand Monarque. Gloriosus completes the grand trio. N. Tazetta Phillis had thirty blooms.

N. INCOMPARABILIS ALBUS PLENUS SULPHUREUS.—Turning lastly to the double monstrosities, while I grow and like much N. i. aurantius fl.-pl. and N. i. albus aurantius—the former commonly known as Butter and Eggs and the latter as Eggs and Bacon, I give the preference to that first named Codlins and Cream, or the great Sulphur Kroon of the Dutch. I sent a fine specimen to Mr. Burbidge, to whom narcissophiles are so much indebted, and, writing this morning, he says, "I consider Sulphur Kroon the finest of all Narcissi." W. J. MURPHY.

Clonmel.

Erythronium grandiflorum.—I send you a flower of an Erythronium from roots received last year from Vancouver's Island. It seems to differ from those I have had from nurseries under the names of grandiflorum, giganteum, and americanum, in being larger, whiter, and with the centre markings more distinct. The tubers were collected before they were thoroughly ripened, and few flowers have appeared in this their first year, and those only one on a stalk, but the fine size of the flowers sent looks hopeful for future years when they will be better established.—G. J.

Coloured Primroses.—Two years ago I procured a packet of seed of a good strain of coloured Primroses, and raised some good plants from it. They were grown in the flower-beds last year and did fairly well. I have, however, since removed them to a bank facing the west and well sheltered on all sides. The soil an inch below the surface is pure clay, to which a little leaf soil was added as taken from the wood. In this the plants have done remarkably well, a circumstance which seems to point to the let-well-alone system of growing choice Primroses being the best.—G. MERRITT.

Scilla Hughii.—In your interesting account of Scillas of the 4th ult. (p. 286) I find no mention of a bulb sent me under the name of S. Hughii some years since. It is like a miniature peruviana, but appears to be more hardy, keeping its leaves green all through the winter; in fact it is very seldom without foliage, sending up its new leaves almost immediately after the flower-stalk has died down. The foliage is almost recumbent, only the tips of the leaves turning up off the ground. The blossom is a *fac simile* of peruviana, only 6 inches high. I have but a solitary bulb, as it has never increased. Is it a rarity?—W.

Sarracenia purpurea.—In THE GARDEN (p. 309) it is stated that this plant is capable of withstanding from 40° to 60° of frost. I do not wish to question this statement in any way, but when reading it it certainly struck me that this Sarracenia must be very accommodating in its habits, for in Messrs. Veitch's nursery at Exeter it may be seen growing with uncommon vigour in an intermediate temperature. I have seen long lines of it there growing close under the glass, and the pitchers charmingly coloured with purplish crimson veins, and large as well. I have never seen them so fine elsewhere.—J. C. C.

Chelmsford Flower Mission.—In your remarks on Daffodil names (p. 331) I see you say that one large grower intends to pitch half of his hundred sorts of Daffodils to the rubbish heap this season. I should be greatly obliged if he could be induced to send them to me for growing for our flower mission. Inferior sorts are just as good

for this purpose as the best. Mr. Williams and Mr. Veitch let me have their forced bulbs, which I plant and grow, but of course the strength of many of them is quite exhausted; some, however, live and produce small spikes which do for bouquets. Large spikes are not suitable. My excuse for troubling you is the good which the flower mission does and the pleasure which the flowers give the poor people.—ROBERT WARNER, Broomfield, Chelmsford.

Narcissus Nelsoni.—Most of the Nelsoni group of Narcissi are now in flower, and during the last few days I have been examining them for the purpose of noting the differences that exist amongst them. The two commonest are Nelsoni and Nelsoni major. I have carefully examined these two varieties and have come to the conclusion that there is no difference between them. They are the same in colour and in form, height, and strength of foliage, and time of flowering. In both the cup is slightly tinged with orange when the flower is opening, and both have the same vigorous habit of growth. Perhaps, however, someone may be able to point out a difference which I have failed to detect. At any rate the case is worthy of the attention of the Daffodil committee, as if the two varieties are the same, it is useless to keep the same plant under two names.—DAFFODIL.

American Asarums.—Strange weird-looking flowers are those of A. canadense and A. virginicum; closely packed little triangular goblets, half buried in the earth, of a texture so thick and hard that they scarcely bend under firm pressure; of a lurid brown-purple colour, curiously shaded and spotted respectively, mysterious and wicked-looking. Bending down to ascertain if they have any smell, one half expects, from their rather repellant look, some unpleasant odour, and it is a pleasant surprise to find a faint delightful scent, something like that of the flower of the Allspice bush, but also of a strangely mysterious quality. Though these plants are not of obvious garden value, they are decidedly interesting, and their unusual aspect may plead for their having a place even in the collections of the critical. The flowers are followed by rather handsome, leathery polished leaves. It is a strange contrast to come suddenly upon the sullen-looking flowers of these curious plants after the frank, genial physiognomies of Pansies, Daffodils, and Primroses.—G. J.

Daffodil Sir Watkin.—"An Observer" (p. 365) accuses me of "continually putting forth statements and proving nothing." He expects me at once to prove the exact descent of Sir Watkin from the Nonpareil Daffodil figured in Hale's "Eden" 130 years ago. If he had appended his name, I should have thought it worth while to reply. As it is, I will simply challenge him to prove how it is in the least probable that Sir Watkin was raised by Leeds, of Longford, which he thinks likely. Both Mr. Barr and Mr. Burbidge have also named this to me by letter, so there is evidently some supposed foundation for the theory. To say that the varieties raised by Mr. Leeds—viz., Edward Hart, Hudibras, and Sir W. Harcourt, are steps in the ladder, Sir Watkin being at the top, is going a very little way indeed towards the proof. None of these are half the size of Sir Watkin, although they each have points of resemblance on a smaller scale. So far as I know, Mr. Leeds never raised any giant form of incomparabilis, and, therefore, it is idle to talk about his having probably raised Sir Watkin. A comparison of dates would settle this point if we take into account the fact that Mr. Pickstone possessed 20,000 bulbs when it was let out last year. I quite hope we may succeed in finding the great mountain Daffodil during the present season. Diligent search is being made for it, and I have now in my possession large forms of the incomparabilis Daffodil larger than any yet raised by Leeds, and very nearly approaching Sir Watkin in size, colour, and style. I believe that Mr. Pickstone knows a good deal more about his Daffodil than he has yet told us. He will probably keep up the mystery until his commercial

interest in the plant ceases, and then he may perhaps tell us more.—WM. BROCKBANK.

Crown Imperials.—Mr. Wood's note on these splendid flowers does not reveal the secret of ensuring an annual display of bloom. "Whilst in some gardens," he writes, "these never fail to flower, in others they are flowerless year after year." Yes, but why? Soil may have something to do with it, but there is something else which has far more. It is indispensable that the flowering stems should be allowed to wither and die off of themselves. They look untidy, and therefore they are generally removed, and a flowerless stem follows next year. But in some cottage gardens, and in more ambitious borders also, where they are left either carelessly or with solicitous care to dry off with the heats of summer, the same clump sends up year after year splendid clusters of golden or copper-coloured crowns. Young gardeners learn with difficulty to leave some things alone, and generally herbaceous borders suffer most from injudicious cleaning. Nothing in them suffers more than the Crown Imperial. It is a most fascinating flower. Before the Snowdrops fade it is pushing up its succulent shoots with almost tropical luxuriance, yet neither frost nor wind can bite nor blast them. When at last its noble inflorescence is complete, the blossoms will reward more than one examination, for, unlike other crowns, it bears its jewels inside; the honey glands at the base of the interior of the corolla are like large pearls.—SALMONICEPS.

Prunus triloba.—This makes a good plant for a wall facing the south or west, so as to ensure a thorough ripening of its wood, when every twig will be wreathed with pretty rosy pink semi-double blossoms at this period of the year. In sheltered places it is even very handsome grown as a hush, its style of growth being good, and the flowers borne in the same profusion as on a wall. It may be grafted or budded on seedling stocks of the common Plum, which is the usual mode of propagating it, cuttings being by no means easy to strike. This Plum is sometimes met with in gardens under the inconveniently long name of *Amygdalopsis Lindleyi*. Another allied kind is *Prunus sinensis*. This is smaller than the preceding, more upright in growth, and has pink-coloured rosette-like blossoms. There is also a form in all respects like the last, but with pure white flowers. Both are beautiful small-growing shrubs, and their blossoms being later in expanding than those of *Prunus triloba*, they are less liable to be cut off by frosts. These shrubs are all well adapted for forcing early into bloom for the embellishment of the greenhouse or conservatory, as they flower naturally so early, but warmth is needed to bring them into flower, and from the semi-double character of their blossoms they last a comparatively long time in beauty. We employ some specimens of each of them for flowering under glass; after blooming they are hardened off and plunged outside in full sunshine. During summer they are well supplied

with water, a little weak liquid manure being given occasionally during the growing season. Thus treated they are available every spring for forcing, and do not require a year to recoup themselves as planted-out specimens do. In that case the check experienced through lifting and sub-



THE HERMITAGE, DUNKELD. See p. 339.

sequent flowering exhausts them, so that few blooms are borne the second season, while those grown in pots are exempt from such checks.—H. P.

The Virginian Cowslip (*Mertensia* (*Polygonaria*) *virginica*).—The flowers of this have a remarkably delicate beauty grown under glass. They come somewhat larger than in the open and of a pale blue colour with pink buds. It is curious to see the transition from pink to blue in the half-opened flower.—G. J.

TENNIS LAWNS.

I VENTURE to offer the following practical hints for the guidance of those about to make a lawn who have not the assistance of skilled labour: Never trust to the eye alone as to levels or squares or dimensions; rely only upon the spirit level, the square, and the measure. If you have no practical experience in the use of the level and the square, send for a carpenter or skilled man to start you in handling them, and do not imagine that you can do so by instinct without paying heavily for your experience. Remember that to lay down your lawn level and even and true at first will cost little in comparison with the expense and vexation of correcting errors after the turf is laid down. First procure the necessary instruments, including a spirit level, a 6-foot wooden square, a tape or chain measure, two strong garden lines, a wooden 8-foot straight-edge, from forty to sixty wooden pegs cut smooth and true upon the top, and varying in length, according to whether the land is more or less out of level; three wooden levelling crosses, though not necessary, are very desirable for testing and correcting the level over a long line; turf cutters, and ordinary tools. Secondly, select your spot, free from the neighbourhood of shrubs and overhanging trees, where you can make a dead level of somewhere about 100 feet long by 50 feet wide (less, of course, will do). In order to determine your exact spot, begin by running and fixing your garden line for about 110 feet or 112 feet lengthwise down the middle of the supposed lawn, and then measure your 100 feet on this line and mark it with a peg at each end, leaving the garden line still fixed and tight; then, at each end of the middle line of 100 feet, measure off with a line and square 25 feet on each side of the middle line and at right angles to it, and mark each corner thus arrived at with a peg. You can now, with the spirit level and straight-edge and a few more pegs—or, still better, with the levelling crosses—take the levels of your ground and judge of the fitness of the spot. Thirdly, having selected your spot, lift the turf by the aid of the line and turf-cutters in strips of a foot wide, 3 feet long, and 2 inches thick; roll these up and remove them to a distance quite clear of your ground and stack them. Fourthly, the treatment of the ground at this stage will vary according to its nature, the object being to obtain a solid, level, even surface, fit for the growth of fine Grasses and resting upon a uniform foundation. If drainage is required, the drains should now be made. The next thing is to level and make the surface even and ready for tinning; this is the most important and difficult

part of the whole operation. You should proceed thus: collect and place on one side sufficient fine mould ready for use for dressing the surface and laying the turf; next, in order to obtain your levels, run out once more and fix your garden line for 112 feet along an arbitrary middle line of your lawn, then measure 100 feet on this line, and mark it with a peg at each end; then place pegs along

this line about 6 feet or 7 feet apart, and reduce all the pegs to a level by means of the spirit level and straight-edge, and when level, re-measure the 100 feet at the level line, and, if necessary, refix the two end pegs; you have now a level line 100 feet long, the garden line still remaining where it was. Next measure 25 feet each way at right angles to the middle line, as before, at each end of the true 100 feet; peg the corners out, and by the use of a line run pegs all along the sides and ends, and level them as before, and when you have obtained the true end levels, you can readjust the situation of the corner pegs, so as to correct the distances of 25 feet to the level line. You ought to have now a right-angled parallelogram, measuring at your level line 100 feet long and 50 feet wide. Fifthly, you now work all the ground to the level of the pegs, placing all rough and inferior stuff below and the best earth above; when fairly levelled in this way, the whole surface should be well rammed and trampled, and the levels again adjusted. It should then be well rolled with a heavy roller if dry enough and all inequalities reduced. It is now ready for turfing, and the fine mould should be placed in heaps on the ground, and the rolls of turf should also be laid on the ground in heaps. The mould is now lightly laid over the surface by the hand, and the turf laid on with great care, the straight-edge and spirit level being constantly applied, to see that the surface of the turf is level and even. In this operation, the strips of turf should be fitted close together, using a knife to make the edges true, and filling in with fine mould. The turves should also be flattened with a large, flat, wooden stamper, with a handle fixed at an angle of forty-five degrees. At this stage it is more important than at any other to constantly test the truth and level of the surface, because errors allowed to pass now can only be corrected with extreme difficulty afterwards. Sixthly, the laying of the lawn being now complete, if the turf is poor or coarse, it will be best to sprinkle over it half a bushel of fine Grass seeds and a little stable manure, the sower traversing the lawn upon planks. On no account should Clover seed be used (Clover is very unsuitable for a tennis lawn), nor should anyone be allowed to set foot upon the newly laid turf, still less should a roller be placed upon it until it has had ample time to consolidate; a roller causes the edges of newly laid turf to curl up, and ruins the lawn. The worms are not at this stage enemies to the new lawn; they assist in consolidating and unifying the turf. The proper time to sow the seed is spring or autumn; it is very late indeed to sow in November. I shall be happy to assist anyone desiring further information, and therefore add my address.—W. WILLIAMS, in *Field*.

AURICULAS IN THE NORTH.

ADMIRERS of these charming plants in the south can form no idea of the exceedingly good show which is annually made of them at Newcastle. On the cool northern hillsides of Northumberland reside a few of the old school of true florists who still continue to give these old-fashioned flowers all the study and attention that is due to them. Some eight years ago I wandered into the Corn Exchange at Newcastle and saw such a show of Auriculas as I have never seen before nor since in London. On Wednesday, the 15th ult., I ran over specially from Durham to have a look at another gathering. Speaking from memory, I should say that the strictly hard and fast lines of the old florist had been somewhat departed from in the intervening years; exact regularity of form, the rigidly circular paste, &c., seem to have given place amongst the prize-takers to general robustness of constitution, clear colour, bold habit, and all-round beauty; no signs were observable of clipping out overcrowded pips, nor of dressing. The importance attached to Auriculas in this district may be inferred from the fact that twenty-five prizes were given in the various classes. The following appeared to be the best in the first prize collection, viz.: Acme, C. J. Perry, Frauk Simonite, Sapphire, Complete, Ringleader, Lord Lorne, and Mrs. Sturrock. It is noticeable

that the recently despised Col. Chainpneys figured amongst those which won the second prize, along with Meteor Flag, Lady Sale, and General Havelock. The best in the class for sixes I thought were, Imperator, Othello, Tam O'Shanter, Mrs. Heap, Pizarro, and Richard Headley, the latter an exquisite variety. Amongst other classes were some extremely good examples of green, grey, and white edges. Alpines had six prizes allotted to them. There were some well-grown pots of Diadem, Brilliant, Bronze Dragon, Mrs. Ball, King of the Belgians, Philip Frost, Mrs. Smith, General Neil, Catterina, and Anne Smith. Frequently recurring names amongst the prize winners were C. J. Perry, Acme, Beauty, F. Simonite, Brilliant, Diadem, Lord Lorne, Complete, and Mrs. Smith. R. A. H. G.

Horsforth, near Leeds.

KRELAGE'S NARCISSUS SPURIUS CORONATUS.

MY title to be allowed to say a few words about this is—First, that I have obtained every distinct Daffodil in the market as soon as it came out and studied it in my own garden, besides having collected many wild varieties at home and from abroad; secondly, that last week I spent twelve hours in Mr. Barr's nursery and two or three in Mr. Ware's, besides several hours on April 14 and 21 at the Royal Horticultural Gardens, devoting my attention entirely to Daffodils. I am certain that there are at least a dozen forms of the so-called spurius and at least six of the so-called spurius coronatus. Of all the latter, the flowers exhibited on April 14 by Mr. Krelage are the best, and amongst several forms I found both in Mr. Barr's and Mr. Ware's nursery I saw only one flower (not a set of flowers) in Mr. Barr's equal to those exhibited by Mr. Krelage. At the same time I have reason to think, from specimens I have watched in my garden, and seen from other gardens for two or three years, that the form of the flower is liable to change somewhat with soil and season. But really when one comes to make a collection and to note slight differences, the forms of spurius and major and pseudo-Narcissus as well as of the white Daffodils become simply endless, and to try to draw a line in the series between one name and another is hopeless. As for the name spurius, I agree with the editor of THE GARDEN that it is equally unmeaning with most of Ilaworth's names, all of which I should like to see entirely dropped, and only those resumed which could stand on their own merits. Spurius was probably suggested by Parkinson's name "Bastard Daffodil," which is intended as a translation of the name pseudo-Narcissus, a name adopted by botanists to distinguish the plant from the true Narcissus of the Greek poets, no trumpet Daffodil being found wild in Greece.

Edge Hall.

C. WOLLEY DOD.

Comte Brazza's Violet.—I am surprised that "W. I. M." (p. 339) should consider this Violet to be the same as Swanley White, especially after my experience of the two had been recorded in THE GARDEN (Vol. XXVI., p. 311). If "W. I. M." will refer to that number, I think he will come to the same conclusion as I have, that he and his six neighbours are cultivating Swanley White, and that he has not got the plant at all that received a first class certificate from the floral committee at South Kensington. "W. I. M.'s" description of Comte Brazza, as he has it, exactly coincides with my opinion of Swanley White, that it is not so vigorous or floriferous as Marie Louise. On the contrary here, I and others who have Comte Brazza true find it to be just as much more vigorous than Marie Louise as the last is more than Neapolitan. If "W. I. M." will accept some plants of Comte Brazza from me on the condition that he grows them next season side by side with his present stock, and records the result in THE GARDEN, I will gladly send him some.—WM. ALLAN, *Ganton Park*.

Chionodoxa seed.—I notice in the very interesting paper by my friend Mr. Ewbank in THE GARDEN of April 18 (p. 312) the following: "I also think that the fixing of these glasses may

be of much use in the way of ripening seed, and Chionodoxa Lucilia is already with me *in situ* for this purpose, and I think will respond to it." Now, as he knows, I live in a less favoured region than the Isle of Wight, although I have nothing to complain of, and yet with me this charming spring bulb not only ripens its seed without glass covering, but all round the clumps I can see heaps of young seedling plants like grass, while of some that I gathered and sowed in a pot I do not think one seed has missed. I see that someone in a contemporary abuses this plant, and said that it was a fraud on the public when we already had Scilla sibirica. Now, I do not wish to disparage the older flower, but what can be more distinct than the metallic blue of it and the corulean tint of the Chionodoxa, which, albeit what has been said, most of us regard as one of the most valuable introductions in hardy bulbs of late years?—DELTA.

FRUIT GARDEN.

FORCED STRAWBERRIES.

THE following remarks on this subject are a record of unvarying success in this particular branch of gardening, and as such may not be altogether without value, especially as failure in this department is by no means uncommon. The length of time required to finish the crop from the runner to the ripe fruit and the amount of attention necessary in the nine or ten months during which the work is in hand are the cause of considerable annoyance when a few poor deformed fruits are all that one has to show for time and labour spent. Strawberries being the chief desert fruit during the spring months, it cannot be too strongly enforced that careful attention is absolutely necessary at all stages of their growth; indiscriminate watering, a close moist atmosphere, and insufficient feeding are all in their turn conducive to failure.

The number of varieties that will force well is large and their enumeration is, perhaps, unnecessary. If I were confined to one variety my choice would certainly fall on La Grosse Sucrée. It has very little foliage and invariably but one crown; it is a free setter and produces large handsome fruit. Strong runners of this should be layered in 3-inch pots as soon as they can be obtained; the soil for them should consist of two parts loam to one of ordinary garden mould, firmly put into the pot, and water should be freely given as soon as roots make their appearance. The last week in July is a good time to shift them into their fruiting pots and the soil at this stage should be entirely loam. We find a mixture of two loams, a stiff and a fibrous one, in equal proportions to answer well, and to this should be added a few handfuls of crushed bones. Attention should be paid to careful pot-croaking, and a slight sprinkling of soot may be laid on the loose litter or leaves that are placed on the crocks before working in the soil. The plants after potting should stand on boards placed well in the open and exposed on all sides to sun and wind. The constant removal of runners and a watering when necessary are all the care which they require until frost sets in, when they are packed as closely as they can stand in rough frames and sheltered with old sashes and Fern in very wet or frosty weather. Their first quarters in the forcing stage are pits, into which beds of leaves have been introduced sufficient to afford a very gentle warmth to the plunged pots. Very little water is necessary here, the chief points being to keep the foliage well up to the glass and to give sufficient air day and night to prevent the premature starting of the crowns. Having to ripen our fruit in vineries and Peach houses, the precaution is always taken before introducing the plants to the leaf pit to dip them in a solution of Gishurst, and they also receive at the same time a slight top-dressing of soot. I am not prepared to say that soot is essential, but we find that the plants like it, and consequently it is always used. As soon as the trusses are well up and individual blooms are on the point

of bursting, the plants should be removed from the leaf pit and placed in their quarters for setting. These in our case are lean-to pits, in which an average temperature of from 60° to 65° can be maintained. I find Strawberries will set well in a higher temperature than is generally allowed, provided they have a dry atmosphere, are close up to the glass, and have a little air playing about them day and night. Immediately the fruit is set it is thinned out to ten or a dozen on each plant, and a good top-dressing of cow manure is given. I have discarded all contrivances in the way of saucers, layers of rotten manure, &c., the only stimulant given in addition to the cow manure being a small dose of Clay's fertiliser applied when the fruits have attained the size of Hazel nuts.

In summing up the chief points essential in Strawberry forcing, I may say that they are early runners, early potting, protection from continued rain in autumn and early winter, free ventilation during setting time, and liberal feeding until the fruit is set. Green fly must be checked by occasional fumigations (before setting time); the dipping previously mentioned will effectually ward off spider, and a dust of sulphur will check any tendency to mildew.

E. BURRELL.

Claremont.

STRAWBERRIES BY POST.

To sick persons, especially children who object to taking medicine, a few Strawberries are of great value, and I am pleased to bear witness to the liberal way in which many part with their fruit for such purposes. More forced Strawberries and ice are given to invalids than many people are aware of, the former being frequently sent by rail and latterly by post to considerable distances off. Not a little depends upon the way in which they are packed, as good and obliging as the post office officials undoubtedly are, we cannot expect them to handle parcels very carefully. To go by letter post either small square cardboard or light tin boxes are best, and the weight being under 12 ozs., they will go any distance for 3d. For parcel post we prefer light deal boxes such as can be bought at a confectioner's, and in these a small quantity of fruit or rather less than half a pound can be sent for 3d. or upwards of 2 lb. in a larger box for 6d. In either case the boxes must be tightly filled with the packing material and fruit so as to bear a rough tumble without disturbing the latter. Fragile boxes and loose packing are the most frequent causes of failure, not only in the case of Strawberries, but also in that of other kinds of fruits and flowers. The boxes should only be sufficiently deep to admit of a layer of packing material, preferably cotton wool, to be placed above and below the fruit. Each Strawberry should be enclosed in a forced and previously flagged Strawberry leaf or the leaf of a Kidney Bean; they must be packed, as has been said, closely together and in one layer only. A few of the leaves should be placed on the top of them, and a layer of cotton wool, varying in thickness according to the depth of the box, should then be placed on the top of all. The leaves preserve the freshness of the fruits as well as serve to keep them apart. The lid should shut down tightly on the packing material, and be properly, though not strongly, nailed down, as careless persons may easily spoil the fruit in their efforts to open the box, especially when French wire nails are used. When strong cardboard or tin boxes are employed, a loose parchment label bearing the address and stamps should be attached to the box; this gets the principal portion of the rough usage. The parcel post is rather slow at times, and consignors will do well to make themselves acquainted with the exact times at which hampers are made up for different directions and post accordingly.

W. I.

Canning fruit in Niagara County.—One establishment, located at Lockport, canned during last season 2,630,000 pounds of Tomatoes, 10,000 pounds of Plums, 100,000 pounds of Cherries, 110,000 quarts of Strawberries, 10,000 quarts of Raspberries, 44,000 bushels of Apples, and 4000 pounds of Crab Apples. — *Proceedings of the Western New York Horticultural Society.*

CARE OF ORCHARDS.

IN the "Proceedings of the Western New York Horticultural Society," a copy of which has just reached us, we find the following observations on leaning trees, pruning, and manuring. A great many fruit trees are out of the perpendicular. This looks bad, and is bad. The branches of a tree should shade the trunk, but they cannot do this when the tree leans badly. The roots of a leaning tree are subjected to unnatural strain and often yield to the pressure. The passage way is obstructed, order and harmony destroyed. When a tree first leans it is easily righted, and may be held to its place by a stake, a prop, or, if small, by earth or sods weighted with stones. This leaning habit is confirmed, and becomes more difficult to correct the longer it is continued. Most orchard get plenty of trimming when they do get it. After long neglect, the owner of the orchard and his assistants, armed with axes and saws, assault the trees with desperate energy. Limbs, whichever are handiest, great and small, fall in rapid succession, and the orchard thus trimmed looks naked for months. It is hard to say which is worst, excessive and improper pruning, or no pruning at all. Not to prune is to allow the tree to be exhausted and enfeebled by excessive draughts made upon it by superfluous branches. Fruit trees on short allowance, sucked and sapped by sixteen times too many greedy branches, that crowd and rob each other, till some are dead and many are dying, is a poor show for fruit. Watery sprouts, suckers, all superfluous shoots should be removed before they have attained much size, and before they have diverted the strength of the tree from the fruit and the necessary branches. If a limb is not wanted it should not be allowed to grow. Every man, when he cuts off a big limb, confesses that he is a careless and improvident cultivator. He should have cut it off before. Cutting out the central leader is a mistake. It should be preserved and the branches should radiate from it and be subordinated to it. Low heads, well balanced, and well open to the sun, should take the place of the stilted, one-sided compact tree tops everywhere abounding. Neglected orchards that require a good deal of pruning should be trimmed in autumn. Heavy summer pruning seriously checks growth, but superfluous sprouts should be removed as soon as they put in their appearance. Orchards, with rare exceptions, are not well fed. They suffer for the necessities of life. Plants, like animals, must have their daily food, and they should have food adapted to their individual necessities. Endless variety in the vegetable kingdom indicates different conditions of growth and development. Fruit growers will have taken a long step forward when they learn what to feed, how to feed, and when to feed their fruit-bearing trees and plants. The first step towards supplying proper food is to select the best soil and situation. Irregular feeding of animals is known to be detrimental; irregular supplies of fertilisers to plants is also detrimental—they are sometimes starved, sometimes gorged. A cornfield, expected to yield 60 bushels of corn to the acre, receives about every year a liberal supply of manure; an orchard is equally entitled to a yearly allowance; it should not be starved five years and overfed the sixth, but that is what most orchardists do. Mulching is good for fruit trees. It is Nature's method of supplying nutriment. Forest trees are annually mulched with leaves, branches, and decayed wood. Stable manure, ashes, ground bone, and lime are the great fertilisers, and every man who has a large Apple orchard should keep these in stock.

Bees in Peach houses.—I know of no better way of securing a heavy crop of Peaches and Nectarines than by putting a hive of bees in the house when the trees are in bloom. This has been our practice for several years past in the case of a house in which the trees come into flower in March, and the result is always satisfactory. When the bees are in the house we never brush the flowers or shake the trees in the hope of fertilising the flowers; this work is left entirely to the

bees, and they do it effectually. To-day I have thinned 900 small Nectarines from a tree which covers a piece of trellis 4 yards square, and several hundred more will have to be taken off before the crop is a safe and ordinary one. This, I think, is proof enough as to the advantage of employing bees, and those who think such work does the bees harm make a great mistake, as they thus get a supply of food before it is plentiful out-of-doors, and I have noted that I have for two years secured my first swarm and earliest filled sections from the Peach house bees. I may add that I have a good many hives of bees. In my opinion they are useful in a garden at this season, and when managed on the bar-frame system they are both interesting and profitable.—J. MUIR, *Margam, South Wales.*

THE BEST EARLY STRAWBERRIES.

OPINIONS vary, and I suppose they always will do so, as to which are the most serviceable early sorts of Strawberries, more especially for forcing. Black Prince has never been very popular, and the good old Keen's Seedling is now fast being replaced by newer varieties. Probably Vicomtesse Héricart de Thury, or Garibaldi as it is also called in some of the northern districts, is the kind which is most extensively forced, and on the whole it must be admitted that it is a valuable acquisition. It possesses a strong constitution, is wonderfully prolific, the fruits set freely, are of good size, travel remarkably well, and are of good quality, even when ripened entirely in strong heat. This season we have tried another early variety known as Princess of Prussia, a name which should be altered to Princess Frederick William, and we have formed a high opinion of its merits. This sort is no novelty, but I have only met with it in the Bristol district, where I procured my stock of it. It forms broad and stout foliage, throws up abundance of large trusses of blooms, and is from ten to fourteen days earlier than the Vicomtesse. With us it set very freely, and when introduced to the forcing house, ripened off very quickly. Its fruits are round, of medium size, bright red, and early in March were decidedly good in quality. The seeds being more deeply imbedded than those of the Vicomtesse, it is naturally not such a good traveller, but nearly all ours were sent upwards of 100 miles, and arrived at their destination in "excellent condition." It is also the nearest approach to a perpetual bearer of any other sort with which I am acquainted, both those forced and planted out and those grown entirely in the open air producing successional crops. In the open air it is apt to bloom too early, and for two seasons our earliest blooms of it have been blackened by frost. I recommend it for the earliest crop, and especially for forcing, as there are plenty better successional and late sorts, notably La Grosse Sucrée, President, Sir Charles Napier, and British Queen.

W. I. M.

Upright cordons.—The fan system of training Plums has been the only one pursued here from time immemorial, and as regards beauty there is no training to equal it. My object, however, was to get the wall perfectly filled with good bearing wood in the shortest possible time, and here let me note that I spur-prune our Plums, but not Peaches. Having determined to uproot some old Plums on a west wall and plant those two princes belonging to the Plum tribe, viz., Green Gage and Golden Drop, the border was prepared exactly as for Peaches, and the young trees (dwarf) were duly planted, and here again I stipulated that each young tree should have three good shoots on it. They are planted 4 feet apart and trained as follows: that is to say, the two lower shoots run horizontally on each side of the tree for 18 inches, and the middle one is cut clean back to a good wood bud, so that we have three vertical shoots to each tree at 18 inches apart. These trees have now been planted three years, and not ten minutes ago I carefully measured their height; each shoot averages 7½ feet, and 5 feet from the bottom of the wall is covered with bloom, now expanded.

This, undoubtedly, is the system to pursue in these days, when we want every inch of wall utilised. I estimate that fan-trained trees would take at least eight years, and then I am doubtful if they would ever cover the wall so effectually as the trees in question.—R. GILBERT, *Burghley*.

How to fill the wall and gather fruit early.—Peaches being in the ascendant here, more particularly late ones, I (twelve months back last November) determined to uproot a wall of Apricots which had been planted a great number of years ago and become unproductive and plant it with Peaches. I began by taking out the old soil 16 inches deep and refilling with good turfy loam. The wall in question is about 170 feet long, and the varieties of Peaches planted were Princess of Wales, Walburton Admirable, and Late Admirable, one-third being devoted to each. When purchasing the trees I stipulated that they should be maidens, 3 feet high, and with straight stems. They were all planted in due course in the usual manner and mulched with rotten manure. In the following spring they broke freely and we disbudded them several times. On the first occasion we merely took the foreright buds, watching them narrowly until the shoots were 6 inches or 8 inches long. We then selected three shoots on each side and one in the middle, taking especial pains to kill all insects and give them a good syringing each fine morning, dusting with Pooley's tobacco powder whenever green fly put in an appearance. They grew most luxuriantly, but not coarse; each shoot was nailed in regularly and the laterals stopped promptly. The beautiful summer and autumn last season ripened them to the very points. At the winter pruning we cut to a triple bud, leaving the shoots about 16 inches in length. They are at this moment beautifully bloomed, in fact some are set, and I have every hope of securing a good crop the second year after planting.—R. GILBERT.

EDGINGS FOR WALKS.

MANY kinds of materials as well as plants are used as edgings for garden walks, but to my mind none are so good as Box; happily, however, this is a subject respecting which no hard and fast rule can be laid down, as it is purely a matter of taste and convenience, some places being well supplied with edging materials of a good description, while in other parts they may be scarce and dear. I am aware that some object to Box on account of its harbouring slugs, and so it does if allowed to grow in an almost wild state, but if managed in a proper manner nothing makes so neat an edging. It certainly requires a good deal of time to keep it in order, but if well and properly planted to commence with it need not be objectionable on that account. Edgings made of stone, brick, and tiles are now common, and they are of various patterns; for wear and tear, no doubt, these are especially to be recommended; they are neat and do not harbour slugs, &c.; still they possess a stiff, formal look compared with Box. Ivy forms a capital edging for fronts of herbaceous borders; indeed, it seems more in character there than in the kitchen garden when planted so as to form an edging about 10 inches or 12 inches wide, and given an annual clipping in March or early in April. Flint in some localities can be had off the land large enough and in sufficient quantity for edgings. These are, of course, cheap, and when neatly fixed in the ground, keep firm, and they are not nearly so stiff looking as tile edgings; the broken surfaces of the stones caused by their variable sizes form good places in which to put plants which in time will cover the whole of the edging, and form an interesting feature in the garden. The following are hardy and effective, viz.: *Sedum glaucum*, *Lythrum*, and *acre elegans*; *Aubrietias*, *Gentians*, *Armerias*, *Herniaria glabra*, and others. Where Box is used, if treated as follows, it will offer no harbour for slugs to any serious extent, if at all. There is a right and a wrong way even in planting an edging of Box. I find that a little time spent upon it in the first

instance is well repaid in after years. Let us suppose, then, that a walk is to be made in the kitchen garden running alongside of the border next the wall, and consequently parallel with the wall. The first thing to be done is to fix upon a certain level at a given distance from the wall; whatever width the border is to be the farthest end of it must be the same distance from the wall as the end near at hand, and the same level must be maintained. Then proceed to dig the ground to the depth of a foot where the Box is to be planted, breaking the soil well, and rejecting any stones which may come in the way. If the soil is of a loose character, tread it firmly and rake the surface smoothly. Now stretch a line in the exact position in which the edging is to stand, and with a clean sharp-edged spade chop out a trench, close to the line, about 6 inches deep. This should be done carefully, because much depends upon whether the Box will be planted in a straight line or not; therefore any pains bestowed on freeing the soil from stones is well rewarded. If the trench has been carefully cut, out the line will no longer be of service to the planter. The next thing to be done is to prepare the Box for planting. Pull it into pieces, and every piece with a root attached to it will grow. It should be cut in uniform lengths of about 4 inches, and care should be taken to keep the top level. Generally it is flat, which is all the better for the planter, as it lies closer to the trench. With the right hand place the Box in position, and, while the left hand holds it there, with the right one place a little soil over the roots. The trench should then be filled up to the proper level and trodden very firmly. This tends to keep the Box straight. Some may think these details needless, but I have found the contrary to be the fact, and I have tried various ways, having planted as much as 1000 yards in a season. March is as good a time as any for laying Box. There is, I think, a wrong and a right way of keeping Box in good order when established. If well managed at the end of six or eight years it should not be much larger than when planted. To keep it thus dwarf it will require annual clipping, an operation which should be done early in April. If allowed to run two or three years without cutting it gets bare at the bottom, and the wood gets hard. It is then more difficult to cut, and takes longer to get green again, as the old wood does not break into growth so freely as the younger shoots do. Some cut their Box with a scythe, commencing on one side and returning on the other, but the cutting is best done as follows: First stretch a line close to the Box at a given height from the ground, say 2 inches or 2½ inches; then with a pair of hedge shears cut off the top down to the line. Upon the flat top thus formed fix the line straight from end to end, pulling it tight; then with a pair of shears, such as are used for shearing sheep, cut the Box on one side in a slanting direction from the gravel to the line; repeat this operation on the other side, and the result will be a wedge-shaped edging. This I consider quite the best way in which to trim Box edgings.

E. MOLYNEUX.

Rhododendron exoniense.—The free branching habit of this *Rhododendron* is very different from such kinds as *Princess Alice*, *Sesterianum*, and *fragrantissimum*, while its neat foliage, partaking of the character of that of *Veitchianum*, is more pleasing than that of *Countess of Derby*, *Duchess of Sutherland*, *Mrs. James Shawe*, and others. The various hybrid greenhouse *Rhododendrons* have undoubtedly a great future before them; they are by no means difficult to manage and they all flower freely. Some of them are liable to run up thin—a fault easily prevented by stopping the shoots freely during their earlier stages. *R. exoniense*, however, needs little of such treatment, its growth being naturally bushy, while the flowers are of an ivory-white tint, relieved by a small yellow blotch in the interior. Where fully exposed the outsides of the blooms are suffused with a reddish tint, especially noticeable in the bud state.—ALPHA.

GARDEN FLORA.

PLATE 490.

THE BARKERIAS.

(WITH A PLATE OF *B. LINDLEYANA* CENTER.E.)

CONSIDERING that the genus *Epidendrum* consists of over 400 species, most of which are worthless in a garden sense, it seems not unreasonable if we prefer to retain the several *Barkerias* under their present generic name rather than throw them in with their 400 brethren, among which, in name at least, they would be almost lost. Prof. Reichenbach considers the *Barkerias* as a section of *Epidendrum*, and Mr. Bentham adopted the same view in the "*Genera Plantarum*," but as the characters of the several species bring them well together, there can be no harm in our continuing to speak of them as *Barkerias*. Indeed, it seems an advantage in various ways to have large genera divided up into sections or sub-genera, as both confusion and lengthy names would be by this plan to a large extent avoided. There are about eight species of *Barkeria* according to Reichenbach, but not more than four of these are well known, the others being recent introductions or devoid of good garden characters by which they can be distinguished. The four well-known species are here described:—

B. ELEGANS.—This is the smallest of the *Barkerias*, but nevertheless a very pretty little Orchid. It is the plant on which the genus *Barkeria* was founded by Knowles and Westcott in their "*Floral Cabinet*" for 1838, where it is figured and described as having been flowered by Mr. G. Barker, of Springfield, near Birmingham, to whose zeal and liberality we owe the introduction of a great many beautiful plants. The habit of *B. elegans* is smaller and slenderer than that of other kinds. It has pale green foliage 2 inches in length, a bulb about 6 inches long, and a terminal inflorescence, the stem of which is blotched with chocolate-brown, and partly covered with long sheathing scales. It bears about half a dozen flowers on each raceme; they are large and spreading, the petals and sepals being almost white or pale rose, and darker outside. The labellum is obovate in outline with the edges slightly waved, and is coloured similar to the petals, with the addition of a large blotch of dark rose-red on the lower part; the column is winged and is spotted with reddish spots. A native of Mexico. There is a marked difference between the plant figured by Knowles and Westcott and the plant we know now as *B. elegans*, but probably this difference is due to the carelessness of the artist by whom the figure in the "*Floral Cabinet*" was made.

B. LINDLEYANA is a stout-growing species forming *Dendrobium*-like stems from 12 inches to 18 inches high, and bearing leaves about 4 inches long, with a keel at the back. The flowers are borne on a terminal spike, varying in number with the strength of the plant, a healthy strong plant bearing a score or so of flowers on each scape. These flowers are purplish in colour, a few spots of a darker colour being about the column. The lip is almost quadrangular in outline with a short acumination at the base. This beautiful species is a native of Costa Rica and Mexico, and has been cultivated in English gardens about thirty years. The variety

CENTER.E., herewith figured, is distinguished from the type in having a number of large blotches about the column, and by its beautiful purple-lilac colour: the flowers, too, are larger. For the introduction of this variety we were originally indebted to Messrs. Veitch, of Chelsea, but recently Messrs. Shuttleworth, Carder & Co. have imported many plants of *B. Lindleyana*, and amongst them some of the variety *Center.e* have been found. The accompanying plate was prepared from one of these, which was well grown and flowered by Dr. Duke in his garden at The Glen, Lewisham.

B. SKINNERI.—An old garden plant, long known as *Epidendrum Skinneri*, under which name it is



BARKERIA LINDLEYANA VAR. CENTRALIS

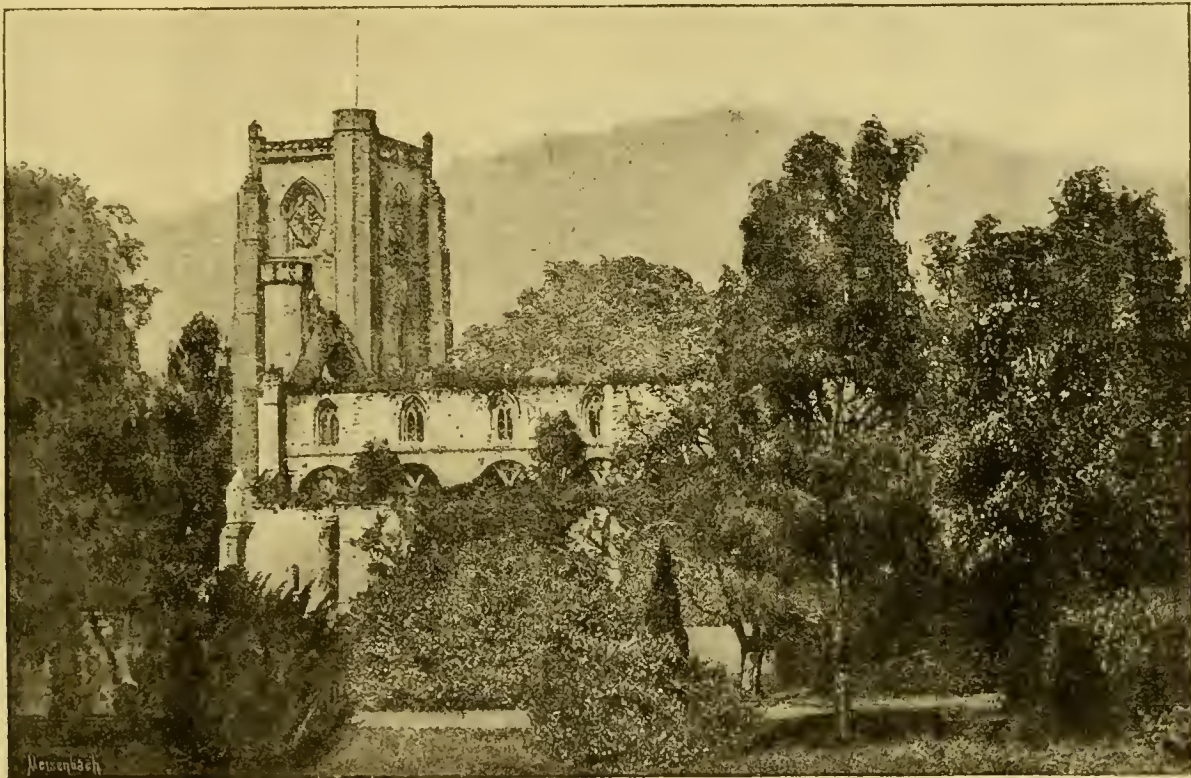
figured in the *Botanical Magazine* (t. 3951), and to which appellation it must now again return, according to botanists. It is a stoutish growing plant, forming clusters of stems about a foot high, terminating in a long graceful raceme of numerous lilac-purple flowers. In form these flowers resemble those of *Epidendrum vitellinum*, more than the other *Barkerias*, the lip being comparatively narrow and pointed. There is a small blotch of yellow at the base of the lip where the keels join. A native of Guatemala, from whence it was sent to Mr. James Bateman, of great Orchid fame, by Mr. Skinner, equally famed as a collector, and after whom the species was named. These are several named varieties of this *Barkeria*, which are distinguished by their deeper colour, larger flowers, stronger habit, &c., but there is very little to choose between them, whilst all are beautiful. For ordinary collections, no doubt *B. Skinneri* will be found to thrive better than any of the others.

B. SPECTABILIS.—The largest flowered of the *Barkerias*, and perhaps the most difficult to

tinct if we ignore those characters which are seen by the botanist through a powerful magnifying glass. *B. Barkeri* is a small-flowered plant, with characters intermediate between *B. elegans* and *B. Lindleyana*.

THE CULTIVATION of these plants is surrounded with a shadow of failure and mystery. They grow freely in their native haunts, but they rarely continue long in good health when grown in Orchid houses. Naturally, they are found in excessively wet places on exposed elevations, where the sun shines full on them all day, and the dews and fogs of evening saturate them and their surroundings. On twiggy bushes, on fallen trees, but always with their tops exposed to full sunlight, these little Orchids are found in greatest abundance in Mexico and Central America. By following Nature as well as we can in regard to the management of *Barkerias* under glass, we may succeed fairly well with them. The great thing is to supply them with an abundance of water while making their growth, dipping them overhead in water several times during a hot sunny

"That some of the varieties were finer than others certificated this season." Amongst the varieties exhibited there were colours not hitherto seen in the *Amaryllis*, and the forms of the flowers were quite perfect. It must not, however, be supposed that such results have been obtained by simply crossing and recrossing varieties raised in the Chelsea Nurseries. The best Continental collections have been visited, and the finest varieties selected from them have been used both as seed and pollen parents. By breeding "in and in," as a fancier would term it, the constitution of the plants becomes impaired after a time, but by the constant introduction of fresh blood, so to speak, and a well selected set of seed-bearing varieties, Messrs. Veitch have placed grand flowers on a class of plants, that for vigour and constitution defy competition. Take, for example, the pure white variety *Lady Howard de Walden*; though only a small bulb, it had four flowers on one spike, the greatest number yet obtained; the flowers, too, are large and of good form, with a green centre, as all white varieties have. Mrs.



CATHEDRAL IN THE GARDENS AT DUNKELD. See p. 389.

manage successfully. It has pseudo-bulbs about 8 inches high, which are rather wiry when mature, and which bear two or three leaves near the top and surrounding the base of the flower-stalk. About eight flowers are produced on each stalk, the sepals and petals being over 1 inch long, spreading, and in colour pale rose with a few darker spots over the upper surface. The labellum is almost triangular in shape, undulated at the margins, and in colour yellowish with a rose tint along the outer portion and dark red spots towards the lower half. The column is club-shaped and wingless. Being a summer flowering species, this should be kept growing through the winter in a warm light house. It is a native of Guatemala, and was introduced in 1843. According to Bateman, it is known among the people of Guatemala as the "*Flor di Isabel*."

B. CYCLOTELLA is a new introduction, with the characters of *B. Lindleyana*, except that in the former the column is not spotted. *B. melanocanon* is also closely related to these two; in fact there seems no good reason for keeping them dis-

tinguished. day, exposure to full sunlight and a free circulation of fresh air at all times in a warm house, such as is used for *Cattleyas*; these are the conditions which have proved most suited to *Barkerias* in hot-houses, Messrs. Backhouse, of York, and Williams, of Holloway, having grown the *Barkerias* well in this way. They do not require any peat, a few bits of Teak-wood or even a few twigs stuck in a pot of Sphagnum and crocks, the plants to be fastened on to the twigs, being the best material on which to grow them. When at rest they should be kept almost dry.

B.

NEW AMARYLLISES.

THE remarks on Messrs. Veitch's exhibits in THE GARDEN (p. 353) are worthy of consideration. The group of seedlings shown by them represented the result of many years' patient and successful labour, and those who have made this grand spring-flowering plant a speciality will be quite prepared to endorse the words of your reporter,

Whitbourn I considered the next best variety in the group. It is quite distinct and very handsome; the flowers are good in form, and furnished with a greenish star; the margins of the petals are creamy white, and there is a heavy central band of dark crimson. *Duchess of Edinburgh* is a distinct and beautiful variety; its flowers are large and good in form; they have a purplish blush ground and an indescribable reddish suffusion veined with rosy red. *Ecclatanta* is also a valuable acquisition; the deep rose segments, margined with creamy white, are very effective. The best of the other varieties exhibited have already been described. In the variety *Lady Macbeth* we have a distinct type, with petals rather irregularly formed; the flowers, which are 7 inches across, are of a rosy scarlet colour. *Triumphans* is one of the very large kinds, with massive petals 4 inches wide. *Mirabel* stands out prominently from all others; its colours, scarlet, crimson, and magenta, are charmingly blended. The question of granting first-class certificates is one which I would rather not go into.

J. DOUGLAS.

WORK DONE IN WEEK ENDING APRIL 28.

APRIL 22.

CLOUDY, but very warm, and this evening rain seems imminent, and in prospect thereof all the movable coverings to fruit trees have been left drawn up and all lights on frames and cold pits containing seedling plants for kitchen and flower garden have been drawn quite off, with a view of saving us the labour of at least one day's watering. Clipped Grass verges on pleasure-ground walks for the first time this year, and they will now require clipping once a fortnight to prevent seeding of Grasses, Daisies, &c., on the gravel; of course lawn mowing is now a daily affair. We still continue to plant the summer bedders as opportunity presents; *Kleinia repens*, *Calceolarias*, and *Violas* are the kinds we have put in to-day. Sowed a first batch of runner Beans, the main crop of Beet, and a second small lot of Turnips; the general crop of the latter we do not sow till the middle of May, because of their liability to run to seed when sown earlier. Sowed another lot of Peas—*Veitch's Perfection* and *British Queen*—and earthed and staked advancing crops. As a rule we do not like either to disbud much or to pinch the shoots of any kind of fruit trees till they are safe from injury by frost, because of the protection the thicker coating of leaves and shoots affords to the tender fruit; but this season the growth has been so exceptionally profuse and rapid, especially during the last week, that we have had to depart from our usual practice, and have to-day begun to disbud Peaches a second time over, and to pinch back the longest growths of Apricots to within three eyes of the old wood, and the fruit, which has set in clusters, is being partially thinned at the same time. Just now Grape thinning, tying down of Peach shoots in the various houses, Strawberry forcing, and preparing bedding plants besides the usual "must-be-done" work so fully occupies the whole of our indoor staff, that extra jobs are out of the question.

APRIL 23.

We were favoured with the longed-for showers—0.26—in the early morning, and the soil being sufficiently dry by 6 a.m., we at once began transplanting Cauliflowers, and thinned out all Lettuces sufficiently large to handle, and also thinned out summer Spinach to 6 inches from plant to plant; this crop we always sow between the rows of Peas, as it is over before the Peas are ready. Watered earliest Cauliflowers with manure water and afterwards gave them a slight earthing up; our second and third plantings had also liquid manure given to them, and the deep drills in which we always plant them were at once filled in to the ground line, and then an excellent mulching is applied at no cost, except that of drawing the drills and filling them in again, as just now done. Our manure tanks being quite full, the opportunity was also taken to give a supply to Strawberry plots, not directly to the plants, but between the rows, the mulching dislodged by heavy pouring being at once made tidy, as the entire plots were hand-weeded. The supply of liquid would not hold out for Raspberries, so they will have their turn a week or two hence, and meanwhile they have been given a dressing of Beeson's manure over the mulching that was put on during the winter. The weak and often surplus new growths have also to-day been pulled up, a process that is quite necessary to obtain well ripened canes and the largest amount and finest fruit. This work suggested other of the same kind, and which was at once done—namely, the thinning out to a reasonable number (of course selecting the weakest) of old stools of *Delphiniums*, herbaceous *Phloxes*, *Pyrethrum uliginosum*, and *Michaëlmass Daisies*. Being dull and warm, and therefore the best of days for placing out bedding plants, all that it was considered prudent to put out have been done, the tenderest being afforded the shelter of the fruit wall blinds and the hardier turf pits, that, if needs be, can be covered over with hurdles or felt shutters: Grape thinning, stopping and tying Melons and Cucumbers, pricking out of annuals, and potting on of sub-tropicals are other work that has been in hand.

APRIL 24.

More showers in the early morning, but fine and warm the rest part of the day. Completed the clipping of Grass verges and rolled the walks. Weeded fernery, and made a complete clearance of all dead fronds and rubbish from overhanging shrubs and trees. Clipped the Grass edgings to sub-tropical beds, and surface-forked over the soil by way of preparation for planting. We use a number of Funkias as edgings to this class of foliage beds, the best kinds being *Sieboldi*, *ovata*, and *ovata variegata*, and these we have now lifted, divided, and replanted. The earlier *Hyacinths* in Rose beds being over, the tops have been cut off and patches of *Mignonette* seeds sown in their place. The bulbs we leave for flowering another year, and right well they do under such unnatural treatment, which the cutting away of their foliage before it is matured most certainly is, but what matter if they flower well? They are lifted biennially with the Roses, and are replanted with them again soon as the soil has been renewed, which work we contrive to do, at the latest, by the beginning of November. Peaches being finished disbudding, and there being here and there a trace of fly, such spots have been syringed with tobacco water, which solution will prevent the insects spreading till such times as it is safe, without injury to the fruit, to turn on the full force of our watering hose, and clear water, applied with force, is after all the best and safest subduer of insect pests. This has been a day of inside border watering, all the inside borders of vineries, except one that is in flower, having been watered—liquid made with cow manure being used for all, at the rate of 4 gallons to 20 gallons of clear water, the temperature of it being from 90° to 100°. Peaches and Figs are served the same, except that we do not trouble about the water being warmer than 70°. Our other work has been the same as for the last two days.

APRIL 25.

Did a little more planting of flower beds, *Pyrethrum Gold Feather*, *Verbena Purple King*, *Violas True Blue* and *Queen of Lilacs*, two excellent bedders being amongst the number. Those who condemn *Verbenas* as uncertain summer bedders should see how they grow and flower continuously in our hot dry soil; only the soil is not "surface-ticked;" it is trenched and heavily manured, and every year too. We should neither get growth nor flower if digging a spade's depth were done. Potatoes are getting so forward, that they cannot again be earthed up by way of protection, and litter has therefore been got in readiness for covering when needed, and the cold winds of to-day seem to indicate that it will be soon. Asparagus is now cut every morning, tied in bundles of twenty-five heads, and placed in saucers of water till required for use. Sweeping up occupied a great part of the day; the family is at present non-resident, but no difference is ever made in this respect; consequently, if a sudden *début* is made on us we are always prepared. But a better reason for maintaining neatness is, that there never being any arrears, nothing has to be neglected in the effort to again reach the front, namely, high keeping. There is so much Grape thinning, that to keep abreast of it we have now to be at it early and late; Strawberries, too, by the daily supplies required, give an immensity of labour, and Saturday is our general overhauling day of these, as it is of plants generally. Thinned out the fruit of some dozens of plants to from eight to ten on a plant, and put in another large batch. *Président* is now our favourite variety, *Vicomtesse Hélicart de Thury* being nearly over. Made a complete sweep from the house of all plants that had been used for forced cut flowers, *Spiræas*, *Deutzias*, *Rhododendrons*, and bulbs being given partial shelter under a high hedge till time can be spared to plant them out. To Roses that have been forced we give the shelter of a shed that can be protected from cold winds and frost should it be necessary. Other Roses and the last of the *Spiræas* and *Lily of Valley* have been put into warmth, and in the space made in the latest Peach house, by placing out of bedding plants, flowering plants have been arranged with a view of retard-

ing them. Watered Pines and Melons, the latter with soot water, as the soil is much infested with wireworm, which has been very injurious to our Melons this season. Grapes keep fairly well; the water in the bottles needs adding to every week, the evaporation being greater now that the ventilators are always open.

APRIL 27.

To-day we have had a recommencement of the splendid weather of the early part of last week, and which is, in fact, a little too good, for one dreads the results to fruit trees should cold weather supervene before the fruits are set and protected by a covering of foliage. We do not intend to dispense with our protection till that stage has been reached. Hoed over the mulching of vegetable soil with which Gooseberry and Currant quarters are mulched; seedling weeds having come up in it by the million, owing to its having been left undisturbed in the woods for years, where of course the weeds have seeded and sown themselves. Staked second sowing of Sweet Peas, also put small sticks to flowers of *Narcissi* that were bending under the weight of their flower-heads, the flowers only being tied up; the foliage looks best loose, as it does in all herbaceous plants for the matter of that, only many of them are so greedy of space making curtailment necessary. Made up other shallow hotbeds for *Alternantheras*. Vegetable forcing frames are now utilised for this purpose, as well as for hardening off tender bedding plants. Did a little planting of flower beds. Still Grape thinning; one out of the four Vines we have of *Alnwick Seedling* failed for the first time last year to set its fruit properly, and as we always thin out the berries at the earliest possible moment, it is probable that some properly fertilised berries were cut out; hence, this year that variety is being left till thinning becomes imperative, though from present appearance they have set all right; if not, they ought to be, considering the attention they have had in the way of artificial fertilisation with pollen of other varieties. Placed small sticks to single *Dahlias* and shifted them into the coldest house we have. Potted into larger pots all later struck stock. *Tobaccos*, *Castor-oils*, *Hemp*s and *Wigandias* have also been given larger pots. Soiled up auratum *Lilies* that are being grown in pots for conservatory decoration at the end of summer. They are growing in a sheltered place in the open air, the pots being plunged in coal ashes. *Marguerites* and *Fuchsias* are being potted on with the same intent.

APRIL 28.

Another splendid day. Surface-hoed all parts of kitchen garden that needed it. Took off and stored away *Rhubarb* pots and ran the hoe through the entire plantation as well as between the rows of Jerusalem Artichokes that are just peeping through the soil. The new plot of *Morseradish* having been planted in wet weather, the surface had got hard, and so it was deemed advisable to lightly fork it over. Sifted and mixed up soil for *Alternantheras*. The arrangements are now all decided, and a portion of this compost is dug in with handforks in every spot where plants are to be placed. The mixture consists of two parts of light peaty loam, one of leaf soil, and one of well-rotted manure, the whole being run through a half-inch sieve, and soon as the plants are put out a mulching of about 1 inch thick is given of the same compost. As opportunity presents we continue to plant out the hardiest bedders. We have now done propagating, and all kinds are being potted up as time can be had. All *Lobelias* have to-day been put out in light soil in a cold frame. *Asters* and *Stocks* are being pricked out in a light soil and sheltered in a temporary tent made with Alder poles and covered with mats. Renewed the mulching in second Peach house. I have great faith in the insect-preventing effects of fresh stable litter, of course used in reason, that is, not in bulk, at most 4 inches thick, and not put on till it has had a couple of days' sweetening, otherwise the following morning the Peach trees might possibly be found to be minus green leaves. When the mulching is first put on we always take the precaution, even when we feel certain that injury of

this kind will not take place, to leave air on all night to carry off any obnoxious vapours. Thinned out fruit in late Peach house, pinched and tied down shoots. For the present Grape thinning has to be classed on the routine list, being of daily occurrence.

GIANTS.

FRUITS UNDER GLASS.

OUTSIDE VINE BORDERS.—An unusually dry winter following a dry parching autumn is such an exceptional occurrence in this country, that we are apt to overlook its effect upon our fruit tree borders at this early period, when all hands are fully occupied in the performance of operations which are more prominent, and consequently claim and receive our first attention. And yet it is hardly possible to name an omission that will tell so adversely on our future prospects as the neglect of external Vine borders, particularly when it is borne in mind that the narrow strips of porous compost are generally elevated above the ground line and have at least 12 inches of clean broken stone or rubble resting on a layer of concrete for their foundation. Although the rainfall has been very light, it is just possible that the Vines may not yet feel the want of water, but it is quite certain that they very soon will if timely steps are not taken to prevent the escape of the moisture which they now contain, therefore prevention being better than cure, I would suggest a careful examination of the borders, and in the event of their being found only moderately dry, a good mulching of rotten manure or fresh stable litter should be at once laid on the surface and well watered with tepid water, not only to keep the roots in action, but also to prevent them from descending in search of the food which the requirements of the Vines will compel them to supply. If this is not done and dry weather continues, the delicate surface roots will suffer, red spider will put in an early appearance, and shanking will in due course follow. These precautions do not, of course, apply in all gardens, but where, as is sometimes the case, mulching is deferred until the borders have absorbed a fair amount of sun heat and the Grapes are beginning to swell, timely attention to this important matter may, and will, save a great deal of trouble as the season advances.

Internal borders.—It rarely happens that Grape growers are off their guard in the management of in-side borders, but it does not always follow that the roots receive an adequate supply of water during the season of growth. If they did, we should hear less of the roots refusing to ramify and to travel northwards, and Phylloxera literally devouring every scrap of internal fibre in preference to the roots which pass out and remain unmolested in the external borders. It is contrary to reason to suppose that the writer of a calendar can say when or how often Vines in a distant part of the country should be watered; but experience justifies the assertion that it is a difficult matter to overwater a well made and properly drained internal border during the season of growth. Moreover, it is equally certain that the want of this element, by starving and paralyzing the roots, often prevents Grapes from setting, produces conditions favourable to the spread of spider, and invariably leads up to wholesale shanking. In ordinary seasons, when the rainfall exceeds 24 inches, Vines put on plenty of dense stout foliage which insects do not know how to attack; but when external and internal supplies are cut short, a jubilant time is theirs, and clever indeed must the cultivator be who succeeds in destroying his enemies without half killing the Vines. It is as yet early to surmise what the summer may be; it may turn out wet and cold, but at the present time appearances are in favour of drought, and the better to guard against and ward off the evils which it may bring into existence, internal watering should be conducted on a very liberal scale. If borders are inert and inclined to be heavy, let them be well dressed with bone dust, wood ashes, burnt earth, or old lime rubble, and well littered down with fresh, but well sweetened, stable manure. Then supply them as often as may be thought necessary

with water at a temperature of 80° to 90°. Let each watering be thorough and add stimulants as the strain of the crop increases and the fertilising top-dressing becomes exhausted.

Planting young Vines.—Although fashions are constantly changing, it seems hardly credible that the mode of preparing and planting young Vines could have been affected by the rapid movements of the age. Such, however, is the case, as all readers of the gardening periodicals are well aware. Formerly it was the practice to obtain yearlings in a dormant state; plant early in the spring and cut them down once, or perhaps twice, before they were allowed to bear fruit. Gradually the planting of duplicates for giving Grapes the second year became prevalent, and is still practised by many good growers. Every alternate Vine under this system is cut down at the end of the first year to secure a strong vigorous cane, which eventually becomes the permanent occupant of the house, while the supernumerary is left nearly full length and is allowed to carry a crop of fruit. When this crop has been taken the supernumeraries should be removed, but many men of progress, finding that they are not exhausted, allow them to remain and bear successional crops, possibly and probably at the expense of the permanent Vines, which must be sadly crippled from want of room. At the present time the favourite mode of preparing and planting, at least where heat and the necessary convenience are at command, consists in striking "eyes" in pots or squares of turf early in the spring and planting out in internal borders composed of well warmed or fermenting compost in May or June. In order to carry out this system successfully, the two cardinal points are heat for striking the eyes and warm compost for the reception of the young Vines. When these cannot be secured another mode is open, and it is equally successful. Well ripened planting canes one year old are cut down to the lowest buds not later than the end of December to prevent bleeding. They are then stored away in a cold house, where they will be safe from frost, but not open to excitement. In due course the lower buds break, and when they have made about 2 inches of growth all the old soil is shaken from the roots; the latter are trimmed and well shortened back, when they are repotted or placed on large squares of turf, Grass side downwards, with the shortened roots radiating towards the extremities. A thin covering of soil, a stick thrust through the sod for training the young shoots, and a gentle watering complete the operation. If the house to be planted is not ready, the young Vines should be placed on a bed of fermenting leaves within a reasonable distance of the glass, where they can have plenty of light and air and sufficient solar heat to keep them steadily progressing.

Preparation of the house.—If, as is often the case, a crop of early Grapes is taken from the old Vines before they are removed, the breaking and preparation of the young canes that are to succeed them should be retarded as much as possible consistent with safety, but where the houses are not so occupied the end of May is the best time to plant, as climatal conditions are then favourable to a vigorous short-jointed growth; but little fire-heat is needed, and the young canes have plenty of time to ripen up by the end of the season. Cleanliness being an important matter, every particle of old soil should be removed, all drains and drainage renovated and corrected, glass and woodwork washed and the latter painted, and, finally, the walls and piers from base to wall-plates should receive a sweetening coat of quicklime and sulphur.

Compost.—In order to have this in a fermenting state when the young Vines are introduced, the turf should be fresh cut from an old pasture when in a dry state, as it is important that every operation connected with the formation of new borders be carried on when plasticity or adhesiveness can be avoided. After the turf has commenced heating it should be well chopped and broken up where, unless very dry, it can be protected from rain when the materials which it is intended to use as

correctives may be added. These generally consist of old lime rubble, burnt earth, or road scrapings. Manure should not be added, as it tends to a pasty condition, but such stimulants and fertilisers as bone dust and soot may be used in moderation and manure can follow as a mulching. When ready for wheeling in, the drainage having been previously covered with thin sods of friable turf Grass side downwards, the compost should be placed in position, say 4 feet in width; it may be more or a little less, and supported by means of turf walls up to the proper height. The lower part of the border should be made moderately firm by beating with the back of the fork, but the upper part will be better left loose and rough to let in solar heat until such time as the Vines are ready for planting.

Planting.—If the young Vines, be they from eyes of the current year or cut-back yearlings resting on sods of turf, are doing well, planting should be deferred until the compost has become as warm as the fermenting bed upon which they have been prepared, that is provided they have plenty of head room and the points are not likely to be injured by delay; then, when the compost has lain for a week or more and the heat has revived, prepare the stations the whole length of the house and some 12 inches to 18 inches from the front sashes by taking out a very shallow trench, wide enough for the spread of the young roots and high enough above the intended level to allow for settling. If the Vines are from eyes it will be necessary to have them well watered before they are turned out of the pots, and to partly crush the balls with the hands and carefully liberate the points of the roots at the time of planting. Vines on sods will not require this precaution, as the roots will be bristling and radiating in every direction away from the stems, and all that will be needed is a large steel fork for carrying them to their destination. If, during the time the Vines have been in course of preparation, the roots have extended to the adjoining sods, they should be severed by running a long-bladed knife along the divisions a week or ten days before they are removed. The temporary check will not affect the Vines, as it will induce the formation of a greater number of roots of uniform strength ready for striking into the new compost.

Distance from Vine to Vine must be regulated by the length of rafter and the purpose for which the Vines are intended. Nothing, however, is gained by close planting, and as each permanent Vine will occupy from 3 feet to 4 feet when properly tied out, those intended to remain should be placed 5 feet apart with a supernumerary in the centre of each opening. When all the Vines are planted a good supply of water at a temperature of 90° will wash the soil well home to the roots, and the work will be finished. If the weather is bright and fine, a breadth of light shading may be needed for a few days, but as soon as growth sets in this must be discontinued. A little light mulching spread over the surface of the border will keep in warmth and moisture, and most likely prevent the new roots from striking downwards, as is too often the case when these precautions are neglected. Each Vine will require a neat guiding stick to the first wire, all laterals must be pinched at the first leaf, and growth, under favourable conditions as to heat, air, and atmospheric moisture, must be allowed to extend upwards until the supernumeraries have made 6 feet to 8 feet. These will then require stopping to throw up the main buds quite down to the top of the front sash, as it is from these the first Grapes will be obtained, and all sub-laterals, with the exception of one or two at the top, will require constant pinching during the remainder of the season. The permanent Vines will require stopping when they have covered half the rafter to throw substance into the base or pruning buds. The growth of the second leader, from the centre upwards, may be free and abandoned, but the laterals, which need not be closely pinched, must not be allowed to grow into a tangled mass, or cling to any part of the roof, otherwise the foliage may become a prey to red spider.

Wildsmith's system.—If letters patent were granted to the inventors of express modes of raising and running Vines into a fruiting condition, Mr. Wildsmith, the energetic gardener at Heckfield Place, Winchfield, would stand first on the list, and yet his mode is simple, so simple, that the wonder is no one has thought of adopting his plan before. Some three years ago Mr. Wildsmith decided upon filling a house with Vines and winning the Horticultural Society's premier prize with the produce, and he succeeded. His concrete, drainage, and borders were prepared early in the spring in accordance with directions contained in the body of this paper. The turf, newly cut with usual correctives, was cast loosely along the front of the house—inside, of course; brisk fermentation set in, and when the heat had reached the maximum the ridge was levelled down into the desired form. Hard brown eyes of the different kinds, made in the usual way, were then introduced much as one would sow French Beans. The steady warmth contained in the compost soon started them into life; they grew away freely, and filled the house with excellent canes. These in due course were cut well back, and within twelve months were carrying their proof bunches. Last year they were left a greater length and carried about six bunches each. The best of these, it may be assumed, found their way to South Kensington and secured the blue ribbon. Whether the firm abstainer confined his Vines to pure water it is not for us to inquire. Certain it is that he succeeded.

Eastnor Castle, Ledbury.

W. COLEMAN.

NOTES ON GARDEN TOPICS.

Hyacinths in the open air.—We have a fine show of these at present on a border a hundred yards long. Nothing is more effective than a good open-air bed of Hyacinths. Our main display, however, is from the old forced bulbs of 1884. Although we have put the bulbs out after forcing for some years back, we find that the spikes "grow small by degrees" and lose their scent. I take it that "Delta" has a more favourable climate than we have, for it is not the habit of the Hyacinth to "bloom year after year with the most satisfactory result" in many parts of England. I do not know what the "cultivated" Hyacinth may be like in its wild or natural state, but here, on the warmest sunny south border, we have got bulbs that have been out some years continue to produce flowers, but they are small and scentless, or almost scentless, and have a wonderful resemblance to the common Bluebell of the woods, the wood Hyacinth, the stems of the spikes being long and flexible, with a few flowers at the top. We have the different lots in flower now, the last year's old pot bulbs producing fine spikes, but little inferior to those of last year, while the same sorts out several years would not be recognised as such, or even as the same species. To keep up the display the old bulbs should be put out every autumn. At this season they are among the showiest of spring flowers, and produce a rich effect.

Railway embankment planting.—"R. A. H. G.'s" 182 square miles of railway embankment fit to plant exist, I think, only in imagination. In the level country the railway margin is curtailed, and the "embankments" are, as a rule, barren spots, to which the station-master or the signalman would have to carry the soil on his back. Planting tall trees or shrubs near the rails will not commend itself to directors, but Potatoes, Strawberries, and small fruits might be grown on the "good bits," and often are to a considerable extent.

Scilla sibirica and Chionodoxa Luciliae.—I still maintain that the introduction and culture of the last named of the above two plants has served principally to corroborate the suspicion that it is novelty and not worth that sends so many cultivators into ecstasies of admiration over new plants. Both species have been fine with us this spring on a sunny bank of good soil, but the Scilla has attracted most attention and has lasted in flower about as long again as the

other; both are pretty subjects, but those who now grow so much of the Chionodoxa and have hardly ever grown the Scilla might now do worse than give it a share of their attention. I do not regard that as the most popular flower that needs a too close observation to discover its merits, and there can be no doubt that at first sight of the two the Scilla is the flower that attracts most attention.

Tree Privets.—Why the nurserymen now push what is called the "oval-leaved" Privet so much to the front for planting for covert and such like purposes is more than I can tell, but it is certain that the old common or evergreen variety is the best for woods or anywhere else. It is to all intents and purposes evergreen, and except the Ithododendron it is the one plant that ultimately defies rabbits, and the densest coverts may be soon formed of it in any rabbit warren, provided enough is put in to begin with, after which it will take care of itself. In what was termed the "hot corner" of a preserve we lately saw one of the thickest covers of this plant we have ever before seen. The rabbits had gnawed the bark off many shoots here and there, and they literally swarmed amongst it, but it had beaten them and was securely established over many acres. We recommend it to be propagated and planted as extensively as possible for game.

A pruning argument.—An enthusiastic patron of horticulture told me the other day that in order to counteract the "knifing" propensities of his otherwise excellent gardener, he had about three years ago strictly forbidden him to lay his weapon upon any of his standard fruit trees or bushes (except to thin out crowded limbs here and there) unless he, the gardener, was prepared to pinch or prune all the Horse Chestnuts, Hollies, Lilacs, Hawthorns, and flowering Currants under his charge on the same principle that he had treated his restricted trained fruit trees and take the responsibility. The result has been that the fruit trees in that garden were let alone and have never at any time had such a quantity of bloom and fruit upon them as they have now. One exception only was made—the fine pyramids were severely pruned—that is to say, their tall centres were all sawn off at the base, converting the trees into dwarf natural bushes never more to be pruned or tied as they had been.

Pruning Orchids.—I see (p. 380) that "T. B." declines to further discuss this matter, a fact which looks like shifting his target quite out of sight, and I have no doubt that that Dendrobium exhibited at South Kensington, which you say must make the opponents of pruning to "yield," has had much to do with his decision. I am well content to leave the matter there. I notice also that Mr. Jas. O'Brien, in another paper, not being able to explain away Mr. Prinsep's wonderful pruned specimen, sets up the theory that the equivalent for the lost pseudo-bulbs is a "very hot-growing temperature and other requisites" not named, but without which it is "of no use to attempt such culture." This theory of Mr. O'Brien's I venture to say may be at once dismissed as worthless. How extra heat, hard forcing, and the "other requisites" are going to make up for the loss of the old limbs of Dendrobiums would require some explaining, and Mr. O'Brien is not equal to the task. It is experiment and proof we want, not words and phrases invented to justify preconceived notions.

Extension Melon culture.—"W. I. M." (p. 366) is quite right as regards this matter. By far the heaviest crops of Melons can be had from plants that are allowed to extend; but the plants must have age as well, and that throws the crop late. Where time is no object it is worth while growing a crop of Melons on the extension system. While acknowledging the principle to be right, we, however, in the case of Melons prefer to plant thick and fruit quickly if fewer fruits are got from a plant. In order to have great crops on the extension system you must give the plants time to grow; whereas you can have fruit set soon after the seed is sown by early stopping. The exten-

sion system is capable of application to almost all fruits, but it is not expedient in the case of Melons.

Pruning Roses.—The sooner the notion is dispelled that Roses, in order to make them grow vigorously, must be cut short back to mere stumps, showing two or three buds, the better. Our main specimen here—an old climbing white Rose, which has the honour of a place in "The Wild Garden"—is an undulating mass about 7 feet high and many yards in circumference, producing many thousands of blooms annually, but it is not the only one of the kind. A good many years ago we made a hedge of a lot of old Perpetuals, Teas, and other sorts that had been severely pruned in the orthodox fashion for years previously. They were allowed to grow up 5 feet or 6 feet high and spread out proportionately, with the result that, although many of the plants must now be five and twenty years of age, they are the most vigorous bushes on the place, producing shoots 7 feet and 8 feet long annually, and of a thickness unknown in closely pruned plants. We gather bunches of Rose leaves from them every season—the quantity of Roses one plant will produce is extraordinary—and all this with very little manure; in fact, they hardly ever get any. I do not believe that there is a single variety of the Rose of ordinarily vigorous constitution that will not make a large and beautiful bush if allowed to do so; and I am sure if some of the tenderer sorts were less severely pruned in winter they would live longer. It is a fact, at all events, that our biggest Roses escape when dwarf-pruned plants of the same kind perish during severe winters.

The Primrose conference.—This was suggested a year ago in THE GARDEN. Should it ever take place, I hope the cultivators of the single coloured Primroses and Polyanthus of the common hardy type will be well to the fore. For English gardens it is plain we must look to these more than to any others where hardness, bright colours, and profusion of bloom are considerations. In these we appear to have all the shades, or nearly so, of the tenderer exotic kinds, and they are by far the most manageable. I hope, therefore, that Primrose growers from many quarters will be well to the front with these when the time comes. With us, in our cool soil and climate, the tender exotic varieties are just moving at the present time, but, notwithstanding the late spring, our banks are ablaze with the single varieties of the common type, and the colours are as rich and varied as in any show of Cinerarias; no foreigners could approach them for garden decoration.

Winter and summer Carnations.—Although it is supposed that winter-flowering Carnations differ from the common border kinds, there is not much to show in proof of the supposition. They are both, I presume, only varieties of the same plant, and the only question seems to be whether the winter Carnations should be called "late" or "early." I would prefer the last name, as describing them most accurately, because they set their buds late out-of-doors and come into bloom if put under glass and gently forced. Mr. Douglas is mistaken in supposing that the common border Carnation will not bloom in April and May if kept in cold frames all the winter. I have had good early layers bloom in cold frames at that season very often, although not forced purposely, and how much could be done with certain varieties in that way is an open question. By cold frames I mean structures in which Lettuces are grown in winter and the like.

Grapes cracking.—We have not done with this subject yet; two novel ideas have been started to meet the case. One grower confidently asserts that the cracking is caused by external moisture, which "soon passes through the porous skin of the berries, which not being elastic soon gives way, hence the cracking." It does not seem to have occurred to the reflective parties who adopt this view that the porous skin which let the moisture in from the outside might also allow it to escape again without causing splitting, but we give the statement as it stands just to show

what acute thinkers some people are. The other equally novel idea is that the fluids inside the berry expand like hot water in a boiler, causing the skins to give way, and this it appears may happen days after the fruit is cut from the Vine. Physiologists and gardeners are accustomed to the idea of fruits shrivelling from the evaporation of the moisture inside of them, but the explosive theory takes no account of this fact, the skin of the Grape being regarded evidently in the same light as the skin of a bladder impervious to moisture from within or without. One plain fact recorded by one of the authorities just quoted is, however, well worth recording, viz., that at one Manchester show his Duke of Buccleuch Grapes cracked and split in the most erratic manner some days after they were cut, while those left on the Vine remained perfect. This, if true, is undoubtedly a poser for the gimlet advocates, and those who say

shining brownish pink, forming a very pleasing contrast; the trusses are large and freely produced, and the leaves of a shining green colour, with dark green veins.—R. D.

DRAWING FOR GARDENERS.

THE *Dublin Daily Express*, commenting on the report just published of the City and Guilds of the London Institute for the Advancement of Technical Education, says, "The chief want seems to be a knowledge of drawing. There are but few handicrafts which can be followed in their higher branches without this, and it would be a step in the right direction if drawing were made a compulsory part of elementary education." With this view most of us will agree, and I trust that young gardeners especially will take the lesson to heart and at once learn to draw not only plans and ele-

how to draw. No copying should be allowed in teaching pupils how to draw. It is far better to go direct to Nature and draw a simple leaf, a bit of rotten stick, or a stone at once. First attempts may be poor, of course, but as the act of seeing a real object correctly is gradually gained, facility of hand rapidly follows. In making a start the pupil should take five minutes to look at the object before him. The paper on which he is to draw should be divided into two by a horizontal line in the middle. The lower half is for the sketch, and in the upper half the pupil should write down the size, texture, and colour of the object to be drawn. A short study or analysis of the object written down in this way is a great assistance to the student at first, and by adopting it he acquires the knack of guessing the natural size and other characters of his model correctly and of fixing



THE TAY ABOVE DUNKELD. See p. 339.

splitting is caused by pressure on the sap vessels by the moisture pumped up from the roots.

J. S. W.

Hoya globulosa.—It is now some three or four years ago that the Cranston Seed and Nursery Company, of Hereford, exhibited at one of the meetings of the Royal Horticultural Society, and subsequently sent out, *Hoya globulosa*. At the time some doubts were expressed as to whether it was this species or not, and so the plant was referred to Kew for the opinion of the authorities there, and Sir J. D. Hooker stated that this *Hoya* was discovered by himself in India in 1849, specimens of it being in the herbarium at Kew, and he announced it to be the true *H. globulosa*. Mr. Roberts has this season flowered a fine specimen of it at Gunnersbury Park, and it is a most useful and valuable plant, though there it has been subjected to a little warmer treatment than is absolutely necessary. In its general character and habit of growth it greatly resembles the old *H. carnosa*, the flowers being of a bright straw colour, the coronal protuberances white, the interstices of a

variations of buildings to scale, but also such simple objects as the leaves and flowers which they have every day before them. Someone has said that there is no royal road to learning, but this may be because royal teachers are so few. At any rate, the methods of teaching drawing in our schools of art are extremely tedious, and not seldom entirely wrong. In this respect even the Japanese are ahead of us, and their success is in part owing to their drawing with a brush well filled with colour, rather than in a hesitating way with a pencil. The usual plan of outlining with a lead pencil and then rubbing out parts of the drawing with india-rubber is wrong, for if a false line be drawn and then rubbed out, there is a tendency to go wrong again. A pen and ink and paper are better, inasmuch as from the beginning no rubbing out should be allowed; if wrong lines are drawn, they serve as a guide as to what is right if left unremoved. But the best way of learning to draw is to begin with a brush filled with Indian ink or colour, and to blot in such objects as leaves and stems with as few touches as possible. This is the Japanese method, and by far the easiest plan of learning

them in his mind at the same time. The young gardener who wishes to get into the top branches of his profession actually must learn freehand drawing, but, as we have said, it is a useful aid to all students. Mr. H. Baldwin, in the introduction to his attractive little work on "The Orchids of New England," tells us that he never really saw the real beauty of these plants, nor comprehended their relationships, "until he began to make sketches of them in his leisure hours."

I am very glad to see that prizes are now offered for sketches in at least one gardening paper (*Gardening Illustrated*), and hope it may bring to the front the productions of young gardeners who can sketch plants, &c., correctly. During recent years THE GARDEN has done much to cultivate a taste for the right and beautiful in drawings and sketches on wood as well as for fine trees and beautiful flowers, and any extra inducements it may offer in the way of promoting drawing as a pleasant study for young gardeners would be most valuable from a professional point of view.

F. W. B.

KITCHEN GARDEN.

SCARLET RUNNER BEAN.

THE best time for sowing this is at hand. It is somewhat tender, and therefore it is seldom advisable to sow or plant it in the open air earlier than the beginning of May. It may, however, with the view of accelerating the development of the plants, and thus securing an earlier production of pods, be sown in boxes or seed-pans under glass in a gentle warmth, and finally planted out in well-enriched soil as soon as all danger from late frosts is over. Some sow or plant in trenches prepared similar to those intended for Celery, and these should not be less than 5 feet or 6 feet apart, and the plants require strong and tall stakes to support them. In places, however, where ordinary stakes such as are used for tall varieties of Peas are difficult to obtain, poles may be substituted for them, even with advantage; they will be found to be in all respects equally suitable for the purpose, and with care will last for ten or more years. The poles should be some 8 feet long, so that when let a sufficient depth into the soil to give stability they may stand some 6½ feet or 7 feet high, and the same may be strengthened and kept in position by means of a horizontal rod fastened to each pole, which should be placed at a distance of 18 inches or 2 feet apart. The plants will thus form, if desired, an excellent screen or hedge to conceal any unsightly object, or they may be made to clothe the front of a rough wall or wooden fence of any kind, as with the assistance of a few strings they will readily adhere to them, and will at the same time furnish an abundant supply of delicious pods. This Runner Bean may also, though possibly less successfully, be grown in a dwarf form, that is, without the aid of stakes of any kind, and when this is attempted it is necessary to frequently stop the strongest shoots, and the surface of the soil should in such cases be well mulched with stable-yard litter, so as to prevent the pods from becoming gritty by contact with the soil. Runner Beans have an advantage over Kidney Beans, inasmuch as they bear continuously to the end of the season, or until the plants are cut down by autumnal frosts. Many, too, prefer the flavour of Runners to that of dwarf sorts. Some years ago some experiments were tried with the view of securing a dwarf habit of growth in the Scarlet Runner by engrafting it upon what was expected to prove a restrictive stock, viz., the dwarf varieties of the Kidney Bean. The operation of grafting, however, did not very greatly diminish the vigorous growth of the plants, but it certainly appeared to increase their productiveness, and might with advantage be resorted to in cases where it is intended to dispense with the assistance of stakes. A few Runner Beans were sown in a seed-pan and placed in a frame towards the end of April, and a few dwarf Beans intended to be used as stocks were sown in another pan at the same time and under the same conditions. As soon as the plants had formed their first rough leaves they were shaken out of the soil, and with a sharp knife a slice was cut from the side of the stem of each plant, i.e., that of the Runner and that of the dwarf; the sliced stems of each were then bound together, and each pair of plants were then potted into pots some 4 inches in diameter and returned to the frame, which was kept somewhat close. In ten days, more or less, the sliced stems of the plants were found to have united, and in each case the stem of the Runner Bean was severed immediately under its union with that of the dwarf variety, while its root was drawn out of the pot, and the stem of the dwarf variety was cut off above the union, thus leaving the Runner depending entirely upon the root of the dwarf kind. The plants were kept for a short time longer in the close frame, and were finally planted out in the open air, where they grew possibly a little less freely than those growing upon their own roots, but, as has just been stated, their productiveness was to some extent increased.

The Scarlet Runner may justly be considered as an ornamental as well as a useful plant, and in

addition to the common variety with its scarlet flowers there are also white-flowering sorts, as well as the variety known as the Painted Lady, or York and Lancaster, whose blooms are very pretty, and in colour scarlet and white, while there are also varieties producing very large pods, known as Champion Runners, Giant White Runners, &c. P. G.

CULTURE OF CARDOONS.

CARDOONS do not receive nearly so much attention in this country as on the Continent, yet there are few gardens in which some are not cultivated. The stalks when well blanched make an excellent dish in winter if properly cooked, an important and material point but insufficiently understood as a rule. The stalks are of little use, except they are large and thoroughly blanched; hence the importance of devoting special attention to their culture. The treatment of Cardoons is in some respects like that of Celery, but considerably more space is required for them, as the plants grow much stronger than Celery. The trenches are best prepared in advance of the season for planting, choosing an open, sunny position for them. A space of about 6 feet should be allowed between the rows, and in making the trenches the soil should be thrown out 1 foot deep. Plenty of good manure should then be dug into the bottom, and if this is done some time before planting, the manure and soil become all the better incorporated. The space between the trenches may be utilised for Lettuces, Spinach, or some other crop of a similar description capable of being removed before earthing-up begins. The safest way in which to raise Cardoons is to sow in small pots about the end of April or beginning of May and place them in a cold frame. It is advisable to insert two or three seeds in each pot, and if the whole grow, weed out all except the strongest. The frame may be kept close until the plants appear, when plenty of air should be admitted to prevent them from getting drawn and weak. If space can be allowed, the plants are much better and also stronger if repotted into 5-inch pots, using any old potting compost in which to grow them. Some sow two or three seeds at the proper distances apart in the trenches and reduce the plants to one as they become large enough, but this is an uncertain method, or at least not so satisfactory as getting the plants up in cold frames. In either case the seed must be protected from the ravages of mice, which pick out and eat every good one if allowed. If the plan of getting the seeds up in pots is adopted, the plants should be put out before they become starved, allowing a space between them of 18 inches or 2 feet. If dry weather sets in, they are much benefited by copious supplies of water at intervals until established. The aim with Cardoons should be to get all the plants as near as possible uniform in size and strength, and encourage free growth by watering and keeping the surface soil open by occasionally forking or hoeing. A second sowing is advisable in case of a failure with the first, but successions are scarcely necessary unless an exceptional number is required. About the beginning of October the full growth of early-sown plants will have been completed, and they may be earthed up. A number of haybands will be required, and after the stalks have been arranged in an upright position they should be bound round from the base to nearly the top with them. It is important that this operation be performed on a fine day and when the stalks and centre are quite dry, otherwise decay will ensue. The soil should then be placed in a ridge round the haybands nearly as high as they reach and be beaten hard with a spade. The stalks will become blanched and fit for use in about a month afterwards. If Cardoons are not used before winter sets in they must be protected from rain and severe frost with a covering of dry litter or bracken. Another plan for preserving them is to lift the plants intact and place them in a cool, dry shed, allowing the haybands to remain on them until required for use. The Spanish Cardoon is the variety mostly grown in

this country; it is apt to run to seed, but the ribs are nearly solid and the leaves spineless—important points in a plant having to be so much handled. The Tours Cardoon, much cultivated in France, is said to be so excessively spiny, that the exercise of great care is requisite in working amongst plants of it. J. G. K.

Pea failures—In THE GARDEN (p. 344) "A. D." seems to attach the sole cause of failure in Peas to the fact of the seed being old. I have just had my attention directed to two fields of wrinkled Peas that I know were sown with perfectly sound new seed, and they are now a total failure, only here and there a stray one appearing above ground. I should be glad to hear what reason can be assigned for the failure of undoubtedly new and sound Peas which have had all the care and experience of practical men bestowed upon them.—K. J.

Cabbages and their behaviour.—I have grown Ellam's Dwarf Cabbage ever since it was first distributed, and it has invariably proved a first-class sort; in fact, at one time I should say it would be impossible to improve on it. This spring it is a complete failure. We have two fairly large breadths of it in different parts of the garden, and in both cases fully 90 per cent. have bolted, or are on the point of doing so. An equal quantity of Veitch's Matchless were grown, and among these there are very few failures. It is scarcely so good in quality as Ellam's, but the hearts are of good size, and the habit of plant is fairly good. The most popular variety in this district is Wheeler's Imperial, and although the crops of it are this year later and scarcely so fine as usual, I notice that very few are bolting. About the third week in July is considered the correct time for sowing Cabbage seed hereabouts. If sown earlier the plants are liable to bolt, and if sown later they do not become well established before winter. In some districts if sown before the first week in August bolting is the consequence; while, on the other hand, I could point to a district where the seed is sown during the first week in July with the best results. We, too, invariably plant a breadth of Cabbages after spring-sown Onions, and do not dig the ground for them, but extra firmness does not appear to have either a good or bad influence as far as bolting is concerned, as ours are bolting quite as badly as those on ground manured and dug prior to planting. Planted on firm ground, we, however, find them harder and earlier, and they may also be planted more thickly. Probably a serious check, the result of a long spell of cold windy weather, caused our Cabbages to bolt, Ellam's being the most delicately constituted.—W. IGGULDEN.

Seakale.—In the case of this vegetable the old variety which has been grown from time immemorial is now somewhat supplanted by a more modern introduction. It is called Lillywhite Seakale, a kind without that objectionable green tip which characterises the old sort. I have not grown this new variety extensively, but I am now working up a stock of it for the future. Seakale likes a good larder; therefore in November, if possible, select for it a good open site and manure it well; if strong land horse manure is best, but for weak or sandy land use cow manure. This should be put on at least 4 inches thick, dig deeply, and lay the soil up roughly. By March this will be well pulverised and in the finest possible condition for planting. Keep the hoe well at work all through the summer so that the plants are kept perfectly clean. In forcing, to lift Seakale roots and force them in the Mushroom house is of all systems the worst; like Rhubarb, force it with clean leaves on the beds where it grows. The very best of all Seakale is that which comes up naturally through coal ashes. This is thick in stature, sweet in flavour, and may be termed a vegetable possessing more Marrow-like flavour than most others. Seakale is propagated both by seeds and cuttings. The latter I prefer. About Christmas-time we take up about a dozen old stools, getting up as many young roots as possible and

cutting them in 4-inch lengths. These we pack thickly in ordinary cutting boxes about 5 inches deep, and which we place in a cool house under the stage. They are just now a thicket of young leaves. We carry the box to the site to be planted, carefully separate the young plants, and rub off all eyes except two of the strongest; we plant the bed 3 feet apart in the row and 4 feet apart row from row, planting three cuttings triangular fashion. When all is planted the great secret is to keep down slugs, for which, next to young *Lapageria* shoots, *Seakale* is their favourite dish. This we do most effectually by placing half a peck of coal ashes on the top of each clump.—R. GILBERT.

TREES AND SHRUBS.

THE JUNE BERRY.

(AMELANCHIER CANADENSIS.)

THIS tree now in flower is certainly one of the finest of early flowering trees, and is not nearly so well known as it deserves to be. Loudon concisely sums up the merits of the June Berry as follows: "A very ornamental tree, from its profusion of blossoms early in April, and from its rich autumnal foliage; and even the fruit is not altogether to be despised, either eaten by itself or in tarts, pies and puddings. The wood is white, and it exhibits no difference between the heart and the sap; it is longitudinally traversed by small bright red vessels, which intersect each other and run together—a physiological peculiarity which, Michaux observes, occurs also in the Red Birch." In a wild state it occurs from Hudson's Bay, south to Florida, and west to Nebraska and the Indian territory. The wood is exceedingly hard, heavy and strong. As might be expected from a tree spread over so wide a geographical area, the June Berry varies considerably in size and habit. Under favourable conditions it attains a height of 40 feet. Some notes respecting a fine specimen at Dane Lodge, Epping, are now before me; this tree is 32 feet in height with a head about 18 feet in diameter, the trunk being 7 feet high and 4 feet in circumference. The effect of such a tree in spring, with its mantle of snowy white blossoms and in autumn with the rich golden yellow of the decaying leaves, can easily be imagined. The fruits, which are of a purple colour, are collected in immense quantities on the Upper Peace River, and form quite an article of food and trade. An American writer says that when he was at Dunvegan, the Indian half-breeds were camped out collecting the berries, then in their prime (August 6). They are pressed by the Indian women into square cakes, and used, dried by the Hudson Bay Company, in pemmican. It is almost needless to say that the June Berry is perfectly hardy in this country. It is easily propagated, either from seeds or by grafting on the Apple stock. At its northern limits the ground is frozen for the greater part of the year. Besides the name of June Berry (*Amelanchier canadensis*), it is also known in the United States and Canada as Shad Bush, Service Tree, Indian Pear, Sugar Plum, in addition to its Indian appellation, *Suskatam*.
G. N.

The Austrian Pine.—Around the margins of most of our seaside plantations here this Pine has been extensively planted, as it not only withstands the rough sea breeze better than any other, but renders a great amount of shelter to other less hardy kinds. It is a capital mountain tree, and braves without the shadow of harm the bitter and penetrating blasts of our exposed hill-sides. As an ornamental tree, it is one of our best, and when planted singly or in clumps along the margins of plantations the dark glossy foliage presents a striking effect when viewed from a distance. The timber is of good quality, being tough, resinous, and well fitted for resisting the evil effects attending the change from moisture to dryness. Amongst the Pines this tree, for general utility, ranks next to the *Pinus Laricio*.—A. D. W., *Penrhyn Castle, North Wales*.

Stachyurus præcox.—This Mr. Gumbleton says "is a curious Japanese shrub whose greenish blossoms are succeeded by purple fruit." He sends a specimen of it from his garden, where it is now flowering. The twig sent bears a few drooping racemes of greenish flowers, not at all attractive in the state in which it comes to us. Accompanying it are twigs of the two pretty shrubby *Spiræas*, *S. prunifolia* fl.-pl. and *S. Thunbergi*, both profusely covered with small white flowers.

Adenocarpus decorticans.—Of this rare little shrub, a near ally of *Cytisus* and a native of the Sierra Nevada of Spain, Mr. Gumbleton sends us a flowering specimen. The flowers are about the size of those of the Gorse, bright yellow, and borne in crowded terminal racemes. The leaves are curious, being composed of two or three narrow leaflets on short slender stalks. Mr. Gumbleton says that it is hardy, but does not give us any information respecting its habit of growth or stature; probably it is dwarf, like its congeners.

The Caucasian Sloe (*Prunus divaricata*), of which there is such a handsome specimen at Kew, is a near ally of our common Blackthorn, but is of a more branching habit. The beauty of the Sloe is by no means exhausted with the flower, as when laden with its dark coloured fruits in the autumn a pretty effect is produced, though unless in isolated spots the berries do not long remain, as they are much sought after when ripe. The double kind of course does not fruit, and is increased by grafting or budding on the common type.—A.

Barberis rotundifolia Herveyi, a handsome Barberry, presumably a variety of *B. Aquifolium*, has been sent to us by Mr. Gumbleton. It has pinnate leaves, consisting of three pairs of leaflets and a terminal one. These are ovate, stalkless, and pointed, and are perfectly spineless, and show no tendency to be prickly, as in *Aquifolium* itself. The flowers are bright yellow, scented, and produced in dense terminal clusters. This is the first time we have had this Barberry sent to us, and we presume it is rare. Another rare Barberry, also from Belgrove, is *B. trifurcata*, a form of *B. nepalensis*, differing apparently from that species in having narrower and more pointed leaflets.

Thuja Phippeniana.—Some years ago Mr. Phippen, of Reading, planted the grounds of a new house erected at Tidmarsh, in Berkshire. Among the Conifers which he supplied I noticed one of great elegance and in every way effective. On asking Mr. Phippen its name, he told me he had originated it. Some have thought it only a pendulous form of the well-known *Thuja Lobbi*, but which it is not. A well-known grower of Conifers in the vicinity of London speaks of it as *Thuja Phippeniana*, and I believe it to owe its existence to Mr. Phippen. Anyone interested in this Conifer can see it here with pleasure.—R. J. HOPKINS.

Sambucus racemosa.—The scarlet-fruited Elder is very seldom found in British gardens of such a size as to display its beauty. When laden with its large dense cymes of fruit, "which resemble miniature bunches of Grapes of the most brilliant scarlet," the tree truly presents a splendid appearance. Planted in open dry situations it does not seem to thrive properly, but in a rather damp cool spot it soon attains a considerable size and fruits freely. For the woodland walk or the wild garden, where low-growing shrubs keep the ground shaded and cool about its roots, the scarlet Elder grows as freely, and would, perhaps, attain as large a size as our common native Elder, *Sambucus nigra*. *S. racemosa* is widely distributed throughout Central and Southern Europe, and in some of the Alpine valleys makes a splendid show with its masses of brilliantly coloured fruits. Like most of the Elders, it sports freely, and a cut-leaved form, as well as one with variegated foliage, are in cultivation in Continental gardens.—G. N.

Eurybia Gunn.—Flowering twigs of this interesting and pretty shrubby composite have been sent to us by Mr. Gumbleton, from his garden

at Belgrove, Cork. The flowers, which are small and Daisy-like, are extremely abundant, rendering the bush when in bloom quite a mass of white. Accompanying it is a twig of *E. stellulata*, which Mr. Gumbleton says is generally sold as *Gunn*. It is much later in flowering and has longer and narrower leaves.

Flowering Currants (*Ribes sanguineum*).

—A selection of the best and most distinct flowering Currants now in bloom include *atro-rubens*, a beautiful deep coloured variety, the blooms being of a far richer tint than the common form. In altitude the flowers are bluish white, and in glutinosum of a peculiar pinkish lilac shade. The double-flowered variety (*flore-pleno*) is later in expanding than the rest, and is at its best by no means so conspicuous as the single forms. A very distinct variety of the flowering Currant is *Gordonianum*, which in colour is about intermediate between *R. sanguineum* and the golden-flowered *R. aureum*, for the blooms of this are a peculiar sort of orange-red tint. The golden-flowered *R. aureum* is in itself a beautiful shrub, thriving well under the same conditions as the others, and is equally floriferous. The varieties of this are serotinum, later in flowering than the type, and flavum of a deeper hue, but the difference between them is not great, the ordinary form being in beauty quite equal to the others.—ALPHA.

The flowering Dogwood (*Cornus florida*).

—This species, very handsome when in flower, and scarcely less so in fruit, is the finest of all the Dogwoods. It is stated to thrive best in a peaty soil, which must be kept moist, and the situation should be sheltered, though the foliage of the plants must be fully exposed to the influence of the sun, otherwise they will not flower. Ellwanger and Barry sum up the merits of this species, which they call the white flowering Dogwood, as follow: "The flowers produced in spring, before the leaves appear, are from 3 inches to 3½ inches in diameter, white and very showy. They begin to appear just as the Magnolia flowers are fading, and are invaluable for maintaining a succession of bloom in the garden border or on the lawn. They are also very durable, lasting in favourable weather more than two weeks. Besides being a tree of fine form, its foliage is of a greyish green colour, glossy and handsome, and in the autumn turns to a deep red, rendering the tree one of the most showy and beautiful objects at that season. We regard it, all things considered, as one of the most valuable trees for ornamental planting, ranking next to the Magnolia among flowering trees, and only second to the Scarlet Oak, which it almost equals, in brilliant foliage in autumn." The wood is hard, heavy, fine-grained, and susceptible of a beautiful polish; the bark is sometimes used as a tonic and astringent. In a wild state it sometimes attains a height of 30 feet or 40 feet, and is found from Canada to Florida, west to Eastern Kansas, and southward to Kansas and Eastern Texas. Collinson, in a memorandum dated May 17, 1761, writes as follows: "Invited by Mr. Sharp, of South Lodge, on Enfield Chase, to dine and see the Virginian Dogwood; the calyx of the flowers, wonderful to see, are flowers as large as figured by Catesby, and, what is strange, it is the only tree that has these flowers amongst many hundreds that I have seen, and it began to bear them in 1759.—G. N."

ABIES DOUGLASI TAXIFOLIA.

THIRTY years ago several gentlemen who had been for some time engaged in planting Conifers in Herefordshire expressed an opinion that the old Douglas Fir had proved a failure throughout the county, and, judging from the very few good specimens at that time in existence, it seemed more than probable that the soil contained or required an element the presence or absence of which prevented this graceful tree from growing in a satisfactory way. Not satisfied with other planters' experience, I intimated to my then retiring predecessor that it was my intention to plant it extensively on the different formations which this

estate so abundantly offers. He said, "You may plant, but you will fail. I have planted hundreds and can point out only one solitary tree that has grown into a good specimen." In due course, good stations were prepared on the igneous soil along the base of the Malvern range, on the limestone slopes, and in the deep cool valleys consisting of stiff calcareous marl. Good trees were secured and were planted. Many of them grew well until they were from 12 feet to 15 feet in height, when they began to falter; the foliage turned yellow, leaders perished, the stems became blotched with resin, and the trees eventually died. Non-plussed for the time, but unwilling to give up my favourite tree, the matter was discussed with the late Mr. J. Veitch. In due course that gentleman paid a visit to Eastnor, but, like myself and my lamented employer, he was unable to account for my failure. A careful examination of our one solitary specimen was then made, and my shrewd friend arrived at the conclusion that it was the variety known as *A. D. taxifolia*. This was a step in the right direction. If *taxifolia*, which is more graceful and of a better colour than the normal variety, will thrive, why not plant the best, although the trees may be a little more expensive? A number of handsome young trees about 3 feet in height were at the proper time supplied by Mr. Veitch, and in due course planted; some in the grounds on the limestone, others in a pinetum half a mile from the castle on a light friable soil free from lime. This was in 1862; all have grown well, and down to the present time retain their dense Yew-like colour; not a single tree has faltered, but those planted on the igneous brash have outstripped the others, many of them making 3 feet to 4 feet leaders in a single year; they are not, however, so dense and handsome as the limestone trees, which have grown to an average height of 50 feet in twenty-three years and are now coning freely. One tree planted on a cool, deep, well-drained marl has quite recently been measured, and its height is 53 feet with a girth of 6 feet close to the ground, and 4 feet 6 inches at 4 feet up the bole. The sweep of the lower branches is 24 feet in diameter. Every tree is a perfect specimen, plenty of room having been allowed for development, and the branches, which are never injured by the wind, are so densely packed as to completely hide the boles. How long these magnificent trees will continue to grow it is impossible to say; as yet nearly all of them retain their leaders, and they promise to outstrip every other Conifer, including the Wellingtonias planted at the same time and under similar conditions and treatment. Messrs. Veitch in their exhaustive "Manual of Coniferae," which, by the way, should be on every planter's bookshelf, state that "*A. D. taxifolia* is a variety

found in Oregon, and according to some writers also on the Real del Monte, in Mexico. The branches are stouter than those of *A. Douglasi* and the leaves longer. It does not attain more than half the height of the species, and the habit of the largest specimens in England is more broadly pyramidal, and the general aspect darker and more massive." Dr. Lindley in the English

may have found the species intractable, the simple fact that the handsome variety known as *A. D. taxifolia* may succeed as I have proved by more than twenty years' experience.

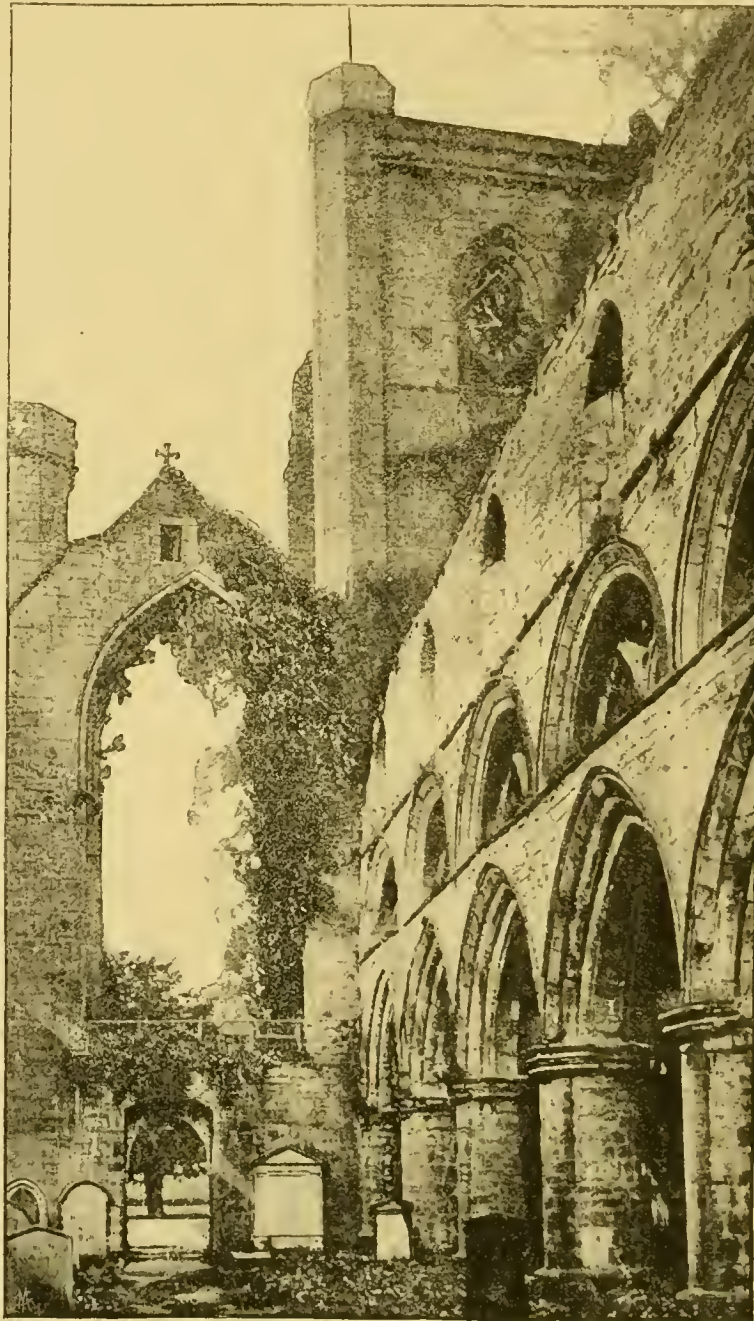
W. COLEMAN.

PROPAGATING MAGNOLIA CONSPICUA.

WHAT is the quickest and best way to raise young plants of this *Magnolia*? Will they strike from cuttings or layers?—W. E.

*** This *Magnolia* is not the easiest of shrubs to propagate, for cuttings will not strike and layers take a long time before they are sufficiently rooted to detach them from the parent plant. In such a case, as seeds are not readily procurable, grafting must, of course, be resorted to, and this is the mode of increase practised in nurseries where plants are raised in quantity. The stock employed is *M. purpurea* or *obovata*, which will root readily enough from layers, or seedlings of it are preferred if they can be obtained. It is essential that the stocks be of good, clean growth, as a more perfect union is effected than where they are of a weak and stunted character. A good and convenient size for the stocks is from the thickness of a pencil to that of the finger, and as grafting takes place during the summer months, they should be potted in as small pots as possible during the preceding spring. The scions are composed of the current season's growth when it is almost ripened, and several different methods of grafting are successfully employed, but mostly limited to the different styles of side grafting, as then the stock need not be headed down before the operation, and when a union is complete the top of the plant can be removed by degrees. The point of union should be as low down as possible in order that it may be covered when the plants are turned out in the open ground. After the operation, the whole of the mutilated portion must be covered with grafting wax in order to thoroughly exclude air, and the plants placed in a perfectly close frame till a union is effected, after which they must be hardened off by degrees. If any of the stocks are inconveniently tall they may be partially headed down some time before required, but care must be taken to leave some of the foliage in order to maintain a constant circulation of sap. If the plants after

grafting are kept quite close, a union will be effected in little more than a month in the case of those grafted about July. Inarching is also carried out at times, but a much longer period is required before they can be separated from the parent plant than is the case with grafted specimens, while as a set-off no frame is needed for those that are inarched. Another consideration is that, unless in nurseries where plants are kept dwarf for the purpose, inarching would be often a difficult matter, and in the case



RUINS IN GARDEN AT DUNKELD. See page 380.

Cyclopædia says, "*Abies Douglasi* is one of the most important of coniferous trees as regards its economic properties; the timber is heavy, firm, and of as deep a colour as the Yew, with very few knots and not in the least liable to warp." Another writer says, "It is strong, clean grained, elastic, and acquires large dimensions in unequal climates." My object is not, however, to quote from Messrs. Veitch's fascinating book, as every lover of trees should peruse its instructive pages at his leisure, but rather to convey to others who, like myself,

of some large specimens almost impossible. For inarching the present is a very suitable time, and the stock employed must be the same as for grafting. Though a somewhat tedious process, plants can be raised by means of layers, which will, however, require a couple of years before they can be separated from the parent plant. In layering a long sloping cut should be made about half-way through the underside of the stem just where it is to be buried, which cut will be kept partially open by the bending down of the stem, and thereby tend towards the formation of roots by partially arresting the flow of sap. As the *Magnolia* is very sensitive to a check of any kind, care should be taken to ascertain that the layer is thoroughly rooted before entirely separating it.—T.

ORCHIDS.

ORCHIDS AT CHELTENHAM.

In the cool Orchid houses in Mr. Cypher's nursery at Cheltenham we noted the other day many plants of *Odontoglossum Alexandræ* very distinctly, heavily, and richly spotted. There were also many extra large and beautifully coloured spikes on *O. Cervantesi*, *O. cirrhosum*, *O. triumphans*, and *O. vexillarium*. Amongst *Lycaste Skinneri* there were several good forms, one producing very large blooms with deep rose-coloured sepals and a pure white lip; *Masdevallia Harryana* and *M. Lindeni* were flowering very freely, and the more valuable forms of *M. bella* and *M. Chimera* were showing numerous spikes; *M. Shuttleworthi* was extensively represented, and some plants in 3-inch pots were bearing several blooms each, their cheerful lilac colour and golden tails being very charming; *M. Crossi*, or *racemosa*, was in excellent condition, many of the plants showing several blooms, but none quite open. In the *Cattleya* house several very good varieties of *Trianae* were still in bloom, and two forms of *C. amethystoglossa* were very conspicuous; one plant of *C. Percivaliana* was also bearing several blooms, which I thought unusual for this season; *C. Mendeli* and *C. Mossiæ* were coming freely into flower. In this house there were likewise some fine plants of *Cypripedium candatum* and many imported plants of *Lælia anceps alba*, showing numerous breaks and rooting freely. In the *Dendrobium* house the varieties chiefly in flower were *D. crassinode Barberianum*, *D. litiflorum*, *D. thyrsiflorum*, *D. chrysotoxum*, *D. suavisimum*, *D. Falconeri*, *D. eburneum*, *D. albo-sanguineum*, *D. Bensoniæ*, *D. Parishii*, *D. macrophyllum giganteum*, and the lovely hybrid *D. rhodostoma*, the latter showing six blooms. In the East India house *Cypripedium niveum* was very beautiful, as were likewise some plants of *Oncidium ampliatum majos*; *Saccolabium ampullaceum* and *S. præmorsum*, the latter showing several young spikes; *Cypripedium Warneri*, as seen here, is a very dwarf, exceedingly pretty variety; *C. lavigatum* was just opening its blooms, and *C. Lawrenceanum* was a perfect mass of blossom. On one plant of *Cattleya Harrisoniæ* in this house there were fifty growths. In a cool fernery were more Orchids in bloom, including *Oncidium Marshallianum* with two spikes, bearing 149 flowers and buds; *Odontoglossum citrosomum roseum*, with several strong spikes, bearing about twenty buds each; and *Oncidium altissimum* with twenty spikes. In short, the collection of Orchids in this nursery is both extensive and well grown.

Dendrobium Brymerlanum.—Of this beautiful and most singular *Dendrobium* Mr. Harvey sends us a specimen from his garden at Alburgh, Liverpool. It is so different from all other *Dendrobies*, that nobody can mistake it. The flowers are yellow, about 2 inches across, and the lip has a shaggy beard fully an inch long. This fringe reminds one at once of the pretty Fern Moss (*Hypnum tamariscinum*).

Dendrobium Falconeri giganteum.—I send you blooms of this *Dendrobium*. The plant came from Upper Burma, and is, in my opinion, clearly a natural hybrid of *D. Falconeri* and *D. Wardianum*, the Burmese variety sometimes called *Lowi*. I believe the few specimens of it in this country came from Assam, and that the parent is the Assam variety of *D. Wardianum*, a smaller, but more brilliant flower than the ordinary form.—E. HARVEY, *Alburgh, Liverpool*.

Early Cattleya Mossiæ.—A flower of what is considered to be a distinct type of *C. Mossiæ* has been sent to us by Messrs. Sander, of St. Albans. It is very large, measuring over 8½ inches across, with sepals 3 inches broad and of a deep lilac. The lip is 3 inches in depth by 2 inches in width. The colouring of the lip is very rich, and, surrounding an intensely deep amethyst, is a broad frilling of white edged with pink, and the broad blotch of orange-yellow in the centre extends far into the throat. It is indeed a splendid variety, and as it is a decidedly early flowerer, it is the more valuable. The ordinary forms of *Mossiæ* are only just beginning to flower, whereas this one has been in bloom for some weeks.

THE PRIMULA CONFERENCE.

You will see from the subjoined list of *Primulas* at present in cultivation in one garden in this country that your fears regarding a lack of species of these plants being brought together are not well founded. When the large number of so-called hybrids that exist of most of the species here enumerated is taken into consideration, besides other species and hybrids in other gardens not in this list, you will see that the exhibits of *Primulas* will probably equal those at the Daffodil conference without descending to microscopic differences, as appears to have been done in the case of the Daffodils.

List of *Primulas* cultivated in the Royal Botanic Garden, Edinburgh.

<i>Primula</i> 'acaulis' (L.)	<i>Primula</i> 'mollis' (Nutt.)
'auricula' (L.)	'nivalis longifolia' (Egl.)
'auriculata' (Lam.)	'obconica' (Hook.)
'Balsi' (Lehm.)	'obtusifolia' (Royle)
'bellunensis' (Venz.)	'omensis' (Thom.)
'capitata' (Royle)	'officinalis' (L.)
'cassimeriana' (Royle)	'Palmieri' (Pentagr.)
'ciliata' (Schrank.)	'Parryi' (A. Gr.)
'Clusiana' (Tsch.)	'pedemontana' (Thom.)
'cortusoides' (L.)	'proliera, syn. imperialis'
'denticulata' (Sm.)	'purpurea' (Royle)
'elator' (Jacq.)	'purpurea' (Royle)
'farinosa' (L.)	'Ruisbyi' (W.)
'floribunda' (Wall.)	'scotica' (Hook.)
'Fortunei' (Vatke.)	'Sithorpi' (Rehb.)
'Heydeii' (Watt.)	'Sieboldi' (Morr.)
'hirsuta' (All.)	'aikimensis' (Hook.)
'inflata' (Lehm.)	'alcensis' (Ldl.)
'integrifolia' (L.)	'spectabilis' (Tratt.)
'involuta' (Wall.)	'Stuarti' (Wall.)
'japonica' (A. Gr.)	'suaveolens' (Bert.)
'Kaufmanniana' (Egl.)	'suffrutescens'
'longiflora' (All.)	'tyrolensis' (Schott.)
'luteola' (Rpr.)	'verticillata' (Forsk.)
'marginata' (Curt.)	'villosa' (Jacq.)
'minima' (L.)	'viscosa' (All.)
'minutissima'	'Wulfeniana' (Schott.)
'mistassinica' (Mehx.)	

Hybrids and well-marked varieties.

<i>Primula</i> × <i>Boveana</i> (Desm.)	<i>Primula</i> × <i>Murettiana</i> (Moritz)
× <i>Dinyana</i> (Lagg.)	× <i>Peyritschii</i> (Stein.)
× <i>Doutoulini</i> (Stein.)	× <i>pubescens</i> (A. Kern.)
× <i>Fachini</i> (Schott.)	× <i>pumila</i> (A. Kern.)
<i>Floeriana</i> (?) (Schrad.)	× <i>Stenila</i> (Obriest.)
× <i>Gibbi</i> (A. Kern.)	× <i>similis</i> (Stein.)
× <i>graveolens</i>	× <i>venusta</i> (Host.)
× <i>intermedia</i>	× <i>villosa alba</i>
<i>latifolia</i>	

There are also several Indian species, as yet undetermined, and many beautiful hybrids of *ciliata*, *intermedia*, and *villosa*, which have been raised in the garden here. Those marked with an * have flowered or are coming into flower this season.

G. W. OLIVER.

Royal Botanic Gardens, Edinburgh.

* * We are pleased to see that the Edinburgh Botanic Gardens are so rich in *Primulas*, but we still feel sure that in gardens generally they are not plentiful. When we made our remarks respecting the *Primula* conference we did not reckon upon the support of botanic gardens, seeing that it is unusual for exhibits to come from such sources. How many of our private gardens could furnish such a list? Few indeed, we apprehend.—Ed.

Sulphide of potassium.—I first used this chemical on April 13 after reading Mr. Edmund Tonks's article on its use in THE GARDEN, and I am more than satisfied with it. Not only is it a sure cure for mildew, but for something else that I did not bargain for, viz., 1 oz. in a gallon of water will clean the green off floors with very little trouble. This latter may not seem much, but to

us it means a great deal, for we have a stove and fernery the floors of which are paved with the same kind of tiles as those usually laid down in entrance halls. We had tried all kinds of material to keep them clean, but with very indifferent success. Now we have no difficulty.—X.

ROT-PROOF SCRIM.

I HAVE just examined some samples of the metallised weather-proof scrim canvas, and that recommended for shading appears to be an excellent material and of just the right substance to screen delicate plants from the hot sun whilst admitting enough light to allow of healthy development. The texture of this canvas will be understood when I say that two threads out of three are removed, so that it covers about one-third of the glass. It is about the same as the ordinary scrim sold at 3½d. per yard. It costs 1s. per yard, and therefore is more than two-thirds dearer than the ordinary material, a fact which will deter many from using it. It is a pity that it cannot be sold more cheaply, as with trade growers the primary cost is an important consideration. The durability ought to more than compensate in the long run for the extra outlay, and being green in colour, the Willesden scrim has a much neater and less obtrusive appearance than ordinary canvas, which in time becomes soiled and far from ornamental. As far as real economy goes, however, this can only be decided by comparing the durability of the two materials. An ordinary blind will last about two years; therefore the rot-proof scrim, to give it an advantage, should last quite eight years. Can any of your readers say if it will do so? As ordinary scrim rots long before it would wear out, and my experience has been confined to this material, I have no means of knowing how long it would last if guaranteed against climatic influences. A thicker kind of metallised scrim is offered for protecting purposes, but this I think too thin to render it so serviceable as it ought to be. It is priced at 1s. 6d. per yard, and I buy ordinary scrim at 7d. the yard, which is double as thick, and which will therefore keep out twice the amount of frost. In our fickle climate I consider the use of very thin canvas a great mistake; it will not guarantee the blossoms against those severe frosts we in some years experience in May, and I see but little use in a protecting material which will not save the blossom from 12° of frost. In some localities fruit growers have the utmost difficulty in saving the bloom in a frosty May even when such a thick material as frigi domo is used, so that money spent on very thin canvas is too often wasted. It does seem a pity that a whole season's hard work and attention should be rendered abortive for the want of sufficient protection to guarantee the blossoms against May frosts. The Montreuil Peach growers use straw mats largely for this purpose, and when 12° of frost follow a cold, rainy day, some such substantial material is absolutely necessary. J. C. B.

GARDEN LABOUR.

THE question of labour for a garden is one which is so often a subject of inquiry, that it may not be altogether unprofitable to consider some of the most salient features connected with it. In a general way it is considered that one man to an acre of ground is sufficient, but to anyone acquainted with the work of a garden it will at once be seen that this is a very unsatisfactory way of settling the matter. We must look at it in another way if we want to make the arrangement applicable to all cases; we must, in fact, decide what we want to get out of a given area of land, because, given a suitable soil and situation, a garden can be made productive or not, according to the amount of labour bestowed upon it. If we want a garden to produce two and three crops during the year, it is clear that it would involve more labour than one which is only expected to grow one crop annually. The settlement of the question does not therefore depend on space, but what we get out of it. If we turn from the kitchen garden to the pleasure grounds, the same

difficulty presents itself as to what proportion of labour should be allowed. In this case it must be decided by the state of keeping to be maintained; high keeping means incessant labour. If lawns are to be mown twice a week, walks rolled and weeded, shrubby borders kept in presentable condition, and flower beds and borders in good order, then the labour in proportion to the space must be liberal. There is, too, a vast difference between a rough-and-ready way of doing work and doing it in a neat and proper manner as often as may be required. It may surprise some, perhaps, but it is nevertheless a fact that in the matter of work to be done hardly two gardens are alike. The wants of different establishments likewise vary as much as do the soil and situation. Some only require the most common-place management, and can tolerate disorder in the backgrounds of a garden, while others expect every part of the grounds to be in good order. In new gardens and pleasure grounds there is not nearly so much litter from old trees and shrubs as in older places, and only those who are practically acquainted with garden work can form an idea of the amount of labour which old deciduous trees and shrubs make. Every strong gale causes the lawns and walks to be strewn with leaves and branches, and in many cases a rough wind means employment for all hands for a day or two to clear up the *débris*—in short, work which is often a serious hindrance to the daily routine in other departments.

In regard to plant growing, I doubt if many of the owners of conservatories that are kept bright throughout the year with relays of fresh plants have any idea of the amount of labour which such embellishment involves, much of the work which it entails not coming under their observation. In the forcing department, too, it is not to be expected that a casual observer should understand all the details that have to be gone through in regard to the preparation of Strawberries for forcing and the forcing of French Beans, Potatoes, and similar crops. They cannot therefore, from a gardening point of view, be the best judges of the amount of labour that should be allowed. Where these and all other parts of a garden are expected to be in good keeping sufficient hands must be provided to do it, or something must be left undone. I must say, however, that proprietors are not very exacting, as a rule, but they would be even less so had they the necessary experience to guide them to a right conclusion in such matters.

J. C. C.

QUESTIONS.

5347.—*Figs*.—Will some of your readers kindly tell me whether it is the second crop of Figs that has been on the trees all winter out in the open under a wall that ripens, or the young ones just showing now?—READER.

5348.—*Cyclamene*.—Will some of your readers kindly give me a few hints as to the best mode of growing *Cyclamens*—i.e., whether they should be dried off or not, and the best compost for them? I have a quantity of seedlings that were raised in March, 1884, and only one has bloomed out of the lot. Should the bulb be covered when potting?—R. D., *Headingley*.

5349.—*Double white Violet*.—In Bacon's "Essays," published in 1625, Essay 46, of *Gerardea*, occurs the following sentence: "That which of all others yields the sweetest smell in the air is the Violet, especially the white double Violet which comes twice a year, about the middle of April and about Bartholomew-tide." Is anything known of this Violet at the present time?—F. J. H.

5350.—*Vines on the extension system*.—Will some of the advocates of this system answer the following: Does it take longer to bring to perfection a crop on the extension system than it does on the old plan? if so, how much longer? Being growers for market on a large scale, time is a great consideration with us; hence the reason for our asking this question. I quite agree with all that has been said in reference to young Vines and the extension system, although opposite views are held by my gardener friends.—L.

5351.—*Plant showing*.—Will some of your leading plant cultivators kindly answer the following questions: 1, in a class for foliage plants, not variegated, would *Alocasia metallica* be disqualified, on the ground that it is (as some of the gardeners here contend) a variegated foliage plant? 2, in a class for greenhouse plants in which florists' flowers are prohibited could a *Coleus* be shown? 3, what constitutes a florist's flower now that hybridising is so much in vogue? and what are at the present time considered florists' flowers? 4, what constitutes a variegated-foliage plant?—H. H. T., *Willington, N.Z.*

ROYAL HORTICULTURAL SOCIETY OF IRELAND—SPRING SHOW, 1885.

THIS was held the other day in the Round Room of the Rotunda Gardens, Dublin. The weather was dismally wet, and the attendance was in consequence limited in number. The dark blacks and cold greys of the mackintoshes, rain-coats, and dripping umbrellas bore a melancholy contrast to the gay and brilliant masses of colour which filled the centres of the flower tents and the historic Round Room. A semi-circle of Hyacinths of every shade, grade, and variety made this room delightful with perfume. It was otherwise devoted to a magnificent display of fruits, including Apples, Strawberries, Grapes, and vegetables, but the Azalea tent was the attraction of the show. The magnificent masses of colour where emphasised by the leaden character of the day, and for shape, luxuriance, and height were probably superior to any ever before exhibited even at the shows of a society remarkable for its successes in this particular department of floriculture. The stands of Roses were good, and the cut Roses, especially the *Maréchal Niels*, were remarkable. There was one stand of Countess of Saxony Roses which attracted attention for its beauty. The group of plants from the Botanic Gardens, Glasnevin—*Nepenthes*, Ferns, &c.—formed a graceful arrangement in one of the tents. It would be unfair not to notice the fine and seasonable display of the modest *Primula* and *Cineraria*. Mr. Balfe, the efficient secretary, had had gangway planks laid down through the sodden Grass to facilitate access to the different tents. We trust that the next show of the society will be favoured with better weather. A most charming and much-noticed feature of the show was several stands of *Narcissus* forwarded from Riverston, Tipperary, by Mr. John Poë. Of these there were 40 varieties in twenty-four bunches. Some good *Pelargoniums*, Roses, and Hyacinths were also shown by our occasional contributor, the Rev. Frederick Tymons, and there was a collection of rare and beautiful plants from Glasnevin.

HELLEBORES AND IRISES.

At the last meeting of the scientific committee of the Royal Horticultural Society, at South Kensington, Prof. M. Foster exhibited specimens of the so-called *Iris agrostifolia*, but the narrowest leaf was not so narrow as that of *agrostifolia*. It seemed intermediate between *I. unguicularis* and *I. cretensis*, partaking more of the latter; *Iris Milesii*, from the Himalayas, intermediate between *I. tectorum* and *I. sibirica*; *I. equiloba*, a form of *pumila*, but with nearly cylindrical ovary, that of typical *pumila* being trigonal. Another form of *pumila* remarkable for its beard was the smallest of the bearded Irises, and another form very strongly scented like the Tonga Bean, *Fritillaria amena*, really *F. Sibthorpeana* of Boissier. Dr. Foster also read the communication below from the Rev. Canon Ellacombe: "In 1877 I received from Berlin a collection of hybrid Hellebores under the following names—1, *H. hybridus*; 2, *H. albedo-virescens*; 3, *H. reticulatus*; 4, *H. caucasicus purpurascens*; 5, *H. c. porphyromelos*; 6, *H. c. pallidus*; 7, *H. c. p. albus*; 8, *H. punctatus hybridus*; 9, *H. p. purpurascens*. For three or four years these were all fairly distinct, but now the result is this—3 has entirely lost its mixed character and bears two distinct flowers, a large white and a pale pink; 1 has also gone into two colours, apparently *guttatus* and *H. olympicus*; 5 is almost *H. c. colchicus*; 4 is in two colours, a dull pink and a greenish white; 6 and 9 have become almost identical; 2 is a buff one, and apparently constant; 5 is also constant and a fine plant; 7 is constant; 10 has two very distinct colours, a good white and a very deep dull plum. These colours are not mixed in the flowers, but the plants bear the two distinctly as much as if they were distinct plants placed close together; but they are not distinct plants, but are borne on one root. The change from the hybrid characters to the colours of the parents has been gradual."

Birds and Apple buds.—Mr. Grieve says (p. 378) that birds make terrible havoc with Plums, Cherries, &c., but he had not yet noticed that they attacked Apple buds. A week ago I took a quiet walk round our orchard, and greatly to my dismay discovered that the walks were strewn with scales from the outsides of the Apple blossoms and small particles of the buds themselves. Like Mr. Grieve, I have never noticed bullfinches attack Apples before. I am quite sure as to the depredators, as I caught them in the act; I therefore shouldered my breechloader, and killed five the first day. I think they will therefore fight shy of our orchards for the rest of the season.—R. G.

Tough soils.—If Mr. Douglas had fourteen years' experience as I have had of the nature of the clay soil we have here and others have in many places, he would have found forcible illustration of the old saying that you "Can't make silk purses out of sows' ears." No matter how much worked and with what kind of dressing, the soil soon eats it all up and leaves us just where we started. Especially is this seen in the case of Primroses, because these once planted must of necessity remain in the beds some two or three years, and during that time the ground becomes as hard set and tough as a road. The pasty and baking nature of a stiff clay soil is best seen when it is worked in the autumn or early winter. The November and December rains soon beat the surface so close, that the water cannot get freely away, as in porous soils, and those newly dug soon become of the consistency of brick clay. Surfaces of soils thus beaten and saturated presently bake frightfully hard when drying east winds prevail, or the hot sunshine of summer falls upon them cracking in all directions, and either fixing the plants and roots as in a vice, or tearing them to pieces in the process of drying. While such results happen to hard soils that have been moved, we find, on the other hand, ground which has been lying untouched all the winter to work in the spring comparatively free and loose, whilst any autumn moved soils redug or forked in the spring are in a heart-breaking condition. If dressings of long or short manure could have remedied such a state of things, it would have been remedied long ago. The only real remedy for such ills is to be found in a complete exchange of stiff clay for some light porous soil to the depth of 4 inches or 5 inches, but remedies of that kind are not for those of ordinary means, or who are seeking to live from the products of the soil. Leaf-mould, which Mr. Douglas so strongly recommends, is here worth its weight in gold, and except where woods are plentiful, I doubt whether anyone would find it profitable to purchase and employ it as an ordinary dressing.—A. D.

LATE NOTES.

Books (G. H. R.).—"Hoppus's Measurer," by W. Richardson, is published by F. Warne & Co., Bedford Street, W.C.

Vine leaves (P. C. F.).—There is no Phylloxera or any other insect on the Vine leaves or roots which you have forwarded, but some of the leaves have evidently been attacked by thrips. The little green excrescences are the result of too much moist heat and too little ventilation.—G. S. S.

Names of plants and trees.—S. Nisbet, *Saxifraga crassifolia*.—G. C. 1, *Pteris argyrea*; 2, *Cyrtomium falcatum*; 3, *Blechnum corcovadense*; 4, *Aubrietia deltoidea violacea*.—J. Baylis.—The numbers had become detached from the flowers when they arrived. Among them were *Narcissus Telamonius* and its double variety and *N. incomparabilis*, also with double varieties. We could detect no other species.—T. A. A. H.—Appears to agree with *Sella Lilio-hyacinthus*.—Subscriber.—Not *Narcissus poeticus ornatus*, but the specimen was too much withered to determine its name.—R.—1, *Rhododendron nivum*; 2, *R. hybrid*, most likely between *R. arboreum* and another; 3, *R. campanulatum*; 4, *R. hybrid*, arboreum × some other species.—G. F. G.—1, *Palmonaria angustifolia*; 2, *Corydalis bulbosa*; 3, *Orobancha minor*.—H. H. W.—*Alonsoa laevis* will thrive out-of-doors perfectly well in summer.—Mrs. E. P. R.—*Ornithogalum arabicum*.—Sub. Bray.—1, *Narcissus pseudo-Narcissus moschatius*; 2, *N. incomparabilis*; 3, too withered to identify; 4, *N. Telamonius plenus*.—A. C.—*Dendrobium litiflorum*.—Joint Reader.—*Rhododendron campanulatum*.—J. B.—*Dendrobium chrysanthum*.—W. H. Blair.—A variety of *Narcissus incomparabilis*.—G. W. H.—The double is *Narcissus odoratus fl. pl.*; other is a pale form of the common *N. pseudo-Narcissus*.

WOODS & FORESTS.

INFLUENCE OF SOILS ON SCOTCH FIR.

THERE is probably no other timber tree whose merits and demerits have been more discussed than the Scotch Fir, and perhaps there is no other tree that so many conflicting opinions have been expressed by different writers regarding the quality of its timber for thrift and general utility. This, I consider, arises in a great measure from the particular standpoint or place of the country where the different writers reside and have gained their experience and information, and not to any want of candour on their part in giving a faithful exposition of its merits or demerits, as the case may be, according to their finding. This of itself goes a great way to prove that soil, climate, and a variety of local circumstances exercise great influence, not only on the quality of the timber produced, but also on the growth and healthy development of the trees themselves; and those who have had experience in cutting up trees produced in their natural habitats at high elevations, and contrasting the quality of the wood with such as have been produced in the low country under different conditions as regards soil and exposure, are well aware of the fact.

The largest and best class of Pine timber which I have seen in this country was produced in the natural forest of the Ballochbuie on the Invercauld estate, Braemar. The soil is principally composed of sandy gravel with a small mixture of organic matter at the surface. The largest trees were found in the vicinity of the Garrawalt, a small mountain stream, 1118 feet above sea level where it joins the river Dee. The timber here is of a hard, close, firm texture, and generally, but not always, clean grown and free of knots. In the same district excellent timber is found at a higher elevation on the slopes and rocky corries of the hills, where the soil is principally composed of gravelly drift mixed with disintegrated fragments of granite rock. I have cut excellent timber upon clay soil, as well as upon clay mixed with gravel and small stones; the latter tends to keep the clay open and porous, and when naturally dry, or rendered so by efficient drainage, the timber produced is generally of a fair average size and good quality.

We next come to peaty and loamy soils, that is to say, soils whose principal properties consist of organic matter, or, in other words, the reverse of such as has been described or nearly so. Timber produced upon this class of soil is softer in texture and less durable than such as has been grown upon hard inorganic matter, and in cutting up the former class of timber, the clear, sharp ring of the saw tells in a very pronounced manner the quality of the wood; the fibre here stands hard and firm up to the saw, whereas that of the latter yields considerably to pressure, owing to the softer texture of the wood, and by squeezing a handful of sawdust in the hand it feels soft to the grip, and not so hard and firm as the other. The keen, pure, bracing mountain air at high elevations in the Highlands is likewise favourable to the formation of hard, close-grained timber; at any rate wood grown on the same class of soils in the low country and in Ireland being softer in texture, I believe such difference to be attributable to the difference of the climate. The character of the Scotch Fir, I think, has suffered in a great many cases by cutting up the wood before it had been thoroughly matured, and in all cases where durability is essential it is a matter of vital importance to make sure that the wood is properly ripened, otherwise the results will be disappointing, and if so, the wood is declared to be worthless and not fit to be used for constructive purposes where strength and durability are requisite.

The effects of soil and climate, however, on the quality of timber is by no means confined to the Scotch Fir, or other species of trees. In districts of the country where flax is cultivated I have supplied Beech timber for the making of scutching handles, and the experienced scutcher is so well aware of the inferiority of timber grown upon rich, soft, or peaty soil for such a purpose, that he

will not purchase it at any price. The most efficient and highly prized timber for this purpose is such as has been grown upon dry, hard gravelly ground, and I have been told by the workmen that such timber, being of a close, hard, firm texture, is not only more lasting, but that they likewise are enabled through its agency to produce a cleaner and better sample of flax for the market than such as has been prepared by using soft inferior timber. But the influence of soil shows itself in a very clear unmistakable manner in other plants as well as trees; as, for example, the fibre of flax grown on soft peaty soil is always of a soft inferior texture, and not to be compared with such as has been grown upon clay and inorganic matter mixed and well prepared. Corn and Wheat when grown upon mossy soil is always soft and inferior, and the grain can easily be distinguished when placed upon the kiln to dry from such as has been grown upon good soil; when the former gets warm, the grain becomes more or less damp to the feel of the hand, while the latter keeps perfectly dry throughout the whole process. The experienced farmer will take very good care not to use straw for thatching his houses that had been grown on soft peaty ground, as he knows it would only last about half the time that straw the produce of good ground would last. The subject is of great interest and importance, and I might add more examples, but they would be superfluous.

J. B. WEBSTER.

Larch in Scotland.—Who says that Larch "does not thrive in the south-west of Scotland?" "Yorkshireman" cannot, I think, have been there to see. Wherever you can find drained land sheltered from the immediate force of the sea blast it thrives admirably. Sir James Fergusson, at Kilkerran, in the valley of the Girvan, planted two sheep farms which were on his hands with Larch alone about thirty years ago, and there is a considerable weight of fine wood on the land now. During the terrible storms of 1883-4 I lost some Larch trees in Wigtonshire which girthed 8 feet, and were sound to the core. The largest Larch in the country stands in the grounds at Galloway House. I have never seen disease in the Larches in this district. The cool subsoil seems to suit them well. A beautiful and useful tree at all ages, we have yet to find an efficient substitute.—SALMONICEPS.

WOOD OF WHITE OAK AND CHESTNUT.

I WAS much interested in your correspondent "G. W.'s" remarks on the White Oak. They reminded me of a purchase I made about the year 1847 of two large oil casks which were set up side by side at the back premises of my house to hold the rain water collected from the roof. I remember noticing at the time they were being prepared for their new purpose that the wood of which they were constructed—of that one at least which was examined—was as white as deal, and I was told by a naval officer, who happened to be my guest at the time, that he believed the wood to be what was known as White Oak. These two casks performed the office of rain-water receivers for nearly thirty years. They stood on the south side of the house fully exposed to all weathers. They were painted, but nothing more was done to preserve them, and in dry summers they were often for a long time empty. They were removed to make way for a slate tank about ten years ago. One was set up where it still remains doing duty as a sort of shed, in which odds and ends of garden materials that do not require any great amount of protection from the weather are stored; the other was sent to the village school to take the place of water collector, but it soon became unfit for that purpose, and last year it was broken up for firewood, and, unfortunately, not a scrap of it remains. On reading "G. W.'s" notice of the White Oak, I immediately had a piece of the surviving cask cut out, and I discovered on planing it that it was not White Oak, but Spanish Chestnut. I have sent a sample of it to THE GARDEN Office, together with a specimen of the Spanish Chestnut

grown on my ground. There is no perceptible difference between the two. The casks may have come originally from different parts of the Continent, for though they were of nearly equal height they were different in form, the existing cask having staves more curved than the other. They are of considerable thickness and must have been made out of board not less than 1½ inches thick. How long the other cask would have lasted if it had been put to a different use, of course cannot now be ascertained; much of its wood when split up was found to be quite sound. But in the survivor we have an additional proof of the durability of Spanish Chestnut under very trying circumstances and of the useful purposes it may be made to serve.

B. S.

* * The samples of wood sent by our correspondent quite bear out what he says respecting them.—ED.

GROWING LARCH IN BOGS.

SO much has been written upon the Larch culture in all its phases, that one would suppose the subject to be well nigh exhausted. Still, the Larch is so valuable for its timber, which always commands a ready sale, and, moreover, may be so easily turned into money at all stages of its growth, from paling and telegraph poles up to the largest sizes, that anything that can be said in connection with its successful management is always interesting to those engaged in its cultivation. Such being the case, the writer purposes giving his experience of it as a tree for bog planting. Tree planting in groups of one kind has been recommended by some writers, and I admit that in many cases such a system possesses considerable merit, but in others quite the reverse. The experienced forester, however, will not be tied to any particular dogma, but will use his own discretion. In planting exposed tracts of barren ground he will not only have to combat adverse influences as regards the climate, but also a sterile soil, and in doing so he will divide his trees according to circumstances—either mixing the kinds or planting masses of one kind only.

Some time ago I saw a plantation that had been formed entirely of Larch on flat peat bog on a property in the north of Ireland. The bog had been thoroughly drained, and a small quantity of soil mixed with the bog at the time of planting. The trees were planted at a distance of from 3 feet to 4 feet apart. On good soil under ordinary circumstances there can be no doubt that the plantation would have been a success, but on such a flat peat bog the results were the reverse. The trees had been planted about thirty years at the time I saw them, but as bog possesses the property of retaining more water after thorough draining than any other soil, trees planted in it must be hardy and also capable of lifting the superfluous moisture in the soil so as to render it in a fit state for supporting them. As Larch is incapable of extracting excessive moisture from soil, failure was the result. A great many of the trees had died, and those that remained were dwarfed and scattered here and there throughout the plantation. The best of these were growing on the sides of the bog drains. None of the trees had a healthy appearance, and the bark on the stems and branches was dry and thickly coated with Lichen and such-like growth. Some parts of this plantation carried a heavy crop of Heather and Bog Myrtle, and in order to improve and renovate it these were pulled up by the roots and burned. The drains were all thoroughly cleaned out, and a quantity of good large well-prepared plants of Scotch Fir and Pinus Pallasiana planted here and there, both of which grew admirably, and gave the plantation a well-furnished healthy appearance. Pallas's Pine is a strong growing hardy tree, producing strong robust side-branches in an irregular manner. It is a capital tree for bog planting, as well as for cold exposed situations in poor soil where it is desirable to get up cover and shelter. The timber is of fair quality, rather knotty, but resinous and durable. This Pine is a native of the Crimea, where it grows to about

70 feet or 80 feet high. It is also known as *P. taurica*.

On the same property another plantation of Larch, Scotch Fir, and Spruce had been planted on flat peat bog. The plantation had been formed about fifty years. The Scotch Fir and Spruce had been gradually thinned out, with the exception of a few trees along the margin, which were left for shelter, so that the plantation proper consisted entirely of Larch, standing at a distance from each other of about 15 feet, or, in round numbers, about 180 trees on each acre. The trees had attained an average height of from 50 feet to 60 feet, and possessed fine clean stems, free of branches for a distance of 25 feet to 30 feet from the ground, and contained on an average fully 20 cubic feet of timber each, and were worth 20s. each as they grew on the plantation; indeed, the proprietor was offered a higher price for them, but as they were extremely healthy and developing wood rapidly, he declined the offer and would not cut them. I never remember seeing a finer plantation of clean-grown Larch. These are the particulars of a mixed plantation on peat bog under a proper system of management, and, were it necessary, many instances could be given. I have always found it necessary in planting Larch or other deciduous trees in bog to plant a mixture of hardy Conifers with them in order to perfect the drainage. I cannot ascertain the exact amount realised for the thinnings of the plantation in question from the time of its formation, but imagine it to be not less than the expense of planting—including the preparation of the bog, thinning, and other incidental expenses.

The timber of Larch grown in bog is less resinous than that of the same tree grown upon ordinary soil and in rocky situations. It is, however, by no means to be despised, as I have proof of its efficiency as railway sleepers for a period of eighteen years. Another peculiarity of Larch on Irish bog is that it never contracts disease, such as heart-rot or ulceration. Any trees that I have found affected by heart-rot have been such as were growing on the edges of the bog where the roots came in contact with an inimical subsoil—such as hard gravel, till, or stiff clay, and although Larch in England and Scotland is often affected to an alarming extent by ulceration, yet such a disease is unknown in Ireland. From my past experience of planting covert land, I have always found it to be remunerative, and as foreign supplies of timber must soon get exhausted to a considerable extent, a brisker demand is anticipated as well as higher prices than has ever yet been realised for home-grown timber.

J. P. WEBSTER.

SCOTCH FIR PLANTATIONS.

UPON this subject "Scot" (page 250) makes the following remarkable statement, which he says is "the outcome of a desire to disseminate information among brother foresters," and so on. When a man feels it his duty to say something for the benefit of others, he must not take it amiss if his pupils are audacious enough to question the soundness of his teaching, and refuse to accept whatever he endeavours to impart to them. "Scot" says: "At about twenty years, when the trees stand at the original thickness, about three-fourths of the weakest plants are cut out, thus leaving those that remain at about 8 feet apart." Had "Scot" well considered the statement he has put forth, he probably would have withheld it and offered less baneful advice. The idea of reducing an acre of trees from 2700 to 800 trees at one thinning is the most barbarous treatment I have yet observed advocated in the thinning of plantations. Why, from twenty to twenty-five years were none too long to achieve such a reduction per acre. No one of any judgment would think of thinning trees to such a degree at once; for, even in the most sheltered situations, there would be great risk of having the other 800 trees blown down; and if not, at all events greatly retarded in growth through starvation and excessive exposure.

If the soil be such as "Scot" says, it is good enough to produce Turnips, and the subsoil clay, I should advise him, if there be more of the same sort of soil to plant, to crop it with Ash; the Ash will be more remunerative on such soil than the Pine. Further, "If the branches do not touch each other, I leave the trees so that they will nearly touch" (how does this statement agree with what we have been considering? not well); "for if much further apart, the wind gets vent amongst them and often uproots the best ones." It must be supposed that the wind does not get vent amongst the trees after "Scot's" first thinning; that indeed not a gust of wind blows through his plantations for the next dozen years sufficiently strong to upset a tree. Lucky forester! But "Scot" sums up the total of his experience thus: "In point of fact, however, the trees after the first thinning do not all thrive; both before and after this operation many of them die." Well, now, how is that? Why do they die before and after thinning? He does not say. Hence we are compelled to infer that he does not know, and to conclude, first, that the trees die for want of timely thinning, and next because the operation when done is overdone; and last, because "Scot" seems to have no medium betwixt those extremes; therefore the death of otherwise healthy trees is the sure sequel of such haphazard treatment. If that be the kind of information "Scot" desires to disseminate among brother foresters, the less of it the better.

GLENDYIE.

THE WOOD OF BRITISH TREES.

THE OAK.

IN making a few remarks on woods of commercial value, we cannot do better than commence with the Oak, a tree which, from its strength, hardness, and durability, has been aptly named "The King of the Forest," and is common to almost all the countries of the earth. Oak of the greatest strength and durability is generally found to be that which has grown on a soil on which it was reared slowly, as it acquires from the time occupied in its growth a greater consistency of strength than would have been the case had it been grown on a soil that brought it more rapidly to maturity. This, however, like every other rule, has its exceptions, as, under particular circumstances, an Oak tree may acquire a strength and hardness sufficient to sustain the severest tests, although it has sprung from a mere Acorn to a lofty tree in a very few years. This is not mere conjecture, as the writer could mention an estate where for stature, strength, and resisting quality, the Oaks are not to be excelled by any grown in Great Britain, and a very few years are necessary to bring it to maturity, but even on this estate there is a very great difference in the quality of the Oak. That which has northern exposure is found to be more strong and hardy than that which inclines towards the south. In selecting pieces of this timber for use in important positions, a very good test is to soak it in water. That which absorbs the least water, and therefore alters the least in weight, will be found to be the best. The reason of this is evident, as the fact of the water being unable to find an entrance proves that the fibres are laid very closely, and the limbs will consequently be durable. This test is not confined to Oak, but may be applied to timber of any description. Again, when durability is of the first importance, care must be taken as to what trees are felled. The health of the tree must be noted, for if decay has set in we may be sure that the timber is not so fit for our purpose as it would otherwise have been. When the top of a tree is in a state of decay, it clearly shows decay in the tree itself, and if a branch be decayed or a butt rotten, it indicates a defect in that part of the tree where it is situated. Another circumstance to be particularly attended to is the time of cutting. For purposes requiring the greatest perfection of strength and texture, it is found necessary to cut down the tree in winter. At this season of the year it is more free from sap and more readily seasoned and rendered fit for use. It is seldom, however, that Oak

is cut in the winter, as the value of the bark has to be taken into account.

When bark was selling at some £8 per ton, this was an important item in the total sum obtained for the tree; but now that the price of bark is so low, it is questionable whether the practice of winter felling should not be more extensively adopted. This, however, we cannot discuss here, but may direct attention to the subject another time. The difference in seasons sometimes causes a considerable difference in the time the Oak is ready to be stripped of its bark; but the particular thing to be attended to is the state of the leaf. As soon as the leaf appears operations should be pushed forward, as by this time the sap has expanded all round and over the tree and the bark is easily removed. If delayed too long the stripping is only performed with difficulty and the bark deteriorates in value. If a tree that has been cut down in full health is left to decay, it is observed that the outer coating, being exposed to the action of the atmosphere, is first destroyed; after this the second, and so on, gradually approaching the centre of the tree. This, however, is not the case if the tree has reached its prime before it is cut, as in those that decay from age the process goes on in the opposite direction. The outer shell will sometimes stand many years after the inner parts have entirely disappeared.

It is necessary, therefore, if the tree be old and large, to be very particular in examining the central parts, especially those nearest the roots, as it is here that decay generally begins. Some years ago it was the practice to commence the seasoning of Oak by immersing it in water; but the more general plan is when the wood has been sawn to the desired specification, to place a strong beam horizontally at a sufficient distance from the ground to admit of one end of the plank resting upon it and the other end resting on the ground in an inclined position. The planks should be placed edgewise and alternately on each side of the beam. This arrangement leaves a space between each piece and allows the air to circulate freely.

D. J. Y.

WOOD OF THE DOUGLAS FIR.

THE wood of this Fir (*Abies Douglasi*) is very strong, clean, free from knots, and straight in the grain, whilst the great lengths in which it can be obtained, straight and sound throughout, mark it out as well adapted for purposes in which joints would, in all probability, be a source of weakness, if not of expense, in consequence of the extra labour involved. Logs of Oregon Pine can generally be found floating in the basins of the Surrey and Commercial Timber Docks, but chiefly in what are termed Oregon masts, which are roughly hewn to an octagonal section, so as to allow of their being readily rounded off for masts and spars. It predominates in the forests of the West Cascade region, but not in the arid parts of the East Cascade region. It is plentiful in Washington Territory (United States). The Douglas Fir is also found in some of the Rocky Mountain valleys, on the Blue Mountains of Oregon, and here and there eastward as far as the head waters of the Platte. At present the principal seats of its manufacture for export are the coast of British Columbia and in Puget Sound (United States). The Douglas Fir does not grow in any quantity north of Millbank Sound, in latitude 52°. The principal existing mills are in the New Westminster district, and probably that neighbourhood will continue to be the chief seat of the export of Douglas Fir. The Nasse-Skena district looks like a good saw-milling country on the map, but the Douglas Fir, as just said, is not found so far north. The inlets on the mainland, or some of the outlying islands between Millbank Sound and the New Westminster district, probably offer locations for export sawmills, but it is not known, however, at present that these places can be found readily. Many of the inlets are almost wall-sided, with short watercourses or torrents emptying into them, the water collected among the surrounding

gloomy mountains. The rivers generally which flow into these inlets are not good "logging" rivers.

PESTS AND DISEASES.

REMEDIES AGAINST RABBITS.

To those whose trees and plantations suffer from the attacks of rabbits and hares the following recipes will be found useful, as they are amongst the most useful remedies:—

ASAFŒTIDA.—A teaspoonful of tincture of asafœtida in half a bucketful of liquid clay, mud, or muck of any kind, applied with a brush to the stem and branches of young trees, will preserve them from the attacks of hares and rabbits without injury to the trees. Two or three applications during the winter will be sufficient.

CORK GUARDS.—Rabbits and hares may be kept from gnawing young saplings by tying cork guards round the foot of the trees. The material used is virgin cork, at present so much employed in the construction of ferneries, and which can be procured in pieces of all shapes and sizes. It can be easily placed round the stems of young trees and attached in such a way that the attacks of hares and rabbits will be rendered ineffectual. The mischief caused to specimen trees planted near dwelling-houses, in parks, or on lawns by cats and dogs, &c., may also be prevented by the same means. First fix the pieces in their proper position, and then fasten them together with wire or strong twine, an operation which can be done at a trifling expense. It would, of course, be better if such tree protectors could be made to close round the stems and open and shut by means of hinges.

COW MANURE.—A mixture of lime, water, and cow manure made pretty strong forms an excellent anti-rabbit composition. There should be plenty of the latter ingredient, both to make it adhere properly, and because, if lime be in excess, the mixture dries too white upon the trees and is unsightly; whereas if properly mixed it dries just the right shade of greenish grey. Where tar is objectionable on account of its injuring the young trees, a simple mixture of soot and cow manure made thin enough to be put on with a brush will help to ward off the attacks of rabbits during ordinary seasons.

FAGGOTS.—In large plantations where hares and rabbits have to be dealt with by the thousand, one of the best remedies is to get from fifty to a hundred faggots, stack them up in any corner, and you will find the rabbits burrowing under the stack in a very short time. Give them a month's peace, and then by the help of a net put all round the faggots, proceed to throw the wood over the net; you will find the rabbits at the bottom of the heap, when you should be armed with a short, stout stick, and give them the *coup de grâce*.

SULPHUR.—A mixture of equal proportions of sulphur, soot, and lime, made into a thick cream with liquid cow manure, is also very effectual in cases where a strongly-smelling remedy is not objected to.

TAR.—Where appearance is of no consequence Stockholm tar is recommended. Gas-tar should never be applied to young trees, especially if the bark be already stripped away from them. The stems should be tarred from the ground to about 20 inches in height. If the trees be planted for ornament, the following plan is preferable if the extra expense be no objection: Instead of applying tar to the tree itself, stick three or four stakes round each plant, at the distance of 9 inches or a foot from it; then tie a piece of fresh-tarred line round the stakes at the distance of 9 inches from the ground. The tar should be mixed with an equal portion of manure, of about the same consistence as the tar, or it may injure some of the trees. A strip of tarred paper tied round the stem is also of service where the rabbits are not very numerous. Strong subjects may be daubed with a mixture of equal parts of gas-tar, cow manure, and water made into a thick paint. If there be

any marks of old bites, they should be carefully painted over.

VARIOUS REMEDIES.—Amongst miscellaneous remedies we may cite the following: Place a thin layer of Reeds or refuse hay round the stems, and fasten it with a tough Reed or tie of straw. Rub the bark with something distasteful to them, such as strong-smelling grease. The application of a paint made of butter-milk and soot when snow falls, and again in March, is said to be an excellent remedy. Wire netting or tying Birch or Heath round the necks of plants are effectual remedies in severe seasons where the rabbits are numerous. C. W. Q.

LARCH BLIGHT ON WEYMOUTH PINES.

In a plantation here numbers of Weymouth Pines (*Pinus Strobus*) were attacked early last summer by the common Larch aphid or blight (*Chermes laricis*). The white downy matter is first secreted at the base of the leaves, but soon spreads all over the tree. The leaves begin to change to a shade of dark brown colour, and in the course of a few weeks the whole of the foliage changes to the same colour, and presents the appearance of having been dead for some months. The downy matter at length spreads over the entire stem of the tree, and gives it the appearance of an Apple tree badly infested with American blight. The leaves of the trees in the plantation in question gradually decayed during the summer, and by the middle of September every leaf had turned brown, and the trees looked as if they had been dead for a year. The bark on the branches shrivelled and became soft and decayed upon the bole. We cut ten trees down last week. The number of trees of this variety growing in one group was fifteen, ten of which were quite dead, and three of those remaining are slightly affected with the disease. The trees averaged from 25 feet to 30 feet in height, with fine clean stems. The Scotch Pine, Stone Pine, Austrian Pine, Corsican Pine, the Hemlock Spruce, and *Abies cephalonica* are all growing in the same plantation, and all seem to luxuriate, even in cases where the tips of the diseased trees touched them. Not a single tree is affected, though growing so close to the diseased ones. I have had Weymouth Pines affected with the same disease on several occasions, but I have not observed the trees being killed in such a short time. A large *Rhododendron ponticum* growing beneath the branches of one of the trees has had all its leaves discoloured, and to all appearance where the leaves are most discoloured the branches are dying. The rains washed the downy substance upon the leaves of the *Rhododendron*, which must have settled upon and poisoned them. The soil in the plantation consists of a poor black peaty soil, having a good deal of rusty sand mixed with it. The soil rests upon a thick crust of hard rusty pan, but this piece of ground has been trenched and the pan properly broken up and carted away, and some of the yellow sand mixed with the top soil into which everything seems to root freely. We have several more fine specimens of *Pinus Strobus* growing in the grounds all upon the same strata of rusty pan, and at present are in excellent health. W. C.

Oork tree-guards v. rabbits.—This is a good idea, but none more effectual, and certainly not so cheap as bark-guards. Chestnut, Larch, or Oak bark we find not only the simplest, but cheapest preservative against the attacks of game. —A. D. W.

Wax for tree wounds.—Everyone should keep grafting wax on hand ready for use whenever needed, for it is valuable for various other purposes besides that of grafting. Wounds made in pruning large trees will heal over much sooner if coated with this wax; and if a piece of bark is accidentally stripped from a tree, the place should be covered over with it, and the wood will remain sound and healthy underneath. There are several recipes for preparing this wax, and I have found the following better than any one tried: Melt in a basin 1 lb. of tallow, 2 lbs. of beeswax, and

4 lbs. of resin; stir well together, and keep in a cool place in the dish in which it was melted. If beeswax is a very costly item, one-third less quantity can be used.—D.

Scotch Firs and black game.—In the Highlands of Scotland young Scotch Fir plantations often suffer considerable damage by black game feeding upon the terminal buds of the branches and leaders, in consequence of which the trees produce a plurality of leading shoots at the top. Under such circumstances my practice has been to go through such plantations in the month of April, and cut off all rival leaders with a sharp knife, leaving the most central for the proper leader, and if this is attended to for a few years the latter will soon get out of their reach and give no further trouble. Of course this will entail a little extra care and attention on the cultivator, but ultimately his efforts will be crowned with success.—J. B. W.

THE PINES OF NORTH AMERICA AND THEIR TIMBER.

No fewer than twenty-nine species of Pines exist in North America. These are popularly known under the names of white, red, yellow, and Pitch Pine. Of the white Pine family, the Weymouth Pine (*Pinus Strobus*) occupies the foremost place as a commercial wood, and is found from Newfoundland west to the Saskatchewan River, including Canada, Michigan, Wisconsin, and Minnesota extending south, through the New England States, New York, Pennsylvania, and along the Alleghany Mountains to Georgia. It is a white, soft-grained wood, easily worked, a favourite in house building, and forms the principal wood of the lumber traffic and manufacture of the north and north-west, to which localities its production is now mostly confined. It grows from 80 feet to 150 feet in height, and attains a size as great as 6 feet in diameter in individual cases, the majority of that having a commercial value, however, being from 12 inches to 48 inches in diameter at the stump. The white Pine (*Pinus flexilis*) of the Rocky Mountain range, from Montana to New Mexico, on the high mountain ranges of Nevada and Arizona, on the Inyo Mountains, and Mount Silliman, in California, is of a similar nature to that before described, being soft in wood, white, and of fair quality. It grows, however, only from 50 feet to 60 feet in height, as a rule, has a trunk from 24 inches to 48 inches in diameter, and is a good tree for timber. Its quality is intermediate between the Eastern Pine and the Sugar Pine proper.

THE SUGAR PINE (*Pinus Lambertiana*) is a distinct species from what is frequently spoken of in the north as Sugar Pine. It is a wood resembling the Eastern Pine, but is of a coarser grain, heavier, and stronger, grows to a height of from 150 feet to 300 feet, and its trunk reaches from 10 feet to 20 feet in diameter. It is found on the west coast ranges, from the Santa Lucia Mountains along the Sierra Nevadas, especially on the western flank, at an elevation of from 4000 feet to 8000 feet, and in Oregon, north to the Columbia River. The above constitute the principal varieties of the white Pine family as classified by Professor Sargent, of the United States Census Commission, although there are several other varieties of an obscure and less valuable character, entering but little, if at all, into commercial uses.

THE YELLOW PINE (*Pinus ponderosa*) is a product of the Pacific coast. It is found in California and Oregon, principally on the western slope of the Sierra Nevadas, and is the most valuable of the Western Pines. The wood is yellow, hard, heavy, strong, and durable. It is a large tree of a height of from 200 feet to 300 feet, with a trunk from 12 feet to 15 feet in diameter. It is found extensively along the eastern slopes of the Sierra Nevadas, where it attains a lesser height, being from 100 feet to 200 feet above the elevation of 5000 feet and having a diameter of from 10 feet to 15 feet; it is often found in most arid situations. It is also found throughout the Rocky

Mountains from British Columbia to New Mexico and Arizona, where it grows but from 80 feet to 100 feet in height. In the family of the yellow Pines there is also a variety (*Pinus mitis*) known as yellow Pine, short-leaved Pine, and Spruce Pine. It has a wood yellow in colour, hard, compact, and quite durable, growing to a height of from 40 feet 70 feet and rarely exceeding 24 inches in diameter. It has been seen as far north as Staten Island, but in few cases, and is found as far south as Florida and Alabama, on the Ozark Mountains of Missouri, where it is the only Pine, and in Arkansas. Its wood is used for similar purposes as the yellow Pine of the south, to which it is inferior. The yellow Pine, long-leaved Pine, southern Pine, Georgia Pine, brown Pine, hard Pine, by which designations is known the one variety *Pinus australis*, is found from Southern Virginia to Florida and Mississippi, Louisiana, the valley of the Red River of the South and Eastern Texas, extending seldom into the interior more than 100 miles from the coast. It is strong, compact, straight in grain, has light sap, is very durable, and is the true Pitch Pine, although differing from *Pinus rigida*, to which the term Pitch Pine has been given. It is from *Pinus australis* that the bulk of the turpentine, tar, pitch, and resin produced in the United States is derived. Its growth is from 60 feet to 100 feet in height, with a trunk of from 24 inches to 48 inches in diameter, affects a dry sandy soil, and is rarely found in low swamps. It is the commercial yellow Pine of the south. The Pitch Pine (*Pinus rigida*) is found in Maine and Vermont, and extends to the upper districts of Georgia, and is but seldom found west of the Alleghanies. Its wood is heavy and resinous, and when grown on low ground is soft and largely sapwood. It grows from a height of from 40 feet to 80 feet, reaching sometimes 30 inches in diameter, and affects a dry, barren, sandy soil, or a deep swamp.

THE RED PINE (*Pinus resinosa*) is a growth of the north-west, being found in Canada and the New England States south to the mountains of Pennsylvania, and west to Minnesota. Its wood is high coloured, resinous, hard, heavy, and durable in dry situations. It is used to some extent for shipbuilding, and in the west for joists and other building timber. It is usually from 60 feet to 80 feet in height, although in the forests of Michigan, Wisconsin, and Minnesota, and the British provinces it attains from 100 feet to 150 feet, with a trunk from 15 inches to 48 inches in diameter. It affects a high, sandy soil, and in favourable locations resembles the wood of the Spruce, being equally white, the name Red Pine being apparently derived from the colour of its bark.

TIME FOR FELLING TIMBER.

THE following note, taken from a translation (1724) of Palladio's "Architecture," is so quaint, that I consider it is worthy a corner in your paper. I have modernised the spelling, but retain the diction: "Timber, Vitruvius hath it (book ii., cap. 9), ought to be felled in autumn and through all the winter, because then the trees recover from the roots that strength and soundness which in the spring and summer was dispersed into leaves and fruit; and you are to cut them in the wane of the moon, because the moisture which is most apt to rot wood is then consumed, from whence there will not come the worm to hurt it. It should be cut but to the middle of the pith, and so left until it be dry, because by drops there will pass away that moisture which would cause putrefaction. Being cut, let it be laid in a place free from the extremity of the sun, wind, and rain; and those ought chiefly to be kept dry which are of spontaneous growth, and to the end that they may not cleave, but dry equally, you are to daub them over with cow manure. It should not be drawn through the dew, but in the afternoon, nor to be wrought, being very wet or too dry, because the one makes it apt to rot, the other hard to work; nor will it be in less than three years be dry

enough to use in planks, doors, and windows. It is convenient to those about to build to inform themselves from men skilful in the nature of timber what wood is fit for such use, and what is not. Vitruvius in the chapter above mentioned gives good instructions, and so other learned men who have written thereof at large." D. Y. J.

FOREST TREES OF WEST VIRGINIA.

THE White Oak is unquestionably the principal tree in central West Virginia. It is found on nearly every kind of soil and from every size, from 1 foot to 6 feet in diameter; also of every quality from the freest splitting to the toughest description of wood. This Oak when slightly seasoned will float in water; it is also quite free from worms. The yellow Poplar (Whitewood) is second in order of importance. It is altogether the toughest tree of the Virginian woods, and has also the thriest growth and freedom from knots. The trees generally open well, but of course vary in different localities.

THE BLACK WALNUT comes next in order, although it is really the most valuable of the country; it is much sought after, but not very largely found. There is, however, a considerable quantity in the aggregate, as it is scattered here and there on patches of rich, shady land. The sizes run from less than 20 inches up to about 40 inches in diameter. It is said that the claret undertones in the colour of this tree is peculiar to the district of West Virginia.

THE WHITE ASH is plentiful on some of the richest lands, but as unevenly distributed as the other timber. It is seldom these trees grow perfectly straight in the bole. It runs to about the same sizes as the Walnut, as over 40 inches in diameter is considered a large tree. It is very sound-hearted, but it varies very much in the degrees of toughness, that on the bottoms of the hills being tough and fit for waggon and handle stuff, while the growth on the mountains is more open and suitable for furniture.

WHITE PINE is found in a few localities, and the Chestnut Oak grows on the rich slopes and plateaux. In this situation it reaches to a considerable height, and is frequently found as large as 4 feet in diameter; on the sunny and rather barren ridges and slopes it only grows to small or medium size, and is interspersed with other Oaks, Chestnut, Locust, Dogwood, &c.

BASSWOOD is abundant, of good size, and mostly of sound quality, and on rich and shady land it is a tree that does not often exceed 3 feet in diameter. It does not carry its thickness very well, and is not so straight in the stem as many other trees. It is a good wood for inside work, and is preferable to the Whitewood. There are three kinds of Hickory; the White Hickory is the wood of commerce, but as it is very widely scattered and it will not float, very little is brought to market, although it is enquired for. Chestnut is very plentiful, and when it grows on rich hillsides and broad tablelands, is of good size and straight. A large portion, however, of this wood in Virginia is small and knotty, as it grows in barren places.

SUGAR MAPLE is found wherever the land is rich enough to carry it. It is generally a moderate sized tree from 15 inches to 24 inches in diameter, although in some places it reaches as much as 3 feet. There is some finely figured wood amongst it. Black Maple is also known to exist, but no estimate has been formed as to the quantity. The Red Oak grows to a large size, and on good lands is straight and tall. The Hemlock is found along the shady borders of streams, but it is not much used when other suitable wood is available, as it is very knotty and its knots are excessively hard.

THE COMMON WHITE BEECH is plentiful in the valleys, but it does not extend far up the mountain-side. It usually grows to about 20 inches in diameter and is fairly free of limbs, although it seems rather inclined to throw out small lateral shoots. Buckeye is found in rich shady

woods, in some of which it grows tall and straight, and averages 20 inches to 30 inches in diameter. Locust, Black Oak, Black and White Birch, Cucumber, Sycamore, Cherry, Hornbeam, Ironwood, &c., exist in various parts of the State. There is some confusion in naming the last two named woods, as the Ironwood is really the British Hornbeam.

The saw in tree pruning.—I am among those who object to the use of the saw in tree-pruning. Where timely pruning with the knife has been neglected, rendering the use of a saw necessary, I question whether it would not be better not to prune at all, unless it be for the purpose of admitting light and air. A large wound made by cutting off a limb of a tree may heal over, to outward appearance, leaving no defect, but when the tree comes to be sawn up for use, the injury to the timber will be preceptible. I do not approve of the fashion of pruning to naked poles; I would have a well-balanced tree feathered from bottom to top.—J. J. G.

Planting waste land.—Apart altogether from any pecuniary benefit to landowners accruing from the planting of waste mountain land, and viewing the matter from a disinterested standpoint, tree-planting is a necessity, and is urgently required, not only for the amelioration of the climate, but the shelter and genial warmth it affords to man and beast. Viewing the Welsh hills from any particular peak reveals the fact that a few proprietors at least have been alive to the necessity of extensive planting, and by their enterprise and forethought clothed, with a fair proportion of carefully laid out plantations, many of what fifty years ago were dreary, treeless stretches of hill land in Carnarvonshire. The area of woodland in North Wales might be doubled by the planting of waste or otherwise worthless tracts of ground, with the result of not only benefiting the country generally, but would be a vast increase in the value of land. To early define what portions of the land it would be advisable, or rather beneficial and profitable, to plant is, however, a question that requires careful consideration, even with the present excessive depression in agricultural matters. To plant cultivated land, or even such as is capable of being cultivated, so as to give a fair return to tenant and landlord is, however, a matter that does not in the least affect the necessity of clothing the waste and poorer lands of our country with flourishing woods and plantations, which would not only prove a source of wealth, but add materially to the landscape beauty of the country.—A. D. WEBSTER.

Inducements to plant.—There can be little doubt that the remote prospect of remuneration is one main reason why planting is so much neglected. To many proprietors it looks like and really means providing for future generations, which we all realise as a duty, but probably owners of estates think they can do that to better purpose in other ways than by planting trees. It should be remembered, however, that it is comparatively cheap to form young plantations, and that the more trees one plants for a future generation the more trees he may cut down and turn into money while he lives. This is an encouraging reflection not often enough acted upon. On estates where considerable tracts of timber exist, the value of the wood sold should compensate for the planting of an equal area, and leave a liberal margin of profit besides. This way of balancing the profit and loss accounts of the woods is not sufficiently understood and acted upon. It is to be feared that on some estates the income from the woods is too frequently looked upon and gauged merely as an item of income to be sustained from some source or other without any reference to departments or the duties and responsibilities they entail, or what they earn or lose. One thing is certain at all events—there are large tracts on mostly all estates of any size that are fit for nothing else than planting, but which are left as wastes and not planted, chiefly because of the expense of doing so.—YORKSHIREMAN.

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"This is an Art

Which does mend Nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

ARRANGEMENT AMONG SPRING FLOWERS.

THERE are few things in flower gardening which show more lamentable want of taste than the way in which spring flowers are often grown. One sees Tulips and Hyacinths, in one or two colours, placed in beds by themselves without anything to contrast with them or to succeed them. A circular bed of red or white Tulips is not much more decorative than a bunch of Carrots or Turnips. The only way in which spring flowers can be grown so as to become an ornamental feature in a garden is to plant them in clumps and irregular masses amongst later flowering plants, allowing such as spread to form great sheets of foliage and bloom. It is only when a year or two established that many of the best spring flowers show what they are capable of.

It is a very easy matter to arrange large beds so as to allow of this. Autumn-sown annuals and Tulips can be removed in time for half-hardy and tender annuals to take their places, and biennials which are green tufts in winter, such as Sweet Williams, Canterbury Bells, German Scabious, &c., and perennials which are evergreen in winter, or come up early in spring, can be arranged so as to reduce the bare spaces in beds to a minimum. The most pernicious legacy bedding-out has left us is the habit of digging up things as soon as the bloom is over and planting other things in the place of them. That sort of treatment should be confined to such plants as are benefited by an annual change of soil, and to the few bulbs which are improved by being lifted and dried, or which are unsafe in the open ground in winter. These, with annuals and biennials, will give ample material for change from year to year.

If flower beds are made large and of irregular shape, they can present sheets of bloom in spring and bold groups of taller flowering plants later in the season. No digging is required, and all the labour necessary is the handpicking of weeds and top-dressings of nourishing material in autumn. Planting breadths and bold groups of flowering plants may be described as gardening made easy, as if care is taken to prepare the soil properly in the first instance, and make the groups of plants which require similar treatment, and which will do well as neighbours, no attention is required until the plants become crowded and have exhausted the soil. No labourer should ever be allowed to touch a flower-bed, except to pull up a weed. Choice hardy plants in the open air require as intelligent and skilful planting and management as plants growing under glass, although that skill and attention need involve only a minimum of actual labour.

Professional gardeners would do well to devote more time to the cultivation of hardy plants than they do, for there can be no doubt that those of the public who employ gardeners are becoming rapidly acquainted with the multitude of beautiful things which can be grown and flowered in the open air from February to November. At present it is next to impossible to grow hardy plants unless one is one's own gardener, and a man

who can grow a good collection of such plants and florists' flowers in addition to the ordinary routine of a moderate sized garden would have a much better chance of employment than men whose knowledge is confined to forcing and stove and greenhouse cultivation, and who often do not know even the names of ordinary hardy plants or of the leading varieties of florists' flowers.

J. D.

NOTES ON RECENT NUMBERS.

Edgings for walks (p. 396).—One edging not mentioned is perhaps the easiest and most quickly effected of any, viz.: Some straight bits of Spruce or Larch, either tops of trees or young poles of little use for anything else, laid in a small trench in the ground and kept in position by one or two stakes driven in on each side. Though not so permanent as bricks or tiles, they will last good for some years, and are easily re-done at any time with very little trouble if the wood is to be had. They are very good for the sides of raised borders, or for kitchen garden walks round Asparagus or Seakale beds where there is not much traffic. As an edging to temporary paths they are much to be recommended, being so quickly removed at any time. With the bark left on the appearance is by no means bad, being neat and unobtrusive.

Drawing for gardeners (p. 401).—A prize offered for the best drawing or series of sketches from Nature by an under gardener would be by no means money badly spent. Many of those who enjoy the luxury of long ranges of hothouses never think much of the weary hours that have to be spent on cold winter evenings by the men in trying to keep themselves awake when it is their turn to look after the fires. They have the time—many must also have the capability—and only require to be started with a little encouragement and a few simple instructions such as those given by "F. W. B." in order to have an interest as well as aptitude for drawing aroused. The benefit would be twofold: they would obtain a profitable recreation, and they would gain a keener pleasure in and appreciation of their work. For such an attempt to improve themselves, even if it turn out a failure, they could never be sorry afterwards. Another point not always sufficiently noticed by young gardeners is the advantage of a good handwriting. Many to whom a really "well-formed hand" would never come can yet, by dint of practice, attain a very decent copper-plate style which would not do them discredit on a garden label. A gardener must work with his head as well as his hands; the "horticultural housemaid" condemned recently in the pages of THE GARDEN will do but little in the higher branches of the profession. Do one-half of the so-called gardeners realise this?

Remedies against rabbits (p. 409).—As simple and inexpensive a one as any of those mentioned, especially in the case of newly-planted trees, is a little petroleum brushed on the stem; it has the advantage of being readily obtainable, and at the same time "does not injure the appearance of the landscape." The faggot-stack dodge may be effective when the rabbits are not wanted at all, so is a ferret or a gun (if handled by a "good shot"), but when it is desirable to preserve the rabbits as well as the trees or plantations, the best plan is to give the former something to eat, which they will like better. Rabbits prefer a good many things to tough bark, and will generally eat any other food they can get first, except in the case of newly-planted things, for which a few dried pieces of Brake Fern, Sedge, or Brambles just twisted around the stems is after all, perhaps, the easiest and best prescription.

The Pines of North America and their timber (p. 409).—This list is most interesting and useful in its details, but what we want most is descriptions of the timber of these same trees grown in Great Britain. In most cases all the newer introductions have been planted as "specimens;" if they have done well, no one likes to cut

them down; if some have not flourished and been cut for that reason, then we have no test of their value. Many, I am sure, plant them for ornament only, not for profit, merely because they do not feel sufficiently assured of their merits as timber trees in England or Scotland. If your correspondents would give their experiences of the wood of any home-grown trees other than those usually felled they would be most valuable. The same sort will vary so much in different soils and different climates, that till thoroughly tested for timber one cannot feel very certain of it.

Sussex.

C. R. S. D.

RAFTS AND BASKETS FOR ORCHIDS.

Now that Orchids are becoming and even are already an important class of garden plants, any facts that throw light on their culture, and above all that tend to dispel the mystery that still hangs around them in the public mind generally, are sure to be welcome. In all the cultural directions that appear in THE GARDEN I am surprised that so little has been said about the importance of wooden rafts and baskets as an aid to successful Orchid culture. I am convinced that were these more generally used we should not so often see such ill-conditioned plants as we now do. It is difficult to impress upon amateur Orchid growers that fully one-third or even more of cultivated Orchids succeed better when grown in baskets or on rafts than in pots. Even when grown in pots the plants should not be placed in such a heavy mass of soil as is usually the case, with the exception of such strong rooting kinds as *Cymbidium*, *Cypripedium*, *Phajus*, *Calanthe*, and other terrestrial kinds. Generally speaking, it is safer for the beginner to grow all epiphytic kinds, such as *Cattleya*, *Lælia*, *Phalænopsis*, a large number of *Oncidiums* and many other genera, solely in baskets or on rafts, for by so doing the danger of over-watering—one of the commonest sources of mismanagement—is avoided. Basket and raft Orchid culture is spreading rapidly, and in the finest collections, where special Orchid growers are kept, their use is becoming more and more general, since it has been proved that better results can be obtained than by the pot system. Formerly the chief drawback to basket culture was the unsuitability of the baskets, or rather of the wood of which they were made, which was so ill adapted for the purpose, that more harm than good accrued from their use. No sooner had the plant—a *Cattleya*—become firmly established and its roots had taken a firm hold of the wood, than it began to rot, thus impairing the health of the roots as well as necessitating a re-basketing. Now that a durable and suitable wood has, however, been found in the shape of Teak, these disadvantages are in a great measure done away with. Experienced Orchid growers now speak in high terms of Teak baskets and rafts made of more durable material, and some of the finest specimen plants of all the epiphytic genera are grown in such baskets, generally suspended from the roof, so as to bring the plants near the light, a plan not easily carried out with pans or pots. One has only to go through such fine collections as those belonging to Sir Trevor Lawrence, Mr. Lee, or Mr. Peacock to see how largely Teak baskets and rafts are made use of. In the great trade collections, too, like those of Messrs. Low and Messrs. Sander, who import so largely, baskets, and especially rafts, are largely used. Thousands upon thousands of Teak rafts may be seen any day in these nurseries covered with imported plants of all descriptions—*Cattleyas*, *Dendrobis*, *Lælias*, *Odontoglossums*, *Oncidiums*—while baskets are employed on a similarly large scale. These facts prove beyond controversy that wood baskets and rafts are considered more conducive to the growth of some Orchids than pots. For establishing newly imported Orchids they are indispensable, and anyone may see at the Clapton Nursery how in a very short time the plants begin to push out new roots, the results of constant syringings, which cannot be done if the plants were potted. The chief impetus to basket and raft culture, it appears, was given by Mr. Bonny,

well known as a very successful grower of all kinds of Orchids, whose knowledge of their culture has been derived chiefly from his own observation and practice. When he began Orchid growing basket and raft culture was not much practised but he was so convinced of their value that he began to make baskets and rafts for his own plants, trying all kinds of material, till at last he found that no woods equalled Teak for durability, and none proved more suitable to the plants. His successful culture was soon evidenced by the exceptionally fine specimens that were grown by him, and a demand soon sprung up for Teak baskets and rafts. This demand has increased steadily, until now he has established, in conjunction with his Orchid nursery in Downs Park Road, Hackney, a factory solely for manufacturing Teak baskets and rafts, and the machinery employed for the purpose is most ingenious. From the factory one may go to his Orchid houses, and see for themselves the results of basket and raft culture. All kinds of epiphytal Orchids are thus grown, and finer plants of *Cattleyas*, *Laelias*, and similar Orchids than those growing in baskets could not be desired. A good many of the *Oncidium*s also thrive admirably on rafts, particularly such as *O. Marshallianum*, of which there are some marvellous specimens. *Cattleya citrina* is especially adapted for rafts, also both vertical and horizontal, and throughout the whole of the houses fine examples may be seen of basket and raft culture. The rafts are of various shapes, some vertical, others horizontal, the latter convenient for growing masses of such as *Odontoglossum Rossi*, which is specially adapted for raft-culture. Others, again, are boat-shaped, either with closed or open ends, and in these are grown a host of kinds which flower from the base of the plant, such, for instance, as the *Masdevallias* of the *Chimera* section. I was lately much interested to see how admirably this section was grown in these boat-shaped rafts in the Burford Lodge and Downside collections; *Sophranitis* also succeeds well in these. Enough has been said, I think, to show the desirability of baskets and rafts, and their advantages over pots are obvious to all who have seen the evil results of over-potting and over-watering, which is so common in amateur Orchid growing.

ORCHIDIST.

American Exhibition, London, 1886 (Botanical Department).—Among the attractions of the American exhibition to be held in London next year will be a garden comprised solely of American trees, shrubs, and hardy plants; in fact, it is intended that the whole of the exhibition grounds shall contain no plants except those of North America. The intention is to make a representative gathering of the United States flora, taken in latitudinal and longitudinal directions. The former will represent the characteristic vegetation of each State taken serially from New York to California, the latter from the Canadian frontier to Texas and Florida. The Orange and Citron groves of Florida and other Southern States, together with representations of their Cotton, Maize, and Tobacco fields, will be made. As the North American flora is of peculiar richness, such an exhibition will not only be novel, but attractive, for no country is so rich in beautiful hardy trees, shrubs, and herbaceous plants, and an idea of the resources of the North American flora will thus be presented to the visitor at a glance. From the opening day in May till the close of the exhibition in October it is hoped that the grounds will not only prove interesting and instructive to visitors, but attractive also on account of the peculiar nature of American plants to flower in continuous succession. With the ordinary American flowering shrubs, such as *Rhododendrons*, *Azaleas*, *Kalmias*, English people are well acquainted, but it is hoped that this exhibition will comprise large numbers of trees, shrubs, and plants which are comparatively little known in this country. The wealth of the herbaceous plant flora of the States will be a special feature, and it is intended to import direct from the States representative collections of wild trees and plants, particularly of the most attractive kinds.

NOTES OF THE WEEK.

Pulmonaria arvernensis is now beautifully in flower in the York Nurseries. The flowers are of such an intense blue, it reminds one more of *Lithospermum graminifolium* in the habit of plant and the way in which the flowers are arranged. There is also in the same nursery a very dwarf form of *Alyssum saxatile*, a "Tom Thumb," it is so dwarf.—R. POTTER.

Ranunculus rutæfolius.—This is an interesting and pretty Crowfoot of dwarf growth—in fact, quite an alpine. It has finely cut pale green leaves and small white flowers on stems a few inches high. Messrs. Paul send us specimens of it from the rock garden at Broxbourne, where it grows admirably.

Hybrid Candytuft.—Some excellent blooms of the new *Iberis gibraltarica hybrida* have reached us from Mr. W. B. Hartland, of Cork, who says that this sort has been in flower with him for the last six weeks. The flower-heads are nearly as large as those of *I. gibraltarica* itself, and are of the same delicate shades of lilac-purple. It is doubtless a first-rate plant, and being hardier than its parent, its value is increased.

Pulmonaria dahurica.—Compared with the great Lungworts of the herbaceous plant border, this is a mere pigmy. It is, however, quite a gem, the colour of the tiny flowers being of a rich turquoise-blue. The whole plant is under 6 inches high. Some flowers of it from Messrs. Paul, of Cheshunt, show that they thoroughly understand the secret of growing this delicate little plant successfully. We believe they grow it in a moist peat border.

Iris stylosa.—The first flowers of the season were open on November 3. This is May 3, and the latest flowers are yet unfaded. It has therefore been in bloom without interruption for six successive months, including the whole winter. I can think of no other plant of any time of year of which this can be said. In this case the flowering period was not prolonged by any device, such as late planting, our latest flowers being on plants that have been two years in position. We have it in groups in various parts of the garden, but nearly all on sheltered banks facing west in very poor, dry soil.—G. J., West Surrey.

Moggridge's Fritillary.—Among dwarf spring bulbs there is surely not a handsomer plant than *Fritillaria Moggridgei*, which, botanically, is considered to be a variety of *F. delphinensis*. It is, however, quite distinct from that species, the colour of the large drooping bells, a peculiar shade of yellow speckled and spotted, at once distinguishing it from all other Fritillaries. It is a most desirable bulb to grow, and being hardy and robust, is not a disappointing plant. Messrs. Backhouse, of York, who were the fortunate introducers of it, have sent us during the week some fine blooms of it.

Thalictrum anemonoides fl. pl.—This is a double-flowered form of the little Rue Anemone, pretty enough in its single state and scarcely less beautiful when doubled. The blossoms last in their double state much longer than the single; therefore an improvement as a border flower. In a cosy shady nook by itself this little wildling of the American woods looks prettiest; it is too tender and fragile to fight its way midst strong-growing perennials in the mixed border. Messrs. Paul send us flowers of this little novelty from their Broxbourne hardy flower nursery.

Tulipa Greigi.—I send you a bloom of this Tulip, which appears to vary from the common form in being brighter coloured (the colour of the plate in THE GARDEN is exactly like that of the ordinary form), in the petals having only as to three of them the clear dark spots, the other three petals having dull markings, rather than spots, and in the leaves being unspotted. I shall be glad to know whether you confirm my opinion that it is not the ordinary form.—W. H. TILLET.

* * * Certainly not the typical form of *T. Greigi*, and to us it appears very distinct, in the colour being brighter and in not having such a black centre.—ED.

Hardy flowering shrubs.—During the week many beautiful hardy shrubs have come into bloom, and these, added to the earlier kinds which still retain their flowers, render a richly stocked shrubbery attractive and interesting. Among a large number of specimens which Mr. J. Stevens has sent us from his garden at Byfleet are several fine Thorns, such as *Crataegus coccinea*, various Barberries, *B. empetrifolia* and *stenophylla* being particularly remarkable, and the Bird Cherry (*Cerasus Padus*), though common, is one of the most beautiful flowering trees of the month. There are also some fine Brooms (*Genistas* and *Cytisus*), the sulphur-coloured *G. praeox* with its long thong-like twigs covered with small blooms being specially noteworthy.

Arnebia echioides.—Those who have known this showy Borage-wort for some years are surprised to find now how hardy it is, and what a strong grower it has become, and how willingly it has taken its place among strong growing border plants. At one time it was coddled on rockeries and received every attention, and was considered one of the most difficult plants to propagate. Now it may be seen growing strongly in an ordinary border, and even in the stiff soil at the Hale Farm Nursery, Tottenham, it may be seen perfectly at home, flowering freely and growing as vigorously as a Lungwort. It is a great gain to know that such a beautiful plant is so suitable for our open borders, for its dense clusters of yellow and black spotted flowers render it exceedingly attractive. We have received during the week several specimens of it from various gardens, including those of Mr. Stevens at Byfleet, where the soil is light, and Messrs. Paul at Broxbourne from a stiff soil, so that it does not appear to be fastidious in that respect.

Daffodils.—During the week we have received many flowers of Daffodils, but they show evident signs of the approaching end of their flowering season. Mr. W. B. Hartland, of Cork, has sent us numerous sorts, including one with eight sepals to the flower, and which he has named octopetal. It is in the way of muticus or the clipped trunk Daffodil, and if a permanent variety it is distinct. Others sent are the last blooms of propinquus, Emperor, muticus, besides the double Jonquil, poeticus recurvus, and the distinct form called *Schizanthus orientalis*, which is like *Tazetta*, but has its shallow cup deeply cleft. Mr. Barr has sent us some forms of poeticus in threestager, showing a singular irregularity of flowering. Mr. Ware also sends a handful of blooms of poeticus from a bed of imported bulbs. There is a wide variation in these, some being even larger than what is known as the grandiflorus variety, while others are unusually small. Mr. Ware also sends a gathering of the charming little *N. juncifolius* with tiny bright flowers of delightful fragrance.

Columnea Schiediana.—The popular belief with regard to this plant is that it is not of much ornament, except when grown into larger specimens than can be afforded room in an ordinary garden. This is, however, a mistake, as quite young plants less than a foot in height, if obtained from autumn-struck cuttings, will produce an abundance of flowers the following spring. This has been proved this year at Kew where in the T range may now be seen several pans, each containing about half-a-dozen young *Columneas*, every one of which bears at least six or eight flowers. The size and glowing colour of these flowers, their curious form, and the length of time they remain in perfection on the plants are such as should bring this plant into general favour. The fruit of this *Columnea* is also attractive, a white round berry as large as a marble and subtended by the large lobes of the persistent calyx being something unusual and even beautiful. Whether the Kew plants are of an exceptionally free flowering variety of this plant we cannot say, but there can be no doubt as to the excellence and usefulness in a garden sense of such little specimens as those grown at Kew. *C. Schiediana* is a tropical plant, which requires a rich soil, plenty of water and sunlight to grow and flower freely.

FLOWER GARDEN.

THE AMERICAN DICENTRAS.

This genus, which comprises about a dozen species, is chiefly confined to America; with us all the species are more or less hardy, and their foliage being graceful and almost unique, they have a fine appearance in borders and on rockeries. *D. formosa* eximia and the Chinese *D. spectabilis* might easily be naturalised on the margins of our woodland walks, perfect drainage being really the only essential towards their thorough establishment; thus used, they would fill up a gap between the Daffodils and Bluebells.

D. CANADENSIS (Squirrel Corn), though by ot means common as yet in gardens, lacks none the grace and beauty so characteristic of the allied species. It was at first believed to be only a form of *D. eximia*, which it resembles, but it is abundantly distinct, both in the colour of its flowers and in the formation of its rootstock; the scales, taking the form of grain, look not unlike yellow Indian Corn. It is a valuable addition to the bog bed, where it succeeds well, provided it has a good rich soil and moisture during the growing season. The situation, though not exposed, should not be too shady, as this tends to the growth of leaves instead of flowers. The leaves, which are finely cut, are quite Fern-like. The flowers, which are borne raceme fashion, are nearly heart-shaped and have very short spurs; in colour they are white or greenish white tinted with rose, and have a strong Hyacinth fragrance. They are produced in April and May. It is found in woods from Maine to Kentucky.

D. CHRYSANTHA, figured in the "Flore des Serres," viii., 1931, under the name of *Capnorchis chrysantha*, is an extremely handsome plant—indeed one of the most remarkable introductions of recent years in the way of herbaceous plants. Unfortunately, it gets disabled and even entirely destroyed in severe winters in the more northern parts of the kingdom. In the south, although it winters well in the open generally, it is all the better for the protection afforded by evergreen bushes, where, dotted about at intervals, it forms a striking feature; its large pyramidal spikes, rising up Golden Rod-like, have a unique effect. It requires a light rich soil, well drained, and the crowns should be well under the surface; a few large stones on each side of it greatly assist in giving the roots the desired warmth in spring. Where it does well it generally attains such dimensions that other plants get over-crowded by it. Plants of it raised from seed flower the second year; they may be kept through the first winter in pots, or when ready to handle they may be planted out where they are to bloom. Give it a slight protection during severe weather, and transplanting, except from pots if it can be avoided, had better not be attempted, as the result is oftener than otherwise a failure. It grows from 2 feet to 4 feet and even 6 feet high; the leaves are doubly pinnated, and the larger ones are over a foot long; they are pale or glaucous green and very pretty. The flowers, which are bright golden yellow, are about an inch long, and have beautifully curved or cordate bases. It commences to flower about the end of July, and continues into September. It is found on hills from Lake Co to San Diego, in California.

D. CUCULLARIA (Dutchman's Breeches, or

Hooded Famitory), of which an illustration is here given, although oftener classed amongst curious and interesting plants rather than amongst those that are useful, is not to be despised when well grown as a rockery subject. Our experience with this plant has been varied; a half-shady nook in pure peat seems to be the

clump in the mixed border, and, although liable to spread beyond bounds, a few pieces of slate will keep it in its place. It has a tendency, especially on the rockery, to run to the stones, leaving a blank in the centre of the clump; this is, however, easily remedied by transplanting from the sides, which may be done in autumn without

injury to the plant. The finely-cut divisions of the leaves are broadly oblong in outline, and glaucous if grown in full sun. The flowers, which are borne in clusters on compound racemes, are oblong in shape, with the crest of the inner petals slightly exserted; they are borne on stalks about a foot high. They are bright or deep rosy pink, and last from May until August. It is a native of the Alleghanies of Virginia.

D. FORMOSA.—This plant is nearly related to the above, perhaps too near to bear a distinct specific name; the chief difference lies in its being dwarfer, and in having lighter coloured flowers, and in its having a two instead of a four-angled stigma, as in *eximia*. *D. formosa* is easily managed, and may be grown with advantage in sheltered spots on the rockery. It makes a fine pot plant for edging stages, &c. It is a native of Sierra Nevada, where it is found at elevations of 3000 feet. It flowers from May to July, the flowers appearing rather later than the leaves.

D. PAUCIFLORA.—This is a very slender species, not yet introduced. Its leaves are biternate and have very narrow segments. The flowers are pure white, tinged with rose at the tips.

D. UNIFLORA is a salmon-coloured species. Both are natives of California. K.

Tulipa maleolens.

—I am under the impression that this Tulip is not much known, the more so because a few years ago when the late Mr. Harpur Crewe sent me a bulb of it, he at the same time expressed a hope that, though it had failed to bloom in his garden, it might succeed in mine. This year it has done so, and, on comparing my flower with the figure given in the *Botanical Register*, vol. xxv., pl. 66, I find they agree perfectly. Tulipa

oculus-solis is now generally known, and maleolens is like it, though differing to some extent in colour, in the crinkling of its foliage and in flowering a week or two later; nevertheless, the general habit and the very peculiar markings inside the cup proclaim them to be varieties of the same plant.—T. H. ARCHER-HIND, *South Devon*.

Mertensia virginica (p. 393).—This is a charming plant in spring and it forces well. We flower some of it every year in pots. One specimen had hundreds of its pale blue flowers open at one time, and, contrasted with the pink buds, they have a grand effect. Such plants arranged amongst ordinary greenhouse subjects have quite a novel appearance. We grow many hardy herbaceous and alpine plants in pots, and they are always greatly admired.—J. DOUGLAS.



Dutchman's Breeches (*Dicentra Cucullaria*).

situation in which it feels most at home. It will be rarely found to do well in the open border without some protection; its slender leaves are invariably cut and destroyed by cold east winds early in spring. The scapes rise from a sort of granulated bulb, and bear from four to a dozen curiously hooded flowers, white and invariably tipped with cream or pale yellow; the leaves, which have a glaucous green hue, are very delicate and pretty in outline. It flowers in April and May, and is a native of North America.

D. EXIMIA.—This is a very ornamental plant, suitable for a small rockery, where its graceful, Fern-like foliage never fails to attract attention even without its handsome flowers. It will grow in almost any position, and in ordinary garden soil as well as in a peat bog. It makes a pretty

NOTES ON HARDY PLANTS.

NARCISSI.—The more delicate kinds, such as *cernuus*, *moschatus*, and some others, dwindle away in most gardens when planted in ordinary soil, but I have found them all to improve under conditions which I may almost describe as exceptional, but which, for all that, may serve to furnish a useful hint. In a broad disused walk, formed to a considerable depth with big stones and rubble, we planted a few shrubs by taking out so much material as would allow us to put in two or three wheelbarrowfuls of sandy loam. Conifers were used, and as the situation is sunny, it may be further described as extremely dry for the roots. In this soil, round the boles of the shrubs, a few things, deemed suitable for such places or such as it seemed desirable to experiment with, were set, and among others a few *Narcissi* which had never done any good in stiffer soil and colder quarters, and the results have been as stated. By the way, the

ALPINE PLANT-PROTECTORS, figured in *THE GARDEN* (p. 341), are capital contrivances for sheltering such *Narcissi* as dislike too much wet, for under one or two which have not been removed for a whole year some sickly bulbs have quite revived. Simple, however, as the shelter is, the sketch is wrong in two important points; as shown, the glass is liable to slip down at the low right-hand corner; the two bent sockets should both be at the low corners. As the two wires of the drawing are shown, however, that could not be, because when so fixed the sockets could not face each other, as they should do. The fact is, they require to be made in pairs, "rights and lefts"; then the glass is held firmly at both low corners, and without straining the fixed wires (when the prongs have gone into the earth, so as to give them the correct pitch), the glass can be readily slid into position. I do not see how (as sketched) without making the driven wires shaky the glass is to be put in. Fixed and made, as I point out, the glass is both readily slipped into and held in position. Mr. Ewbank's experience with such shelters quite corresponds with my own. Many, I daresay, will be glad to know that delicate *Carnations* are quite safe under them through the winter, and when we remember how much better the results are from plants two and three years old than one year, provided they can be kept healthy, and when we also recollect how all *Carnations* suffer by being lifted at any stage beyond the layer or rooted-cutting period, the value of such shelters will be all the more appreciated. I can also verify the utility of glass laid closely over the dormant crowns of herbaceous plants; little bits a few inches square have been put over them, with a couple of *Verbena* pins over the cross corners to hold them in position. The rare *Pulmonaria dahurica* and some *Phyteumas* get through our winters capably with the help of these simple contrivances.

DOUBLE BLUE HEPATICA.—There is no reason why the plant mentioned in *THE GARDEN* (p. 333) may not be different from the common form, but I more than suspect from what is said of it, that it is merely the old kind in an unmolested and healthy state, a condition, by the way, in which it is rarely seen. Every year I observe differences in size, form, colour, and degree of doubleness in a batch of plants all of the same stock, but in various stages of vigour. In no plant that I know is quality of bloom more affected by meddlesome culture than in the double blue *Hepatica*, and, I think, in deciding a question of the identity of a plant bearing double flowers which are, as a rule, more variable than single ones, a comparison should not be made between small specimens obtained from a nursery and vigorous ones from cottage gardens, where presumably they have been left alone for many years; at any rate, this *Hepatica* should not be so judged. I note that Mr. Hooper's plant has been in his garden three years, but even in that time it would not get so thoroughly established as it might, so slow is this in that respect compared with other *Hepaticas*. All *Hepaticas* have in perfectly matured specimens a tough and almost woody rootstock

crowned by a greater or less number of offsets which have independent fibrous roots, and wherever that rootstock is wanting the flowers are proportionally inferior. I mention this because it is the case with all the *Hepaticas*, and it stands to reason that small plants of such slow growers cannot for some years, even if they meet with proper treatment, regain their normal strength. Then, again, the stock which is constantly being checked by division must suffer in the quality of its flowers, and it is no unusual thing to see autumn divided roots powerless to push forth buds formed in the crowns, and for several years afterwards the flowers are diminutive. I should much like to see or try a plant of the kind described by Mr. Hooper, and if he will kindly send one, or cause one to be sent, I will be glad in return to allow a selection of a few roots to be made from the seven varieties which I grow. Whilst on *Hepaticas*, a few words to supplement those of "J. C. C." (p. 340) may be allowed. With him, I think position of importance; in my experience it is much more so than the nature of the soil. In stiff loam, in light black mould, in very sandy loam, in almost pure sand, and sticky loam and coal ashes half-and-half I am growing them now, but in all cases the positions are somewhat shaded, and the surface such that moisture can be gathered and held. I never remember to have seen a *Hepatica* killed that was properly set; they will not endure their roots being doubled in the least. If these are put straight down, the most important business of *Hepatica* culture has been carried out. "J. C. C.'s" statement that *Hepaticas* are not deep rooting is not, to my thinking, correct; for so dwarf a plant I think stringy roots from 8 inches to 10 inches long, as they are on old plants, may be termed long roots, and it is mainly on dealing with these in a natural way when transplanting that success depends.

CYPRIPEDIUM CALCEOLUS.—It is satisfactory to again be able to report the appearance of healthy sprout-buds in the case of this *Lady's Slipper*. Speaking without making reference to memoranda, the plants will be about five years old. This season there is some increase and the best prospect of the usual bloom. A more recent planting, in almost pure sand in the walk gutter, is doing equally well, but to judge best whether *Lady's Slippers* are happy or not—i.e., fairly established—the two points, age and increase, are most decisive. If one may give an opinion, I believe that this desirable *Orchid* will prove more manageable and make much quicker progress in sand than in anything else. One or two conditions besides the sand must, however, be secured, and these may be briefly stated as follows: Behind, but not under, a dwarf shrub on the north side make a hole a foot deep to hold four or six shovelfuls of clean close-grained sand in which may have been mixed just a dash of peat-dust or leaf-mould; a spot should be found where surface water can run into this loose material and so keep it moist; in my case I selected a walk gutter. Place strong plants in this (it is not too late even yet to do so), and the clean material, moisture and shade will combine to cause healthy growth without further trouble.

PEONIA CORALLINA, whose name naturally forces one's thoughts to the other end of its season, is worthy of notice in spring. Like *P. anemoneflora*, it has a peculiar form in the sprout state, but more pronounced in *corallina* than in the other, and it is also a much stronger plant. As soon as the shoots have grown a little they assume the shape of a tall and big Mushroom with the top closed on the stalk; the colour is a greyish purple, and though later glabrous, at this stage the plant is very downy, all the upper leaf surfaces being turned in. It is strange that this plant is not largely grown; the flowers are a superb crimson. It is probably the most striking plant in the British flora. Next come the ornamental seed-pods; the follicles are large and downy, not unlike horn-shaped rolls of wash-leather. When they split they expose a beautiful setting of large crimson seeds in a bright yellow bed for weeks the seeds are thus held, and

attractive as the plant is in its flowering state, it is perhaps more so when tipped by its grey carpels.

HARPALIMUM RIGIDUM.—If "L. L. B." (p. 342) will refer to p. 32, January 10, he will there find a part of some discussion which exactly meets the point which he raises. The old plant always sends out a radiating set of young ones by means of what may be termed underground stolons or stems, which, like the parent plant, die, leaving the knobby ends to make fresh roots for themselves, which they do to a considerable depth. If the positions taken up by this itinerant plant are not liked by "L. L. B.," he may change them yet; and if the roots are not hurt, they will flower in their new places late in summer. I would not, however, lift all; on the contrary, I would leave one or two of the better placed ones; the advantage will probably be that the transplanted set will come into flower a little later than the others, and so prolong the flowering of what may be justly called the handsomest of the *Sunflowers*.

PRIMULA SCOTICA.—Before this charming little *Primrose* was cultivated here I remember an occasional correspondent of *THE GARDEN* saying to me, "You will have no difficulty in growing and flowering it well, but you may have in getting fresh seed to start with." These words have all come true. After a little time I had plants sent me from which I took plenty of seed, and last summer I had quite a little crop, so that after sending some to two seedsmen who seemed glad of it, I sowed a quantity about a month ago, and every seed seems to have grown. The pith of this note then is that by means of fresh seed, this desirable *Primula* can be raised readily in quantity. I have just a pinch or two left, and should any reader of *THE GARDEN* wish a few seeds and will send a stamped addressed envelope, I will post them so far as they go.

PRIMULA SPECTABILIS AND WULFENIANA.—Both are beautiful, especially *spectabilis*; being forms of the same species, both have leathery, dark, evergreen foliage; the flowers of both are large, crimson-purple, with an indistinct white eye, and borne in spare umbels on very short scapes. Of the two, *P. spectabilis* has the brighter flowers, longer scapes, narrower leaves, and flatter habit. They are at all times of the year decorative, and belong to the easier grown alpine species. Their effect in winter as evergreen subjects resembles that of tufts of *Gentianella*, and they are pretty nearly as vigorous; at any rate, one may say they increase annually fivefold. The allied species, *Clusiana* or *calycina*, is very different with me; it makes steady progress and that is all. Next in order, according to Nyman, is

P. INTEGRIFOLIA. I believe that my plants are true, having all the specific features, and if they are, this must be a very variable species. When in flower it is exquisite. "I could have taken your plants for *Pinguiculas*," said an enthusiastic cultivator the other day. Certainly the leaves are darker in colour and more upstanding, but the slender scapes and rosy purple flowers, mostly in pairs and drooping, may be compared to the *Butterworts*. One plant has a mahogany-coloured scape and darker flowers than the rest. I find it to do in full sun and somewhat dry soil.

ONOSMA TAURICUM.—It may have been observed that about this period this *Horagewort* often seems to die; the leaves which remained green all winter disappear, and nothing but a blackened stump remains; all that can be done is to clear the crowns from refuse, so that rot may be prevented, and wait. If from the old hairy and persistent foliage decay has not already set in, bright green dots will soon appear all over the blackened knob, and once growth starts it makes rapid headway; roots should not be pulled up too hastily.

DENTARIA DIGITATA is a quaint, but pleasing plant of which a good deal may be made; its flowers are bright rosy purple, and, standing as it does between a clump of *Scilla sibirica* and *Sauginarianacandensis*, it affords a pretty contrast. One can scarcely say that there is anything either showy or beautiful about it in the sense in which

flowers are usually so termed, yet everybody admires it. It is worth growing if for no other purpose than to amuse oneself by taking up some roots twice or thrice in a year and noting their curious shape and process of formation.

PRIMULA OBSCURICA.—Is it hardy? is an important question anent this Primrose, which has been so highly praised, yet none too much. Its almost continuous blooming habit and delicate flowers are its strong points. I have not tested it out-of-doors, but I have just been informed that a healthy looking specimen of it has stood on a somewhat exposed part on rockwork during the past winter, and is now making fine shoots. The locality is but a few miles from here, and our Yorkshire climate is a fairly average one for trying the hardiness of plants. From another source I hear that great hopes are entertained that improved varieties of it will soon be raised, but even in its present form it would prove a distinct and pleasing type for the open garden if quite hardy.

PEONIES.—There is a failing belonging to these during the time when they are making their long shoots and just before the leaves begin to expand. When nearly a foot high a number of growths turn sickly, and in a few days are prostrate and withered. This has occurred with me for many years, but only on one border entirely devoted to the finer hybrids and Daffodils. For a time frosts were blamed, but, as I now believe, wrongly, because in the first place they are not so very tender as all that, but quite the opposite; then in the younger state, when more severe frosts are usually encountered, no signs of injury are to be seen. Further, even when the shoots begin to droop there is on them no trace of frost-bite. The evil is lower down, just under the surface; rot has set in in the succulent stems in every instance. What is the cause of this? and why is this border's occupants alone attacked in this manner? The effort to account for this has to my mind satisfactorily answered the former question. We annually top-dress this bed heavily with stable litter, and these mulchings, together with the fact that such undecayed material holds a deal of moisture, have caused the crowns to be too far below the surface, the damp material immediately over them rotting many of the young shoots. I have further, and perhaps more conclusive, reasons for stating depth of the crowns and dampness of the surface material to be the cause of failure. All the Peonies are not of the same depth; some, in fact, are not too deep, and on these not a shoot dies. This gives rise to another query. Why in an old border, where all have been treated alike, are some up and some down? This could readily explain itself were the roots lifted; not that I have lifted these identical stools, but I have observed the kinds and the difference of their root habit. Whilst some kinds will adapt themselves to an elevated surface by forming new crowns higher on a new and lengthened stock, others never rise from the original set of fasciculated tubers. This surely explains the variation in depth; and what should, perhaps, have been stated at first, all Peonies enjoy being near the surface with their crowns. As this dying off of shoots is often met with, and assuming the above to be all or in part the cause, we should take care with hybrid kinds to plant near the surface and not cover them too deeply, taking off a quantity of manure corresponding to that freshly added, and which, doubtless, is otherwise of great benefit.

SHALLOW BULB-PLANTING has been tried with common Crocuses, and to many I have shown the contrast between bulbs so set and others put in more deeply. In both cases they were planted in January and from the same parcel. The corms were of first-class quality and size; those set 1½ inches deep flowered earlier by nearly a fortnight and more freely developed embryo flowers than the others; some bulbs were taken up and examined, and I venture to say that the thirty-two flowers, which had in several cases been counted from a single bulb, were in some degree caused by shallow setting, because there were also better root development and more advanced formation of the young corms than in the case of

those set deeper. It should also be added that the shallow ones lasted longer in bloom, presumably because the others did not have root power to push forth their store of buds.

TRITOMA PUMILA figures somewhat oddly at the present time. A small group is in full flower and almost perfect; this fact at once shows the very hardy character of this plant, its free-flowering habit, and the mildness of the past winter. Here this kind always holds plenty of uninjured green foliage throughout the year, but I have not before noticed such a number of untimely flowers at this season. I ought to say that the plants are part of a batch transplanted into rich ground late last spring.

PULMONARIAS.—Of the officinalis type of these some are scarcely worth a place, especially when one so well represents all the others, and when, as in the case of the variety azurea, nearly every feature is improved. This is decidedly and by far the best as regards flowers; they are earlier, larger, and brighter than those of the others. From the changeable character of the flowers they are wanting as regards decorative value as seen growing, but those who care to try the flowers plucked and made into "posies" will find that they produce a good effect. Unlike most other flowers, they look best when removed from their own foliage, which is white-spotted or splashed.

PODOPHYLLUM EMODI.—In its present stage of growth this has a most comical resemblance to a pigmy, hooded and cloaked in brown dappled leather. Every day for some time to come this little May Apple may be watched with interest. Soon the leaves will expand and show their divisions; then there will be the flower and the big fruit of a bright red colour. I do not think the cultivation of this plant is at all special beyond giving it a light soil. I have it in three different kinds, and in them all the plants are thriving. It is also growing in shade and full sun. The main thing is to begin with a strong plant, and put the long roots straight down without in the least doubling them up.

OROBUS VERNUS.—This is more than ordinarily free blooming this spring and the plants are dwarfier than ordinary, and in nothing is the superior flower-colour this spring verified more forcibly than in the Vetches. "What a splendid spring bedder that would make," said a gardener, "if it will move well;" and surely it will do this, for the plants then before us were divisions taken off last November, and at the height of 9 inches or 10 inches were blooming beautifully. This Orobos and the white variety flower for quite six weeks. Neither frost nor hot sunshine hurt them.

Woodville, Kirkstall.

J. WOOD.

NARCISSUS NAMES.

WE are left to infer from Mr. Baker's remarks in THE GARDEN (p. 387) that Mr. Barr is a sad offender against the resolution unanimously passed at the Daffodil conference of 1884. Mr. Baker allows us to retain Haworth's Latin names, or as many of them as have been sanctioned and adopted by certain Continental botanists. Now, confining ourselves to the "magni-coronati," or large-crowned section, we find that Haworth enumerates thirty-four varieties, or species, as he calls them. But in Mr. Barr's "History of the Narcissus," published at the end of last year, which is supposed to embody a year's labour of the nomenclature committee, we find no fewer than fifty-six Latin names in the same section of large-crowned Daffodils. This seems hardly consistent with the "unanimous resolution" upon which the nomenclature committee received its instructions. But why retain Haworth's names at all? Mr. Baker at the beginning of his, now classical, "Review of the Genus Narcissus" speaks of Mr. Haworth's work in terms not very flattering. He says, "not only have a large proportion of his (Haworth's) plants never been identified in a wild state, but a considerable number of them he had never seen himself, but had taken up from the rude woodcuts of the pre-Linnean herbalists." Dean Herbert, who, until Mr. Baker wrote his review, &c.,

was the best authority on Daffodils, speaks with equal disapprobation of Haworth's work. He truly predicts that "though the names will be retained, they must be attached to generic characters very different from those given by Mr. Haworth" ("Amaryllidaceæ," p. 293). This prediction seems to have been fulfilled to the letter, for there is no consensus amongst either botanists or gardeners as to the variety of Narcissus intended to be denoted by a large proportion of Haworth's names, and if, for instance, by the name propinquus or tortuosus, Mr. Barr understands one variety, Roemer another, and Kunth a third, the retention of these names rather increases than lessens the confusion. If by some concerted action it could be settled what old Latin names are to be retained, and none retained concerning which there is any doubt to what varieties they belong, it would be an important step towards uniformity of nomenclature. C. WOLLEY DOD.

Edge Hall.

NOTES ON HARDY PRIMROSES.

THERE is very little doubt that in a state of nature the common Primrose is not a true perennial. The seedlings come up in the autumn or spring and flower sparingly the year following; the second season they flower well; the third year they produce more flowers, but not, as a rule, so large individual blossoms; after that they begin to deteriorate. The woods here are full of them, both on chalk and clay, but very few plants seem to be more than three years old. The only way to make Primroses perennial is by annual top-dressing, with an inch or so of rotten leaf-mould in autumn. The leaves fall in summer, and rot on the ground, and when the autumn rains come, new roots push from amongst the remains of the old leaves. If rich fresh compost is provided for these to push into, the plants keep their vigour, but if that is not provided, these new roots come to nothing; the old roots remain, and leaf-buds spring from among the new roots, causing the plants to break up into a number of small weak crowns; a fleshy root-stock is formed, and the plants gradually die out. Primroses are easily kept up by division. The time to divide must be ruled by the weather; just when the new roots begin to push from among the remains of the old leaves is the best time, and it is sure to take place in any spell of cool moist weather after mid-summer. A moist autumn suits the Primrose. Last spring the Primroses on the chalk here were at least a fortnight before those on the clay. This year, after an extremely dry winter, those on the clay are a week before the others. Black moory soil is generally credited with making common Primroses sport in colour; they turn a rusty purple here occasionally in the thick coppices on the clay.

Why is the common Oxlip not more frequently seen in gardens? It is a very handsome Primula, and holds on very well from year to year in slightly shaded borders with very little attention, forming in time large clumps with many crowns. In borders of pure London clay here it grows luxuriantly with no attention but a loosening of the soil about it late in spring and a top-dressing of leaves in autumn. J. D.

Salisbury.

Crown Imperials (p. 393).—"Salmoniceps" notes are always worth reading, and I entirely agree with his directions for managing this grand flower, but I must add that they will not ensure success, for it is a curiously capricious flower. I treat my plants exactly as "Salmoniceps" does, but it is a failure here and always has been, yet in a neighbour's garden not 200 yards away it is always most luxuriant.—HENRY N. ELLA-COMBE.

Iris lacustris (p. 387).—This is said to be "a little-known plant, and not easy to grow and flower well." In spite of its small size it is a great beauty, but the failure to grow it well arises, I think, from cultivators being led away by the name lacustris. Though so named, it is not a

water plant. Here it grows and flowers well. It is in a dry sunny spot at the edge of the border, but it has forced itself into the gravel path, and there it seems to revel.—H. N. ELLACOMBE.

CHRISTMAS ROSES.

THESE have made such unwonted growth here this spring, as to have excited the query more than once whether or not they are *Pæonies*. Specially fine, indeed I may say striking, is the leafage on *Helleborus colchicus*, the finest, perhaps, of all the copper colour-flowered section, and a very interesting and pleasing variety too. I am wondering whether the comparatively dry winter we have had has been instrumental in promoting this fine leafage, for last season it was poor, and during the winter many of the plants had hardly a leaf to show or cover the nakedness of their crowns; indeed, I began to fear that not a few plants were going to die. The present growth shows how needless were my fears. The position in which the plants are growing is, for the summer, rather hot and the soil always dry and porous, and, I may say, rather poor also. But I may be overlooking the fact that the plants have had but two seasons' quiet in the ground, as they had previously been lifted and placed in a house to ensure good, clean flowers. I shall have to serve them again in the same way next winter, and then divide the crowns, as they will be then huge clumps, and I suppose two or three years more will be needed to enable them to once more become full of foliage. No doubt it is an admirable arrangement to plant Christmas Roses on blocks, so that they may be covered with a frame or large plant-protector to ensure good flowers rather than to lift the plants into houses. Still, division and increase become needful at times, and when that is imperative, some big stools may well be put into a greenhouse to give their Christmas blooms, not only that these blooms may be clean and perfect, but also to add some charm and beauty to a greenhouse at a dull season of the year. I put my plants into a soil-bed thickly; hence the trouble involved is trifling. Such is not always the case, and if large pots are not available, some small tubs may well be used for the plants; indeed, on one occasion Mr. Barron showed at South Kensington a fine lot of stools that had been lifted and put into round baskets, the sides of which were lined with Moss just to keep in moisture. A big stock of Christmas Roses should be a feature in all good gardens—a stock large enough to enable division and increase to proceed periodically without interfering with the ordinary supply of bloom. A. D.

Ramondia pyrenaica.—This does not succeed with us in the open garden, but just now we have it beautifully in flower under glass. I have just counted forty-five open flowers on it, large in size and faultless in colour. It is potted in turfy loam with the addition of a third part of sandy peat. In the open ground the leaves seem to gradually wither up, and the plants ultimately disappear.—J. DOUGLAS.

Fritillaria bucharica.—This, lately figured in the *Gartenflora*, is a native of Bokhara, where it was found at an altitude of from 4000 feet to 6000 feet. It bloomed last May in the Botanic Garden of St. Petersburg. The flowers are whitish, with a green or violet centre. The flower-stems, which grow about 6 inches in height, are furnished in the upper portion with numerous leafy bracts, from the axils of which the individual blooms issue, forming a terminal leafy bunch of flowers.—J. C., *Byfleet*.

Wild Violets.—At the foot of a greenhouse wall and amongst stones half buried in the soil colonies of wild Violets have established themselves. Every year a crowd of seedlings come up to replace those which die away, and every spring they form a sheet of blue. I really believe that I never saw such a pleasing effect produced by means of any of the cultivated kinds, and it seems to me that it would be worth while to take more account of the wild form of this fragrant flower than we do in positions where the named

varieties could scarcely live. Its blooms are produced in such profusion, that where the soil is poor and the position sunny they almost hide the foliage, and if the old plants get burnt up others spring up in their place.—J. C. B.

Tulipa Borsczowi.—An illustration of this is given in the December number of the *Gartenflora*. It is a native of Persia and Western Turkestan, and is also found in Bokhara. In 1883 a few bulbs of it were sent to the St. Petersburg Botanic Garden, where it bloomed in May last. It is described as being a fine showy species, the flowers being large, of a fine red, with a large black spot on the inside of each petal and sepal. The leaves are bluish green and much undulated at the edges.—J. C. B.

Androsace sarmentosa.—We can grow this well out-of-doors in summer, but either the damp or frost destroys it during winter. As a pot plant it is really charming. The small rosettes which form plants for the succeeding year's bloom dangle over the sides of the pots, and can easily be pegged down to smaller pots, where they form roots in the same manner as Strawberry runners. *A. lanuginosa* succeeds fairly well out-of-doors, and when in bloom is very pretty on rockwork.—J. DOUGLAS.

Aubrietias for edgings.—In the very pretty old-fashioned mixed gardens attached to the Manor House at Wells, *A. deltoidea* is used for this purpose with singularly charming effect; the narrow borders round the base of the walls are mostly devoted to flowers; they are considerably higher than the walks, and are faced with a long established, irregular broad sloping band of *Aubrietias*. These make a pretty edging at all seasons, but now, when in full bloom, the effect is lovely. Drought does not injure *Aubrietias*, and once planted they incur no further trouble whatever for many years.—A. M.

Comte Brazza's Violet.—Since I sent you my notes on Violets I have had strong proof that Comte Brazza's and Swanley White Violets are not identical. A local nurseryman has a good stock of Comte Brazza, and the specimens submitted to me are surprisingly vigorous, each producing abundance of strong runners. Had I known, I should have got my plants from Norfolk, but the mistake is remedied, and I hope next winter to have blooms in abundance to equal those of Marie Louise. It seems to me that Swanley White has rather the advantage in point of purity of colour, but the blooms do not equal in size or formation those produced on the much more vigorous Comte Brazza.—W. I. M.

Alpine Primulas.—The following Primulas, chiefly from M. Gusmus's collection, are at present in cultivation in our nursery:—

<i>Primula acaulis</i> double white double yellow double lilac double crimson Allioni Auricula marginata arctotis Balsini bellunensis biflora calycina commutata Candolleana Churchilli capitata cashmeriana carpatia carniolica ciliata Clusiana cortusoides decora Dinyana discolor Dumortieri denticulata erosa Facchini farinosa f. alba	<i>Primula Freyeri</i> Florkiana florabunda Gœbbli glutinosus glaucescens graveolens grandis Huteri intergrifolia intermedia i. purpurea incisa inflata involuta (Munroi) japonica Kitaibeliana latifolia longiflora luteola macrocalyx marginata minima n. var. mislassinica magellanica multiceps mollis Moretiana nivalis oneusis	<i>Primula Obrieti</i> oratenis Porte pedemontana poculiformis p. obconica pumila pulchella purpurea Palmuri pubescens rosea spectabilis s. superba sikkimensis salisburgensis species nova Salsi sinuata scotica Sieboldi S. Ilacina S. Magenta S. M. Queen S. alba tirolensis verticillata villosa viscosa venusta Venzol Wulfeniana
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—A. STANSFIELD.

Chionodoxa Lucillæ.—This is so distinct as to render comparison between it and the Siberian Squill misplaced; the former is of a

shade of blue unique amongst hardy bulbs, the clear white eye adding greatly to its charms; the latter is also unique in colour. To say that one is more beautiful than the other is the same as saying that a pale blue Hyacinth is not so handsome as one of a darker shade. A friend who has plenty of this Squill, when he saw the Snow Glory said, "I never saw anything so pretty," which seems to prove that it is the more striking plant of the two, and this is also my opinion. Both are exquisitely pretty, but the *Chionodoxa* is more likely to take the eye of the casual observer than the *Scilla*.—J. CORNHILL.

Planting Gladioli.—"Delta's" notes (p. 361) will, I am afraid, tend to mystify and discourage the growth of these most beautiful of all autumn flowers. Surely no one speaking from experience recommends planting so late as May, when all fear of spring frost is gone. I plant from February 10 until the 1st of April, and have not found spring frosts do any harm. I am now speaking of the most recently introduced hybrids of *gandavensis*. Given a warm sunny aspect, plenty of sand above and below the corm, highly manured soil, and perfect maturity of foliage, and success is assured.—W. J. M., *Clonmel*.

Two little Daffodil gems.—The Rush-leaved Daffodil (*N. juncifolius*) and its handsome variety *apodanthus*, though small, seem to lack none of that beauty and freshness so characteristic of these popular flowers. On a sheltered border in the rockery at Kew they have been in flower for the last fortnight. They are growing in pure peat, in which, by the way, they seem to thrive better than in any other soil, increasing surely, though slowly. *Apodanthus* is much the better of the two; it has pretty glaucous foliage and larger flowers than *juncifolius*; they are also deeper in colour and have more decidedly pointed segments: the corona is uniform, neat and sancer-shaped.—K.

Pinguicula vallisneriæfolia, the Spanish Butterwort, and the Irish species, *P. grandiflora*, are both in flower with us in pots or pans. They are bog plants, and we have not yet been able to find a suitable position for them out-of-doors. They are small, easily grown in pots, and are exceedingly interesting. It is impossible in ordinary gardens to find such positions for these little plants as those in which one finds the common Butterwort growing on the Welsh mountains. They grow freely in the spongy peat, which, although soaking wet, is in places bare of herbage, and there *P. vulgaris* finds a congenial rooting place. All the other species might luxuriate under the same conditions; failing these in gardens, we grow them in pots, using peat and a little Sphagnum.—J. D.

Alyssum saxatile.—There is here a big patch probably almost a rod in extent of this fine old hardy perennial, and just now when it is in full bloom it produces a mass of the purest golden yellow, which no other flower can just now excel. Even in yellows the contrast between a mass of the orange-yellow Wallflower near and this pale yellow Alyssum is most striking. The plants have been in the bed for several years, and even if not useful for the production of seed, for the strain is of the compactum form, would a thousand times repay for any trifling trouble by its wondrous beauty. Plants of this sort seen in small patches give no adequate idea of their glorious richness when blooming in a big mass. Around the margin the bloom wells out like lava from a volcano, only of course not in motion. It is a pity this Alyssum is such a very common plant; were it otherwise, it would then be regarded as one of the most charming of our spring blooming perennials.—A. D.

Aquilegia glandulosa.—Though I have had plants of this most beautiful of all the Columbines growing here for several seasons, I have not found them to thrive well, and they bloom very sparsely; still further, the plants gradually die away. Last autumn I lifted what few stools I could find and planted them in a soil bed in a cool house; the result is that they made good growth this spring and are blooming

with great vigour and beauty. No doubt it is a tender kind, and in many gardens needs unusual care, but, judging by my own results so far, I should say that for ordinary greenhouse decoration at this time of the year a more lovely plant could not be found. Plants lifted from the open ground in the autumn and potted up would in the spring amply repay what small modicum of labour had been thus expended on them. I have a little red-flowered kind named, I think, *Aquilegia arctica*, which grows some 8 inches or 9 inches in height, and is the earliest of all to flower in the open. It is of more interest than beauty, and, beyond glandulosa, we can find few kinds that excel in robustness and usefulness chrysanthi and its allied forms.—A. D.

The Primula conference.—The prospect of a conference affords an opportunity for comparing notes on the varieties of Primrose and their cultivation. I find that every year adds one or two to the number of those with which I succeed, but though Mr. Oliver's list on p. 405 contains the names of very few species which I have not at some time possessed, I find that with alpine Primroses, and especially Himalayan, failure is the rule and success the exception, as every Primrose seems to require a different treatment from others. I will name a few: *P. amoena* is a Caucasian species, figured in Wooster's "Alpine Plants," which seems entirely lost to English cultivation. Herr Max Leichtlin kindly gave me a root two years ago, but it died out at once without flowering. *P. minima* is a plant which no treatment I can think of will make flower, though I have had plenty of roots for several years. The same may be said of *P. purpurea* of Royle, except that it generally dies the second year from seed without flowering. The seed, which I have had direct from the Himalayas, comes up well, but I have never yet had a flower. I believe the late Mr. Joad and the gardeners at Kew have had the same experience with it. The prettiest Primrose I have at present in flower on a rock-heap has a little umbel of bright flowers of clear golden yellow, about 2 inches high, and very sturdy. It came from the Dolomite country, and is not yet common in collections. As for hybrids, I find them far too readily formed, for I have never yet seen a hybrid Primrose better than its parents. I cannot even depend upon the seed of my *P. rosea*, which forms crosses so readily from the wind-borne or insect-borne pollen of *P. denticulata*; that what ought to be brilliant rose comes out a sort of dirty magenta—just what one might expect from a mixture of the colours of the two flowers.—C. WOLLEY DOD, *Edge Hall, Malpas*.

Bedding Calceolarias.—These are not now so much used in flower gardens as I can remember them to have been. This is probably owing to so many of them dying off at a time when they ought to have been in the height of their beauty. This is, I think, however, more the fault of the cultivator than that of the Calceolaria. Many flowerbeds and borders now consist so much of sand and leaf soil to suit half tender subjects, that when a plant like the Calceolaria which delights in a cool soil comes to be put in them it cannot stand the drying up at the roots to which the light soil subjects it, and this is the reason why so many Calceolarias perish during the hot weather in July and August. If planted in a cool, rather heavy, moderately rich soil, it might still be one of the most showy subjects to be seen in any flower

garden. I do not approve of Calceolarias being planted everywhere [and in undue quantity, but a bed or two of them will always be admired, especially if the plants possess abundance of healthy foliage and masses of bloom. Now is a good time to put them out, and let me urge the importance of giving them a stiff cool soil and a little good manure, but no leaf soil or sand.—J. MUIR, *Margam*.

***Triteleia uniflora* in masses.**—Some years ago when this was not so well known as now a friend gave me several bulbs of it, and now they form a large clump bearing upwards of a hundred expanded blooms, besides a quantity of buds yet to open. Such large clumps illustrate the true worth of this pretty little hardy flower better than any amount of bulbs dotted about indiscriminately can do, and the same may be said of nearly all bulbous flowers; they require to be massed to

When the plants are well grown the foliage quite covers the sides of the pots, which adds considerably to their attractiveness.—J. C. B.

INDOOR GARDEN.

WINTER-FLOWERING PELARGONIUMS.

THIS being a fitting time for making a selection of Pelargoniums for flowering in winter, a few remarks as to their general management may not be without interest. Pelargonium blossoms in winter are now looked upon as a necessity; in fact, we get a colour in the Pelargonium which no other winter-flowering plant gives us. The first important matter is to select varieties which are short-jointed and sturdy. The colour is optional; many prefer scarlet varieties to all other colours, possibly because the latter can be found in plants of other kinds. Pelargoniums which I have found to answer best are those selected from cuttings rooted the previous autumn for bedding out, potted off singly in 3-inch pots and placed in a pit heated by hot-water pipes. They are kept close for a few days till they strike root, and after that ordinary Pelargonium culture will suit them. Shifting is done as the plants require it, and when giving them their final shift we make a point always to ram the soil well around them, using a compost consisting of two parts loam and one of leaf-mould and manure, which we generally manage to obtain from a spent hotbed, not forgetting a good sprinkling of coarse sand. All that is necessary after the plants are in their flowering pots is to set them on a bed of ashes in the open air and attend to the stopping and nipping off of all flowers that show themselves till the end of August, when both practices should be discontinued. House the plants as soon as the nights begin to feel chilly, and continue giving them plenty of air as long as the weather is favourable. When dull and cold increase the temperature, which should range from 55° to 60°, with a little air at both top and sides. Under this treatment there will be no scarcity of bloom throughout the winter. As regards varieties, *Vesuvius*, *Wonderful*, and *Silvio* are amongst the best of the scarlet section; *Olivia Carr*, *Lady Sheffield*, and *Rose Rendatler* are good pinks; *Joan of Arc* and *Eureka* are among the best of the whites; and *President Thiers* and *Sophie Birkin* are good salmons; other desirable varieties are *Henri Jacoby*, *John Gibbons*, *Colonel Seely*, *J. C. Rodbard*, *Mdme. Thibaut*, and *candidissimum plenum*. J. HINTON.

Bagshot Park.

BEGONIA LYNCHIANA.

THIS grand winter-flowering Begonia was incorrectly named *Roezli* in THE GARDEN of August 25, 1883, where there will be found an excellent coloured illustration of it. To the account there given but little of interest to the cultivator can be added. Its merits are universally recognised, and its bright crimson colour promises good results if properly used by the hybridist. A hybrid between it and *semperflorens* is said to have been raised, but of its value little information has been obtained. The name *Roezli* has been exchanged for that here given on account of *Roezli* having been previously given by Dr. Regel to another



Begonia Lynchiana, a new species; colour carmine-crimson (much reduced).

render a correct idea of their decorative value. All that one has to do is to prepare the ground for them and leave them in possession of it. There are few hardy plants which increase so rapidly as *Triteleia uniflora*, and not only do the bulbs increase in number, but seedlings are continually coming up, and these bear larger flowers than old ones. Seeing how hardy and vigorous this bulbous plant is, one would think it ought to be easily naturalised in woods and in the wild garden, and coming so freely from self-sown seed it ought to increase in such places with considerable rapidity. So far as I have had occasion to note, seedlings come quite true to character, which is rather a matter for regret, as if the lilac tinge in the flowers could be developed in extent and intensified in hue, we should thereby obtain a pleasing variety. *Triteleia uniflora* makes a good pot plant; if about a dozen bulbs are put in a 6-inch pot early in September and the shelter of a frame given they will come into flower early in the year.

Begonia figured and described by him in the *Gartenflora*. This very distinct species is named in compliment to Mr. Lynch, curator of the Botanic Garden, Cambridge. It is most nearly related to *B. nitida*. Sir Joseph Hooker says it is "a noble species of a genus, the ornamental species of which, numerous as they are, both Indian and American, are far from being exhausted for garden purposes. It belongs to the American set of the genus, but does not fit well into any of the sixty-one sections as defined by A. De Candolle in his elaborate monograph of the genus published in the fifteenth volume of the 'Prodromus.'" The true *B. Roezli* we have not seen, but it is said not to be a good plant for garden purposes. Our drawing for this cut of *Begonia Lynchiana* was made in Mr. Cannell's nursery, Swanley.

A USEFUL LITTLE FERNERY.

SOME years ago, on adding a range of cool fruit houses to one of our heating systems, the connecting flow and return pipes had to traverse a considerable distance out-of-doors, and rather than bury these pipes, they were carried along the north foot of the back wall of a late vinery, and their heat utilised by excavating the ground 3 feet deep and building a small sunk house 6½ feet wide over a portion of them. This is in the form of a lean-to, the roof appearing as a continuation of the back part of the hip-roofed vinery, with the bottom of the sashes resting on the plate on a low brick wall in front. This little house or pit we last spring converted into a place for Ferns to supply cut fronds. These are at all times in request, and who can wonder at it, seeing that most flowers in a cut state are so much improved by association with them. In our instance so appreciated have they become, that it was imperative to provide for a regular supply of them in some way; numbers of different kinds are grown in pots, but mostly for conservatory decoration, and one cuts plants in pots with reluctance. We have no pots in this fernery, everything being planted out; attention in the way of watering is thus greatly lessened, and the health of the plants is increased. The door being at the west corner, next the high wall, the body of the house is formed into one raised bed, sloping up to the front wall, in which the Ferns are planted; 2½ feet are allowed for a path straight along the side of the back wall, and the bed is enclosed by a 4½-inch brick wall seven courses high; drainage has been thoroughly provided for, and a good lasting mixture of peat and leaf-soil, with sand liberally added, was used for the bed, which is firmly filled. At the time of planting, a year ago, cuttings of *Ficus repens* were thickly dibbled in along the foot of the low bare wall in front; most of them rooted and now prettily clothe the wall up to the woodwork. Four wires are fixed lengthways along the roof, on which are trained *Lygodium scandens*, *Cissus discolor*, and *Selaginella cævia arborea*. On the back wall are three rows of spouting, such as builders employ under the eaves of houses to catch rain-water; these are fixed one above the other 18 inches apart; their widths are 4 inches, 5 inches, and 6 inches; the widest one is at the bottom; their cost, including fixing and painting, was very little, being 6d., 7d., and 8d. per foot respectively. The kind of shooting or spouting used in this way is that known in the trade as the O. Z. mould. It is placed flat on the wall, and is deeper than the ordinary half-round; consequently, it holds more soil for the plants. Small holes were drilled 10 inches apart in the bottoms of these troughs to enable the superfluous water to escape, and after being well filled with soil, laid on a layer of pounded charcoal, they were thickly planted with the following, all mixed together, viz., Ferns of various kinds consisting of the smaller growers, *Selaginella Kraussiana* and its golden variety, *apoda*, *involvens*, *Mertensi*, and *M. albo-variegata*; also *Begonias* of the Rex type; *Pellionia Devoniana*, *Panicum variegatum*, *Tradescantia zebrina*, *aurea*, and *multicolor*, and the red and white veined *Fittonias*, all of which grow in them as well as

could be wished. We much prefer these metal troughs to earthenware ones for such a purpose as this, because they are practically imperishable; the plants in them do not need a tithe of the attention as regards watering that they do in more porous material, and they thrive equally well, if not better, in them than in earthenware. The idea of thus using metal was, I may say, first gleaned by me through having seen it employed in the Earl of Cork's garden at Marston for plants to drape the front edges of the plant stages. It is a simple, quick, permanent and effective way of draping with vegetation high walls in warm plant houses. The varieties of Ferns which we have are mostly such sorts of Maiden-hair and *Pteris* as we found most durable and least liable to be injured by cutting. Few are more useful than *Adiantum cuneatum* and *Pteris serrulata*. A great advantage in having Ferns for cutting by themselves is that we can ventilate freely and by comparatively cool treatment render the fronds doubly durable. Immersion in water for a short time before packing them also greatly helps to keep them fresh.

Cranmore.

A. MOORE.

Imperishable plant houses.—I have been much interested by the account in THE GARDEN by "T. B." of Messrs. Beckwith's imperishable plant houses. I intend to build a house and think much of the plan, but the information given is not full enough.—J. W. C.

"J. W. C." may rely upon the account given of the imperishable houses being correct so far as it goes, but it was simply a notice, necessarily brief, of the principle of construction and the materials used. No builder is employed. The work, except such portions as digging the gravel, washing it, and preparing the concrete, which as a matter of course falls to ordinary labourers, is carried out by some of Messrs. Beckwith's plantmen, who build the concrete walls quite as well as the most expert bricklayer or plasterer. The bending of the iron roof bars is an operation that requires the greatest nicety in order to get them exactly correct. I believe Messrs. Beckwith have tried to get ordinary smiths to do this, but they have failed to do it properly. Mr. Beckwith, junior, therefore, does this part himself, with the assistance of two of their own men. Anyone who contemplates building houses of this description should see Messrs. Beckwith's market gardens, which, unlike ordinary nurseries, are not open to everybody, but doubtless Messrs. Beckwith would be pleased to show their houses to anyone seeking information as to their construction.—T. B.

5351.—**Plant showing.**—"H. H. T.," Wellington, N.Z., asks several questions, some of which it would be difficult or impossible to answer in a way to meet the different views that are held respecting them. (1) *Alocasia metallica* could not be shown in a class for foliage plants not variegated, but in a class for foliage plants I look upon it as a mistake calculated to bring nothing but contention to exclude variegated plants on account of the different construction which different people put on the term variegation. (2) It is equally a mistake to prohibit the introduction of florists' flowers, unless the kinds to be excluded are named. It is not possible to define at the present day what is and what is not a florist's flower. There have been attempts to solve the question, and after a great deal of discussion those engaged appeared to be no nearer a solution at the finish than when they began. (3 and 4) So far as I am able to see, the matter admits of no further answer than is contained in what has already been said.—T. BAINES.

Impatiens Sultan.—This is one of the easiest plants to cultivate which we possess. It ripens its seed freely in any intermediate house, and when this falls on the soil in neighbouring pots, a crop of young plants is soon the result. We have a great many young ones just now produced in this way, a circumstance which proves how easily it may be propagated from seed. Cut-

tings of it, too, root freely with the help of a little bottom-heat in any month of the year. Indeed, it is so easily rooted that it reminds one of a *Coleus*. As soon as a few roots are formed it begins to flower, and continues to do so from the cutting state up to any size one likes to grow it. It resembles the ordinary *Balsam* very much in habit of growth, but the flowers are single, about the size of a shilling, and bright magenta-rose in colour. It blooms all the year round; indeed, I do not think our plants have been two days out of bloom during the two years in which we have grown them, but the blooms do not remain long fresh when cut, and this is its greatest fault. It grows robustly in any mixture of loam, leaf-soil, and sand, and enjoys a humid atmosphere and intermediate temperature. It is very liable to be attacked by mealy bug, and those who grow it will have to take care that it does not stock the house with this pest.—J. MUIR, *Margam*.

Raising seeds in boxes.—Everyone is acquainted with the disappointments that often attend raising seedling plants in open air beds, even when the spring is genial and the seed vegetates freely. Slugs, grubs, or fly make sometimes sad havoc, much of which may be obviated by sowing such as must be sown early in boxes, and the sowing of main crop seeds and late sorts may be deferred until more genial weather enables the young seedlings to push rapidly into leaf and beyond the most critical stage of their existence. It is just when in the seed leaf that they are so set upon by insect pests; when fairly in the rough leaf they are comparatively safe. A box to contain enough plants of Lettuce, Cauliflower, and other tender vegetables that it is desirable to get as early as possible need not be very large, and the same remark applies in the case of flower seeds. If there is not room for such boxes under glass, the young plants may be helped considerably if a sheet of glass is laid over the box, only filling the latter in that case half full of soil, and by elevating it on bricks the young plants will be more out of the reach of slugs and similar pests.—J. G. H.

Planting out Arum Lilies.—These succeed much better in summer planted out than in pots. Some of them may be large plants with a number of sucker-like growths attached to them; these should be divided into single pieces and planted. They may have long leaves through being kept under glass during the winter and spring, and these when put out may get blown about, become blemished and die, but that will not matter, as robust dwarf leaves will soon be pushed up from the base, and thus satisfactory plants for blooming next winter and spring will be produced. They should be given a rich deep soil in a sunny position, and each plant should be put in from 2 feet to 3 feet apart. In dividing them turn the old plant out of the pot, then separate the pieces with a root to each. Plant at once and water thoroughly. Last year a large number of Arums were planted out in May. A week or two after being put out the leaves hung in rags and appeared very shabby, but by September they were dwarf robust plants with no indication of having been injured in any way, and when lifted and potted into 6-inch and 8-inch pots about the end of September they were excellent plants, which bloomed freely in succession from February until the present time. Throughout the summer, if the weather should prove excessively dry, they should be liberally supplied with water, and about a month before taking them up to pot in autumn the roots should be cut all round, keeping a few inches from the stem and going well under it. This will induce the plants to emit rootlets, which will be much more serviceable than long straggling roots, and they may be taken up and potted without the slightest check being sustained.—CAMBRIAN.

Double Cinerarias.—Mr. John Forbes, Buccleuch Nurseries, Hawick, has sent us some double Cinerarias of the most improved sorts, and of which he says he has now a fine display. He finds them invaluable for the decoration of the conservatory, and especially for cutting. They are well varied in colour, very double, and beautiful.

BIRD'S-NEST FUNGI.

(CYATHUS AND CRUCIBULUM.)

THERE are seven or more British Bird's-nest fungi, of which the three species belonging to the genera *Cyathus* and *Crucibulum* are the best known. They belong to the order *Nidulariacei*, so named from the general resemblance of the species to a small nest containing eggs—*nidulus*, a little nest. The species which most frequently occurs is the one here illustrated, *Cyathus vernicosus*. The name is derived from the Greek *kyatheion*, a little cup. The plant before us commonly grows in corn or stubble fields, gardens, and cultivated places in the spring (as its specific name indicates), summer, and autumn. It generally grows in paths and borders. *Cyathus vernicosus* is so curious and beautiful, that wherever it is seen it attracts wondering attention. Unlike the majority of fungi, this plant and its two close allies, *C. striatus* and *Crucibulum vulgare*, both common on dead sticks, fir cones, &c., have received popular names, viz., Bird's-nest fungi and Pixies' Purses (or Fairies' Purses). The *Cyathus* was supposed to represent a miniature open purse filled with (owing to the colour of the bodies within) silver coins. In some parts of Scotland these little fungi are termed "siller-cups," or little cups of silver money.

From a botanical point of view, Bird's-nest fungi are equally interesting with the popular.

Bird's-nest Fungus (*Cyathus vernicosus*).

In infancy the mouths of the little cups are closed over the top, so that young examples resemble small balls in form; to the unaided eye they look like little puff-balls. The outer wrapper or "nest" is termed the peridium, and the eggs or silver coin within are known as sporangia, or spore cases. These minute spore cases are each attached to the interior of the "nest" or "cup" by a fine umbilical thread, and at maturity the spore cases or silver coins hang out of the nests or purses still attached to these curious hair-like appendages. The spores or seeds at length escape from the sporangia and reproduce the species.

An allied and common species, but smaller in size, is the yellowish *Sphærobolus stellatus*; this is frequent on old twigs, sawdust, &c. The mature plants look like little starry Puff-balls (Earth Stars); there is no umbilical thread, but at maturity an inner membrane of the cup is suddenly and elastically inverted. This rapid inversion causes a little globose sporangium to shoot out high into the air. The generic name *Sphærobolus* has reference to this extraordinary habit; the word means the ball-thruster. The habit is evidently a natural provision for the dispersion of the spores, and is one well known in fungi. There is one genus named *Thelebolus*, which means the nipple-thruster; each little globular fungus resembles a breast with a comparatively large upturned "nipple." The nipple is really a spore case which is shot into the air. In *Ascobolus* (as the name indicates) a small bag or transparent sack or bladder is shot into the air; each bladder is of course filled

with spores, which are dispersed as the bladder sails about and at length bursts in the air.

The last fungus we shall notice is *Pilobolus*; it grows on manure and earth in which manure has been incorporated, and is very common in gardens and greenhouses. It is almost microscopically small. At first it resembles a very short transparent thread; the top speedily swells and takes the form, on a small scale, of a cobra's head and distended neck; on the top is a black body—really a sporangium or spore case. At maturity this black hat or spore case is suddenly shot into the air; hence the name *Pilobolus*—the hat-thruster. Every hat is full of microscopically small spores. Sometimes these hats of spores may be seen sticking like parasites to the glass of greenhouses and to the pots and woodwork, as well as to the plants.

W. G. S.

FRUIT GARDEN.

NEWLY PLANTED VINES.

THERE is a great difference in the way in which newly planted Vines are treated by different growers. Give, for example, a young hand a vinery to plant, and he will put in canes 6 feet and 8 feet long; instead of cutting them back to the wall plate, he will leave them nearly their whole length with the view of getting the rods up to the top of the rafter as quickly as possible, and by this means save time. Than this there cannot be a greater mistake, unless conditions are exceptionally favourable, and more than ordinary skill and care are brought to bear on their after-management, so as to insure every bud breaking from top to bottom of the canes. As we generally see them, a few buds near the top are all that start, all below being a blank, which after all necessitates the Vine being cut back to insure fruiting spurs from the bottom upwards. Therefore, it would have been better to have cut them down first, and thus prevented loss of time. Even when all the buds start into growth, when the canes are left their whole length, two or three buds at the top will, if not properly managed, monopolise so much of the strength of the rods as to leave shoots below them in a very weak condition. When due care and patience are exercised it is possible to get every bud on a 6 feet long cane to start into growth, but the cane must be carefully bent down so as to insure the bottom buds breaking first, and the tops must not have a much higher temperature than the roots, or the buds will be sure to break weakly. This is the rock on which many inexperienced people wreck their hopes of a satisfactory start. They plant perhaps in February or March, and as there are no Vines on the roof to shut out the light, the vinery is turned into a forcing house; the consequence of this is the tops of the newly planted Vines are forced while their roots are in a cold border outside. The tops, therefore, grow away for a week or two until they have consumed all stored-up nutriment. They then come to a standstill, and only commence to grow again when the outside temperature has risen sufficiently to make the roots active. There is no reason whatever why a vinery should remain empty just to accommodate the Vines, but if the border is outside, and they are planted in March, the tops should be temporarily nailed to the wall outside. At the end of April they could be brought inside, as by that time there would not be so much difference between internal and external temperatures, and by the time the tops had started into growth the roots would also be active, and a proper balance between tops and roots would be maintained. Returning to the subject of cutting back newly planted Vines, I am sure that in a general way it is advisable to do so, and when it is decided in autumn to plant Vines in spring, plants for that purpose should be obtained at once and immediately cut back, leaving only 2 feet of cane, so that the wound might have time to heal before growth commenced in the spring. Young Vines so treated will, if they have plenty of roots, start away with three or four shoots from buds near the top of the cane. In my own practice I

allow these shoots to grow pretty much as they like. The leading shoot, being stouter than the others, as a rule maintains its position; but if I find that the others are robbing it in any way, I top them, which checks the flow of sap in their direction and sends it into the leader. When the leading shoot has reached a length of 6 feet I pinch off its top, and the resulting lateral growths are allowed to grow unchecked until the main shoot has made another leader. I always aim at filling all the space on the bottom wires with young growth and as much of the remaining space as the Vines have strength to cover. To do this an occasional stopping of the strongest shoots is necessary, but anything like a persistent system of stopping is studiously avoided.

J. C. C.

WATERING FRUIT TREES IN BLOOM.

THERE is a wide-spread belief that it is a dangerous proceeding to water fruit trees when in bloom, and in the case of trees forced under glass the orthodox practice is to give the borders a good supply when the buds are swelling, and during the time when the trees are in bloom both borders and atmosphere are kept dry. We know that good crops are gathered year after year by people who do soak their fruit tree borders thoroughly so as to reach the roots, and then apply a mulching to prevent undue evaporation. But we are daily reminded that failures do also occur in the setting of crops under glass when it cannot be urged that spring frosts are the cause, for it is a very rare occurrence for spring frosts to be of sufficient severity to hurt blossoms under a glass roof. After careful observation I am convinced that dryness at the root is one of the most frequent causes of fruit trees failing to set their blossoms; in fact the blooms drop simply from the inability of the tree to carry them further than it has done. It cannot be always spring frosts that make the blooms drop, even in the case of trees fully exposed. I am, therefore, strongly impressed with the belief that it is at the blossoming period that fruit trees require stimulants at the root in the shape of liquid food quite as much as when swelling their crops. During the present season I have been testing this subject in various ways, as our fruit trees both under glass and in the open air are more heavily laden with bloom than I ever remember to have seen them. Under glass I have not only given Peaches, Vines, Strawberries, and other fruits copious supplies of water at the root when in bloom, but I have on fine sunny mornings given a good syringing to the blossoms themselves, and I never remember having had so regular a set of fruit as I now have. Out-of-doors we cannot get enough liquid for all the trees that require it, and the amount of bloom is evidently a severe strain on the trees. This abundance of bloom is general in this locality. A successful grower of Peaches on open walls writing to me a few days back says, I have just had all our outdoor Peaches thoroughly soaked with liquid manure for the second time this season, as I always give them plenty when in bloom, and I would strongly urge on those who have fruit trees of any kind taxed to their utmost capacity with bloom, as they are this year, to lose no time in applying stimulants in a liquid form to the roots. The watering-pot works miracles if vigorously applied.

J. GROOM.

Gosport.

Apple Reinette Hermans.—A coloured plate is given of this Apple in a recent number of the *Bulletin d'Arboriculture Belge*. It is a handsome fruit, and is said to be of excellent quality, the flesh being fine and firm and slightly acid. It keeps from one year to the other, and possesses the interesting peculiarity that if eaten in July of the following year it tastes as fresh and is as crisp as if newly gathered. Another good quality is that it clings so tightly to the branches, that it is rarely shaken down by rough winds. The tree is very fertile and the flowers open late, almost at the same time as those of Court Pendu Plat. It was raised by Mr. Joseph Hermans, of Herenthals, an amateur who for many years has been engaged in

raising new kinds of Apples. Another from this source named President Gaudy is said to be a very fine fruit.—J. C. B.

OUR FRUIT PROSPECTS.

I HAVE during the past few days been through several of our market orchards, and the spectacle seen on every hand is one that may well arouse in us feelings of the most earnest hopefulness and delight. Apart from all mere cropping and pecuniary considerations, the sight is truly lovely, for there is a charm about even Gooseberry bushes laden with myriads of immature fruits that would without them be entirely wanting. How beautiful the Currant bushes laden to the ground with racemes of bloom are, and what a wealth of fruit does it all promise! Above stand out in striking contrast the trees in rows of different sorts, especially where the Cherries, smothered in snowy whiteness, run side by side with the reddish pink-flowered Apples, the most beautiful of which seem to be the Suffields, Keswicks, and New Hawthorn-dens; but it may be that density of habit renders these sorts more effective, perhaps, than are Blenheim, Wellingtons, Kings, and other popular kinds, for all are in wondrously rich bloom, the air laden with the odour of sweet blossom, and the bees in myriads labouring amongst the bloom as if the securing of pollen and food was a labour to be performed whilst the sun shone and without delay. Plums have mostly shed their bloom, and the tiny green fruits studd the trees in numbers that are innumerable. Pears are setting fast; a few days longer and their bloom, too, will have fallen, the petals clothing the soil as with a carpet of snow. The matter-of-fact grower has one thought for the beautiful and a score for the probable crop and its profits. He has had of late too much need to take that view of his surroundings, and a bountiful fruit crop is as much one of his necessities as a bountiful harvest is to the farmer. Seldom has the promise been greater than now. Nevertheless, we live yet for a few days longer in fear and excitement. Every warm day and cloudy night, every hour of soft refreshing wind takes us nearer to our goal. Presently all fear of danger will be over, and then men may sit down and honestly count their profits.—A. D., *Bedfont, Hounslow.*

—All kinds of fruit here are most promising. Apricots have set thickly, and are now nearly the size of small marbles. The trees are looking green and healthy. On Peaches green fly is very troublesome. The fruit has not set so thickly as that on Apricots; still I think a fair crop may be looked for. Standard and wall Pear trees are one sheet of bloom, and this evening look magnificent. But here I must note as a fact that the cordon Pear wall is thickly set with fruit, which I presume must be attributed to their being worked on the Quince stock, for I have another wall of Pears on the same aspect now only in flower. Plums and Cherries, both on walls and standards, are heavily laden with blossom, and as a rule here the latter do not set well. We are, therefore, briskly employed in the middle of the day distributing pollen with the aid of a Pampas Grass plume, which I find excellent for the purpose. The Apple blossom has not yet expanded, but the promise is a glorious one.—R. GILBERT, *Burghley, Stamford.*

—With the exception of Peaches and Nectarines, which have set thinly, fruit prospects here are most promising; all kinds of trees are as full of blossom as they well can be and the weather is favourable for its setting. Cherries and Plums have already got through this stage and the fruit is swelling fast, the rain having come just in time to start it and wash the foliage, which is free from aphids at present. Pears are a sight, some kinds being very full of flower; the Bergamote d'Espere and Winter Nelis are so crowded as to quite hide the spurs and branches from view. The thinning, unless we do get frost to cut some off, will be a task, but a pleasant one, as it seems years since we have had such work to do, and to be able to make choice of the finest and best shaped, and have them in any position

one likes on the tree affords much gratification. Apples are only just opening their bloom and must be safe, as they, like everything else, are later than usual this season. It will, so far as can be seen, be a fine year for holding a show in November, when something might be done to determine the best kinds of Pears, as well as Apples, and get the lists weeded down so as only to leave the really desirable sorts, as many are comparatively useless and lead to much disappointment among growers.—J. SHEPPARD, *Woolverstone, Ipswich.*

SHELTER AND ROOT-PRUNING.

THE more we see the deeper does the conviction grow in our mind that the way to secure abundant crops of early or tender fruit from trees with the least trouble and expense is to grow the trees under the shelter of walls, but not nailed to them in the usual way, and to root-prune, doing no branch pruning at all, or as little as can be helped. For Peaches and Figs, &c., it may be advisable to nail and train in the usual way, but the good effects of growing even standards as close to a high south wall or other sheltering object as possible cannot be gainsaid. The crops of such trees are only a shade later than those ripened close to the walls on nailed-in branches, and the fruit is especially good in quality, and sometimes better in the case of Pears that do not possess good flavour than when ripened on a wall. Then the yield is much heavier and the trouble of training nil. One sees these facts exemplified in the woods even more than in the garden, the health and size of the trees, it can easily be seen, depending, in most instances, on the position they occupy and the warmth they receive. I had occasion not long since to value two lots of Oak timber, one lot occupying the base of the hill and enjoying the shelter of the lot higher up and in the background, the trees being the same age in both lots. The favoured lot, it was found, contained the most timber by about 40 per cent., the trees and poles being on the average nearly as large again as those in the more exposed lot. This rule, it can be observed, holds good in a greater or less degree over one entire wood some 1200 acres in extent. There is nothing more certain than that crops of trees can only be successfully and profitably grown under the same conditions of soil and exposure that suit garden and farm crops.

With regard to root-pruning in the future, it will need to be reduced to purely scientific principles. Everything can be secured by root-pruning that is aimed at in the use of dwarf stocks, provided the operation is performed methodically and with regularity or when needed. It is quite easy to prevent the most luxuriant Apple or Pear tree from producing gross shoots or any shoots at all by root-pruning. The effects at first, in the case of a tree that has been growing too rank, is a severe check to growth the year following and a crop the next and perhaps for two or three years afterwards, much depending on soil. The second root-pruning, if performed in time—that is before the tree has recovered from the effects of the first operation and become rank and infertile again—need not be so severe as to injure the crop the summer following, but should only be sufficient to check any signs of the former grossness in the shoots. A year missed at the critical period may spoil all, for as soon as the roots fairly recover and make a fresh start, away they go again, and the subsequent check is all the more severe. Were I going to plant an orchard in a methodical way, I should have at least two trees of each variety, and I would root-prune one of the two annually or periodically and never touch them with the knife after they had got shaped. The degree of fertility can be regulated to a nicety by root-pruning alone. Too severe or frequent root-pruning causes an over-floriferousness, which is almost as bad as over-luxuriance, but when the pruning is performed just to check exuberance good crops are the result. It will be understood that where this advice is acted upon the kind of stock is of little or no consequence, as the root-pruning affects all in the same way.

J. S. W.

GARDEN FLORA.

PLATE 491.

THE SONERILAS.

(WITH A PLATE OF *S. MARGARITACEA* VAR.

ARGENTEA.)

WHETHER cultivated for their prettily marked foliage or for their profusely borne pink flowers, the several *Sonerilas* known in gardens are attractive little tropical herbs. They are not always satisfactory as garden plants, a dark foggy autumn and winter being most injurious and even fatal to them; still, when their habits and wants are properly understood, *Sonerilas* may be successfully grown in an ordinary stove. It has been suggested that probably our garden *Sonerilas* are annuals; hence the difficulty of keeping them through the winter, particularly if they have flowered well during autumn; but according to our books none of the fifty-eight species of *Sonerila* are of only annual duration naturally, so that we may conclude our treatment or some influence beyond our control is to blame for their failing to continue in good health after only a year's existence. Before dealing with their cultural requirements, the history of garden *Sonerilas* may be traced. Like many other garden favourites, these plants, of which there are perhaps a dozen distinct kinds, which, however, are known under about three times that number of names, originated in the sporting of species known to botanists as *S. margaritacea*, which was introduced from India by Messrs. Veitch through their collector, Thomas Lobb, in 1854, and was named by Lindley as above. It forms a compact tuft of decumbent branches about half a foot high and with a polished red surface. The leaves are opposite, lance-shaped, slightly toothed, the upper surface marked with numerous round pearl-like spots which glisten in the sunlight like frosted silver. Its flowers are produced on rather long axillary stalks, and are composed of a tubular calyx and three mauve-coloured petals. The first sport from the above was obtained by Messrs. Henderson, and was named *S. Hendersoni*; afterwards the same firm raised another distinct form with the leaves almost wholly silvered on the upper surface and possessed of a habit both dwarfer and freer flowered than its forerunners. This was named *S. Hendersoni* var. *argentea*, and is the plant represented in the accompanying plate. Continental nurserymen have added various kinds more or less distinct in some conspicuous character, but still bearing a family resemblance to those produced in England, all of them being simply sports obtained by means of seeds. The importance of seeds for purposes of improvement or variety among garden plants is not sufficiently borne in mind by horticulturists generally. It is a well-known fact that plants generally vary much when grown under artificial conditions if propagated by means of seed sporting, or variety in form, or in colour resulting after the fifth or sixth generation. Darwin mentions numerous instances of this in his splendid work on "Animals and Plants under Domestication." In *Sonerilas* we know that none of the varieties come true from seed, and in this respect these plants are no exception to what holds in all or nearly all cases where seeds are employed for purposes of propagation after the plants have begun to vary from their natural characters.

* Drawn at Kew in December.



SONCHELLA MACROCARPA VAR. ARGENTEA

THE CULTIVATION of *Sonerilas* has been dealt with in THE GARDEN by various writers during the last two years, but it may be as well to mention here again some of the most important of the details for these plants. The specimen which the annexed plate was made was potted in a wire basket filled with Sphagnum, and leaf mould, in which the young plants were placed early in spring. A position near the glass in a very moist, partially shaded stove was accorded this and other kinds of *Sonerila*, where they grew vigorously, so that by autumn they had completely covered the whole of the baskets, rooting into the compost at the sides and forming pretty globular specimens, which, owing to their attractive foliage, were much admired even before they flowered. In flower they presented a charming combination of silvery foliage and rose or mauve-coloured blossoms, the latter in great abundance. In the plate the prettiness of the foliage is not well shown; still, the picture represents the character and habit of the plant as well as the grace and charm of the flowers it bears. Pans are generally recommended for these plants, but as the branches root freely whenever they come in contact with the soil, the advantage of baskets will be apparent. They require to be kept constantly wet, frequent moistening overhead being beneficial if the plants are in a rather light position; when grown in too much shade the foliage is delicate, and is therefore liable to damp if kept moist; this has given rise to the idea that watering the foliage of *Sonerilas* is harmful. In a wild state these plants frequent the edges of streams or swampy land, where they luxuriate during the rainy seasons and go to rest in times of drought—when, however, the temperature is high and the sunlight powerful. No doubt this will help to explain the failure of these plants to thrive when forced to rest in our winter. To ensure a stock for the second year it is advisable to strike a batch of cuttings in the autumn and prevent them from flowering, or to pinch off the flower-buds from several of the plants, which enables them to endure winter treatment much better than they do if allowed to flower in autumn. It would be impossible to speak too highly of these little *Melastomads* as ornamental stove plants, a collection of them grown in company with *Bertolonias* (their cousins), *Fittonias*, *Cyrtodeiras*, and other small pretty-leaved plants being worthy the little attention they require to grow them to perfection. B.

The Kyrle Society will this year again take up the work of distributing flowers and plants among the London poor, and I venture to let your readers know how gratefully any greenery they have to spare will be received for them. The gifts of past years have afforded the greatest delight, and as the society becomes more widely known, it has more requests both for flowers and plants. The latter are greatly needed for the gardens opened in various parts of the metropolis, as not only are fresh spaces secured which require planting, but from the difficulty of keeping plants in an impure atmosphere, those in the older established gardens require frequent renewal. We are very anxious also for plants in pots for the wards in hospitals, workhouses, and workhouse infirmaries. As in my previous appeals, I will ask those who are kind enough to respond to them not to send packages direct to the office, but to write to me in the first place, when I will give the addresses to which they may be forwarded, either of parish, institution, or sick and aged poor in their own homes. And I will ask further that they will tell me how often, or on what day of the week, and what quantity of flowers or plants they will like to send. Especially shall I be glad to know whether the supply would be continued regularly through the season, that I may judge what address it will be best to furnish. —F. E. TRIPP, Office of the Kyrle Society, 14, Nottingham Place, W.

Vegetable Sheep (*Ranolia mammillaris*).—This is called the New Zealand Pincushion, and is often used for that purpose by the shepherds' wives.

It is also called Vegetable Sheep. It grows to a height of 2 feet and is twice as long, and from its resemblance to a sheep lying down, the shepherd has often tried to muster this deceptive plant as a straggler from his flock. As far as is at present ascertained there are two sorts of Sheep—*R. mammillaris*, the most common; and *R. eximia*, more densely covered with woolly hairs. Blooms were collected and put in spirits of wine to send to Kew for examination.—F. N. ADAMS, *Christchurch*.

PLANT COLLECTING IN NEW ZEALAND.*

By MR. F. N. ADAMS.

ON Friday morning we turned out at 5 a.m. to witness sunrise on the mountains. In front stood Mount Torlesse in all its grandeur, with shingle slides carved out by snow and wind; on the left a spur, covered with shrubs and herbaceous plants; on the right, bare shingle slopes, and in the rear, Big Ben, with the sun shining on its top. Not a cloud in the sky, not a movement in the air, the tinkle of the creek which ran by our tent and the croak of the wekas being the only sounds which broke the solitude of the mountains. With alpenstock in hand we commenced the ascent of the mountain. On Mount Torlesse and its spurs are to be found a greater number of species of the alpine flora than perhaps on any other mountain in the colony. Commencing the ascent from the top of Porter's Pass, a short description of the plants will be given, and the elevation at which they were collected. Of the family of mountain Aster (*Celmisia*), which forms quite a third of the herbaceous vegetation, *C. gracilentia* has grey leaves; the flowers are white, 1 inch across, and the plant is very much scattered between 3000 feet and 5000 feet. The leaves of *C. Lyalli* are very narrow, 1 foot in length; the flowers are white, 1½ inches across. This sort grows in patches from the top of the pass to 5000 feet. *C. spectabilis* is very beautiful; the upper side of the leaf is a dark shining green, the under side creamy white; the white blooms with yellow centres are freely produced. This is the cotton plant of the shepherds; they peel off the cotton and use it to light their pipes, with the aid of a lens. This variety is very common from 3000 feet to 5000 feet. We found *Gentiana pleurogynoides* growing in the broken rock between 4000 feet and 7000 feet, but the leaves of the plant from the higher elevation were dark purple. The flowers of this *Gentiana* are white, but a new species recently collected has white flowers beautifully striped with purple. Of *Dracophyllum* we found some fine young plants, and as it forms the chief scrub in the alpine regions, it is very useful for covering the floor of the tent and for firing, as it will burn whilst green. It is found from 3500 feet to 4000 feet. Keeping a direction north by west, we were now commencing the true ascent. The ground we were travelling over was of a brown colour, composed of old moraines much broken up. *Myosotis Traversi* was found growing in favourable spots. This is a beautiful mountain Forget-me-not, with long drooping spikes of citron-yellow blooms. Specimens in flower were obtained, also a few plants, from 3000 feet to 5000 feet. In damp places *Myosotis antarctica* was collected. It forms neat patches some 6 inches across, covering itself with solitary white flowers. The gaps between the clumps of *Dracophyllum* were getting wider, and the ground was of a looser character. It seemed as if the soil which originally covered the mountain side had been washed away, exposing the shingle, except where it had been held together by the roots of *Dracophyllum*; in fact, it was around these clumps that most of our little alpine plants were collected. *Drapetes Dieffenbachii* next put in its appearance. It is a very neat little shrub, some 4 inches in height, of a dull green colour. We collected plants of it from 4000 feet to 5000 feet. Keeping as near to our course as the nature of the ground would permit, we made but slow progress; the footing was bad and the

heat of the sun was very powerful. The little annual *Eyebright* (*Euphrasia Monroi*) was in full bloom, its snow-white flowers with yellow throat making it one of the brightest gems of the alpine flora. At 3900 feet the big *Dracophyllum* was very stunted, and in its place *D. muscoides* was occasionally seen. The colour of the rocks had changed from brown to grey, and the mountain Totara (*Podocarpus nivalis*) was met with for the first time. This alpine Conifer at lower altitudes reaches 10 feet to 20 feet, but here it never rises off the rocky soil in which it grows more than 6 inches or 8 inches. *Ligusticum aromaticum* grew very luxuriantly on the sides of shingle slips. *Ranunculus pinguis* was found in flower, and specimens collected. We were now entering the true alpine zone. *Aciphylla Lyalli* had disappeared, leaving the field to its relative, *A. Monroi*, like a small Palm, with its fan-like leaves 2 inches or 3 inches long. It is an interesting plant when seen in bloom; plants were got from 4000 feet to 6000 feet. At 4500 feet we detected the perfume of *Celmisia discolor* and *C. viscosa*. The leaves are covered with a scented gum. Specimens were collected up to 5000 feet. Stunted examples of *Logania tetragona* were growing in the shingle, and *Ligusticum filifolium*, a beautiful plant, was found in similar situations from 4700 feet to 6000 feet.

We made a short halt to put the specimens collected into drying paper, to preserve them from injury. Some clouds which had rolled up from the plains settled about the top peaks of the mountain, and the wind blew keenly. After a spell of ten minutes we resumed the ascent. Varieties of the mountain *Epacris* were next seen, and if it can be induced to grow in gardens its neat foliage and habit will make it a desirable plant. We had now about 1000 feet of hard climbing between us and the top peak of Mount Torlesse. On the shingle *Veronica epacridea* grew in patches 10 yards square. Most of the plants would now be taken for Mosses at first sight. *Helophyllums* covered pieces of rock with their bright green adpressed leaves, sprinkled with small white blossoms. At 6100 feet we found patches of *Celmisia laricifolia*, the smallest of the Cotton plants, 3 feet across and half an inch high. A few feet higher we met with the first plants of the Edelweiss (*Helichrysum grandiceps*); botanically, this plant differs considerably from the Swiss Edelweiss, but it bears a great resemblance to it in foliage and flower. It is at home in loose shingle or in the crevices of a cliff. The silvery tint of the foliage and the singular flowers make it very interesting. Climbing on the eastern side the first patch of the Pygmeas was met with, which showed that we were getting near the top. *P. pulvinaris* is like a Moss; the flowers are very small, about one-eighth of an inch, white, with purple stamens in the centre. Here some rare alpine Mosses were collected. Striking across to the north-western side, we continued the ascent—300 feet of stones and broken rock to cross before the top was attained. *Ligusticum filifolium* was in full bloom in shingle, and a good specimen was obtained. A few feet higher we collected the curious *Ranunculus Buchananii*. The leaves are fleshy and of a lovely greenish blue tint; the flowers we did not see. At 6100 feet the choice alpine Fern, *Polystichum cystostegia*, was found in crevices of the rocks. This Fern must be a very hardy one, as it is covered with snow six months in the year. On the top of a rock we collected *Cotula atrata*. The flowers are dark purple and resemble the garden form of *Senecio*, but they are covered with yellow stamens, which add much to its beauty. An hour's hard climbing brought us to a large patch of snow, on the margins of which we discovered *Forstera sedifolia* and some alpine Mosses. Leaving our bags on the rocks above the snow, we commenced our final climb of some 100 feet, and reached the cairn on the top peak of Mount Torlesse. We pulled down the cairn, expecting to find some memorial of previous climbers, but as there was nothing, we rebuilt it and sat down to enjoy the view. The plants found on the highest points were, *Pygmaea pulvinaris*, *P. ciliolata*, *Helophyllums*, *Ranolia grandiflora*, *Cotula atrata*, *Dracophyllum muscoides*, *Gentiana*

* Communicated by his agents for this country, the New Plant and Bulb Company, Colchester.

pleurogynoides, Ligusticum filifolium, and a few Mosses.

As we came down the northern side of Mount Torlesse we collected a new species of *Celmisia*, *Senecio Lyalli*, one of the best of the New Zealand flora, and other rare plants. High above us we could see rocks covered with *Edelweiss* in full flower, but in the fissures was something of more botanical interest than the *Edelweiss*—the long-sought *Notothlaspi notabile*, only one specimen having hitherto been found by Mr. Buchanan. This plant is much larger than *N. rosulatum*; the leaves are a brighter green and the rosette measured 4 inches across. This variety did not show any indication of bloom. The roots had penetrated deeply into the rocks and we had no little trouble in getting them out uninjured. We left several plants to propagate, as we were afraid it might be exterminated, being very local. On the other side of the gully we came across a fine patch of *Forstera sedifolia*, a rare *Cotula*, *Ozothamnus microphyllus* and *Veronica epacridea* in full flower.

WORK DONE IN WEEK ENDING MAY 5. APRIL 29.

THE weather here, North Hampshire, still continues to be so fine, that even chronic weather-growlers no longer complain. There certainly never has been, could not be, a more promising year for fruit and vegetable crops. Peaches and Apricots may now be pronounced safe. Pears and early Cherries have set in rich abundance; Apples, Plums, and all small fruits are now in full bloom, and by present appearances will vie with the first named fruits by abundance of crop. Finished mulching of Strawberries and planted out a few more forced plants on a north border, which will afford us a few late autumnal fruit. Planted out Violets. The old plants we lift and divide into single crowns and replant in the richest ground we can spare, and in several aspects, in order to prolong the season of flowering; none do so well with us as *Victoria Regina* and *Marie Louise*. Seedling Primroses, Dean's strain, have been and still are extraordinarily fine with us, and to-day the very test kinds have been marked, that soon as they have done flowering our stock may be increased by division of plants, a piece of ground under a north wall being reserved on which to plant them. Hoed between the rows of Asparagus, the salting given just before the heads broke through the soil having, since the rain, caused a crust to form on the surface and made it impervious to atmospheric influences till broken as has now been done. House work has been propagating *Alternantheras* by means of manure frames. All other propagation of bedding plants is now finished, and the plants are being potted on as expeditiously as circumstances allow. Got out a great number of plants to harden, the tenderest being arranged either in turf pits or sheltered nooks, where covering can be quickly applied if needed. Potted on ridge Cucumbers and Vegetable Marrows; the ridges for the latter are being made up with the lawn mowings and a small proportion of stable litter, and a week hence will be planted out, handlights being used as coverings till safe from frost, and the plants get established in the soil. Ridge Cucumbers we start in frames, but these not being available till *Alternantheras* are done with, the plants meanwhile are grown on in pits or cool Peach house. Grape thinning now takes up a large proportion of each day, and this is work that will not wait a single day without injurious consequences.

APRIL 30.

Scythe mowing round trees and shrubberies now occupies all our outdoor hands for two and a half hours every morning, a far too large proportion of labour for results obtained—namely, neatness, though I suppose there should be added the pleasure derivable from such neatness, and that, in our case in respect of both master and man, is not a little. A shower during the night made us anxious to get out another batch of Cauliflower plants, but this daily mowing intervened, hence the reference to it.

Planted out Cauliflowers between the lines of newly planted Asparagus plots. The rows are 3 feet apart, so that no injury can accrue to the Asparagus from central lines of dwarf Erfurt Cauliflower between each row of Asparagus. Being so much troubled with sparrows eating out the tops of our Peas soon as through the ground, and soot, lime, and wood ashes only preventing their depredations for a short time, I have to-day copied Mr. Gilbert (page 379) and given the rows a peppering with tobacco powder, and I think I may venture to say that the cure will be a perfect one. Thanks, Mr. Gilbert! Planting out summer bedding plants. Removed mulching from early vinery outside border, and gave it a dressing of soot and guano; the border is sufficiently moist, otherwise it would have been watered, as the Grapes are now colouring and plenty of root moisture is required to aid the swelling of berries. As regards the internal treatment, the atmospheric moisture will be slightly reduced and air be more freely given both at top and front of house. The night temperature will range from 65° to 70°, a little air being left on all night. Early Muscats are at a standstill—stoning—and as they are not required till quite the end of June, they are, as it were, being allowed to take their own time, 65° to 70° being now our highest night temperature for these also. The inside border had a good watering again to-day. Perhaps, as some people think and say, we water too much and wash some of the goodness out of the soil; granted that such may possibly be the case, yet I contend (and this is my reason for frequent watering) that the warmth communicated to the soil by the water, which is never used at a less heat than 90°, and frequently 100°, far outweighs in its beneficial effects the loss of manurial properties from the soil; besides, this said manurial property is constantly being replaced by using, at every watering after the fruit is set, manure water. Thinned fruit in late Peach house, tied up young Vines, also Melons and Cucumbers, and cut off deformed and other surplus fruit from Tomatoes.

MAY 1.

Occasional thunder showers, but so slight, that no hindrance of outside work occurred. Thinned out Early Horn Carrots; as these are drawn for use in a very young state, thinning is only done to such parts of the beds as are exceptionally thick. Broad Beans, too, have been thinned out to 9 inches apart, and Lettuce growing on Celery ridges to about 6 inches apart. Another plot of Broccoli having been used, the ground is being prepared for Runner Beans and Veitch's Protecting Broccoli. To plant the last named on ground that was last cropped with Broccoli is, I know, contrary to all recognised rules of cropping, but necessity knows no choice, for we have no other ground, and I am satisfied from past experience that it matters but little, so long as the ground is well done, whether regular rotation of cropping is followed or not, not that I would disparage the rotation system; I would rather follow it, and, indeed, do so far as is compatible with large supplies being required from a limited area of ground. Planted out *Leucophyton Browni*, *Chamaepeuce diacantha*, more *Violas*, a few *Parlagoniums*, and lines of variegated *Mesembryanthemum*. *Gardenias* being now in their prime they are regularly shaded from sunshine to keep them in full blossom as long as possible. They are principally required for cutting, and being arranged in shallow glasses, many of them can be picked off without taking any of the wood, and, consequently, without wasting a bud. They are never allowed to get dry and clear liquid manure water is given twice a week. Tied down shoots in latest vinery and cut off the smallest shoots; they will shortly be in flower and before this stage is reached we always strive to take off all, or nearly all, shows not likely to be required for the crop. There is then no waste, but the full strength of the Vine goes entirely to the production of fruit that is to be left to ripen, and this is not the only advantage, another being that the great strain on the Vines of unnecessary bunches being removed, those remaining set without difficulty.

MAY 2.

Colder; thermometer registered 31° at 6 a.m., and we began to think that our hopes of a good fruit season were not to be realised. However, we have got back to warmth and thunder showers to-night, and the mercury of our hopes has gone up many degrees since the morning. Moved cleaning up, and rolling walks have occupied whole of our outdoor staff all day, and ex-Grape thinning the indoor staff have been so engaged in making every place neat and clear. Of course, the plants that had to be given quarters, cooler or warmer as the case might be, being previously done, as also freed of dead leaves and re-arranged. We have always a long job on Saturdays with Strawberry forcing, for then it is that every plant that has done fruiting is cleared away, and relays of fresh plants put in and others freed of surplus fruit and put into stronger heat.

MAY 4.

Warm and sunny, thunder at night with slight showers. Made a second showing of Dwarf French Beans and a last sowing of Broccoli and Kales. The variety named Cottager's is by far the best in quality of all the types of winter Greens, and we therefore grow it proportionately extensively. The finest Broccoli now in are Veitch's Spring White, Sutton's Late Queen, and Safeguard, all of them grand and hardy as any. Weeded the mulching of Strawberry plots; picked flowers off those that are intended for layers for forcing in pots. We always devote a few rows to this purpose alone, a plan that ensures us strong and extra early runners, and this, I think, is the mainspring of successful Strawberry forcing, namely, the securing of strong healthy plants. The stools from which the runners are taken would, if allowed, fruit well in the autumn, but we prefer to have them for our principal crop next year, and therefore the flowers are kept pinched out the whole season. Autumn fruit we secure by planting out the earliest forced plants. Weeded mixed flower borders, and planted in large clumps at back of the borders the old forced bulbs of Hyacinths, Tulips, and Narcissus. One of the most telling plants now in flower in these borders is that of *Spiraea Thunbergi*; its light sprays of light green foliage dotted over with small pure white, star-shaped flowers makes it the perfection of a plant for use as cut flowers when used with more massive flowers—Tree Carnations, for instance; half a dozen red flowers of the latter with three good sprays of the *Spiraea* make a most excellent arrangement for a medium-sized trumpet-shaped glass. Grape thinning as per usual; tied and stopped shoots of late Muscat Vines; pricked out first lots of Primulas and Cinerarias, and made another sowing. Shifting a few tuberous Begonias into larger pots, picked off the fl. w. and served Fuchsias the same.

MAY 5.

We had 0.18 of rain last evening, and the lowest temperature during the night being 46°, the aspect of the whole garden this morning seemed entirely changed, growth had been so rapid. The foliage of Pear trees on walls now affording a covering to the fruit, the canvas covering has been taken down. It is rather early to have done so, but the soil being very dry immediately under the wall, we were anxious to make a clear course for the showers to reach that spot. Finished planting Violets and weeded and afterwards hoed deeply an old plat that is to remain another year. Peaches and Nectarines are being again gone over to take off a few more shoots and blighted leaves, as well as to rub off part of the fruit, and soon as this has been done they will be given a first washing with the garden hose. Planted the outlies of a long bedding arrangement with Gold Feather Pyrethrum. Heavy rain set in at 2 o'clock, so that all hands had to be employed indoors, making pegs and labels, pointing sticks, washing pots, and putting tool and potting sheds in good order. Work in the houses has been much the same as for some time past, and at the present consists almost entirely of Grape thinning, tying and stopping Vine and Peach shoots, watering, potting and shifting about of bedding plants.

FRUITS UNDER GLASS.

EARLY VINERIES.—Bright mild weather having at last succeeded the cold, cutting, north-east winds which prevailed throughout the greater part of the past month, conditions favourable to the colouring of early Grapes can now be secured without overheating the pipes by night or keeping up a sharp circulation throughout the day. A moderate amount of fire-heat must, however, be constantly at command, as the weather at this early season is very treacherous, and a steady circulation of warm air throughout the usual hours of ventilation is very important. Although fresh air is such an indispensable element in laying on colour and finish, it must not be allowed to reduce the temperature through the early part of the day, but, on the contrary, it must be admitted little by little as the thermometer rises, and when the maximum is reached, piecemeal reduction should be sufficiently rapid to prevent any appreciable decrease in the temperature until after the house is closed for a few hours during the afternoon. Night air, it is hardly necessary to say, should not be neglected whenever the weather is at all favourable. The smallest chink on the top ventilators, say from 10 o'clock at night to 6 o'clock the following morning, will suffice to keep the atmosphere fresh and sweet, and to prevent condensation of moisture on the foliage and berries.

Water.—If the internal roots are likely to require more water before the Grapes are ripe, no time should be lost in giving them a sufficient quantity, free from stimulants and at a temperature ranging from 80° to 90°. A mild bright morning is the best time to apply it, and if requisite a light mulching may be spread over the borders to prevent its too rapid escape from the surface. Atmospheric moisture must also be regularly supplied, otherwise red spider may put in an appearance and become very troublesome before the Grapes are fit for cutting. Early Grapes ripened during a rising season require and carry off a great deal more moisture than would be good for late crops; hence the importance of keeping the mulching and all available spaces well moistened with pure water and stimulants alternately. Many growers now make very little difference either in the quantity or quality of the water used for damping down with, but follow up the usual practice in all early houses until the Grapes are ripe.

Midseason houses.—Tying out, stopping, and thinning in this section will now require daily attention, as Vines are growing unusually fast, and the delay of a single day in the performance of any operation is a step in the wrong direction. The thinning of the Grapes, if not already finished, should be kept well in hand, as late houses are pushing along very fast, and it is difficult to imagine anything more distressing than the feeling that a house of unthinned Grapes has got the upper hand. When all the Grapes are thinned and swelling freely, a little more freedom may be given to the laterals, particularly where they show a tendency to weakness, and they can be allowed to extend without crowding the main leaves. Leaves and laterals keep the roots in action and lighten the strain on the Vines during the time they are stoning and carrying heavy crops of fruit. They should, therefore, be allowed to grow on and extend until every particle of the trellis is well covered, but not crowded, with healthy foliage. Black Grapes always swell and colour best under plenty of foliage, and white ones are equally at home under similar conditions; but the latter require plenty of light and sunshine when they become transparent and show signs of ripening. An abundance of air through the early part of bright, mild days will now be absolutely necessary, as the sun is gaining great power and the young foliage is yet tender. The secret of successful ventilation is early attention as soon as the temperature begins to rise, and before the confined moisture has time to scald the young leaves. The house may run up to 80° or 85° in the middle of the day, with a circulation of air, and it may go as high as 90° after it is closed with atmospheric moisture, and the delicate leaves

revel in the tropical heat, but once allow the morning chink to be neglected and they are spoiled for the season.

Late houses.—Nearly, if not quite, all the occupants of the late house enjoy Muscat treatment. Lady Downes, Mrs. Pince's Muscat, Gros Colman, and Black Morocco include the best of the black kinds, and they are good or bad for eating or keeping in proportion to the amount of heat which they receive throughout the season of growth. A very high temperature is not absolutely necessary where colour is the only consideration and the Grapes are intended for an early autumn market, as we have removed pot Vines of Gros Colman to an open wall where they have coloured their fruit perfectly; but colour is not the true test of ripeness any more than it is the passport to long keeping. Advantage should therefore be taken of the early part of the season for getting these kinds well advanced under the influence of fire and solar heat combined, when the fruit will have the benefit of the declining summer for undergoing the change to a saccharine condition, so essential to the perfect keeping through the winter months. Another important item in favour of a brisk day temperature is the fact that late Grapes are generally allowed to hang on the Vines until the beginning of January, and although the latter are kept as quiet as possible, it is questionable if the period of complete rest can commence until after the crop is removed. Under the impression that this theory is correct, many good late Grape growers prune in January, keep their Vines as cool as possible until the buds begin to swell naturally, and then push them on under Muscat treatment by day, but allow the temperature to range from 65° to 68° by night. Vines so treated will be in flower towards the middle of May, and as some of them set best under cross-fertilisation, a good supply of Ham-burgh pollen should be collected and placed where it can be kept dry for this purpose when the proper time arrives for using it.

Late Muscats brought on under similar treatment will now be in full flower, and as all Grape growers agree in thinking they require artificial impregnation, the camel-hair brush should be passed over them about noon on fine days, or whenever the temperature reaches the maximum. Some growers draw the hand down the bunches, but this is not a good plan, as the slightest pressure often injures the delicate organs of the flowers, and produces a spot which grows into a blemish at the points of the berries when the Grapes are ripe. Others slightly syringe with tepid water to set the fruit, and although few are bold enough to adopt this plan, and many assert that Grapes set by the aid of the syringe will set equally well without it, there exists but little doubt that they may be syringed when in flower, as I have proved this year by way of experiment. But, in justice to the Grapes, it is only fair to say bunches on another part of the same Vine set equally well without the water. Artificial fertilisation is one of the safeguards which all cautious men adopt, but it is questionable if the best aid to a good "set" does not exist below the surface of the soil, as Vines well furnished with fresh, active roots, in a warm, efficiently drained border, are quite capable of performing all the functions which Nature has allotted to them. Healthy Muscats invariably show a profusion of bunches—often three or four on each of the strongest shoots. Only a small percentage of these are required for the crop, and assuming that the flowering process produces a strain on the Vines, they may be considerably reduced before that stage is reached.

ORCHARD HOUSES.—Where the early forcing house was started about Christmas, the fruit will have passed through the critical stage of stoning, and the time will be at hand for making the final thinning. This, it may be well to say, should not be performed hurriedly or too severely at first, as it is so easy to carry on the thinning and pinching together and to persevere in selecting the finest and the fittest for the crop. In many gardens it unfortunately too often happens that advice as to thinning is either disregarded or mis-

understood, as it is no unusual thing to find one tree carrying fruit enough for three, and the owners expressing surprise at deficiency of size and want of flavour. It seems a hard struggle to many to pull off a quantity of fine fruit, but Nature having been lavish in giving abundantly, she must be liberally treated in return, and if the fruit is not moderately well thinned, it is more than probable she will relieve herself by casting many well placed fruit which timely attention might have saved. Good syringing and very careful watering will now be imperative. Of the two, the last is perhaps the most important, as trees in pots should never flag or feel the want of water, and much as they revel in a well-drained, well-deluged open border when in full growth, a cold, wet, sodden state of the soil when they are confined to pots should be carefully avoided. Pot trees should always be watered by one person, and watering should precede syringing, as surface moisture from the latter is not present to deceive the inexperienced eye. When trees are watered the supply should be thorough—no dribbles, no compromise, but a thorough soaking that will penetrate to and through the crocks, and no more should be given until they really acquire it. Properly watered trees remain healthy and capable of resisting the attacks of insects, the worst of which are red spider and aphids. The first can be kept under where good watering is supplemented by good syringing. Twice a day is not too often to syringe when the weather is fine—early in the morning when the temperature is on the move upward, and again in the afternoon after the house is closed. The water should be quite up to the mean temperature of the house, soft, if procurable, or certainly free from calcareous matter, which marks and mars the woolly coats of the Peaches. It should be applied to both sides of the leaves, particularly the lower sides, and with sufficient force to break up their webs and dislodge spider.

MIXED OR GENERAL HOUSES.—In these houses, the season having been unusually favourable, the set of fruit is highly satisfactory, and thinning has already been commenced. So little fire-heat having been needed, the trees are clean and free in their growth, and we may reasonably hope that unheated houses, if any still exist, will now be safe from the effects of morning frosts. The period extending to the 20th of the present month is, however, very treacherous, and until after that date has been passed it will be well to be ever on the watch. The trees must, as a matter of course, be syringed at least once a day, but this can be performed on fine mornings to ensure the foliage being dry before nightfall, and solar heat may be husbanded by closing in good time on fine afternoons. If any of the trees which have set plenty of fruit near home can be still further shortened to improve their compact shape, this may now be done, as it is important that the young growths intended to remain be got well forward to insure early maturity. Let all growths be pinched at the fifth or sixth leaf, not counting the one or two small ones near the base; disbud with a liberal hand, and avoid overcrowding as well as overcropping. Examine Plums and Cherries for the lively little grubs which so soon destroy the crops. Open every folded leaf, catch and kill before they have time to attack the fruit. Fumigate on the appearance of the first green fly, unless Strawberries are in flower. Syringe well and give air early on the following morning. The most troublesome insect is the brown aphid, particularly when it is allowed to get thoroughly established amongst the spurs of Plums and Cherries, from which it is hardly possible to dislodge it. It is not unfrequently brought in with newly introduced trees from the nursery; hence the importance of thorough cleansing when in a dormant state and before they are taken into the house. The best remedy when the trees are in growth is repeated dipping in diluted tobacco water followed by good syringing with clean water. If not already prepared, the material intended for surfacing the pots with should now be got ready. All stimulating mixtures are improved by being kept in a dry place for some time before they are wanted for use.

W. COLEMAN,

TREES AND SHRUBS.

TREES DYING OUT.

THE remarks on this subject in THE GARDEN (p. 385) suggest the reflection that trees die out as well as plants. All over this part of Yorkshire there once existed forests of the finest Oaks in England, and many fine old trunks of gigantic dimensions still exist testifying to the fact. For a good while back, however, some say less than fifty years, Oaks have not been thriving anywhere in the district. Dead and dying trees are as numerous as healthy ones, and in some extensive woods more so. They are indeed dying faster than they can be sold, notwithstanding the large quantities cut down annually. And not only does this apply to old trees, but to young ones also, and to trees both in woods and hedgerows. How little the Oak trees are increasing in bulk may be guessed when I state that small trees that were valued and ringed about twenty-eight years ago at the death of the then proprietor with reference to legacy duty, &c., have increased very little in bulk since, the painted rings on the bark showing hardly any sign of disruption through growth, but remaining almost as entire as the day the paint was put on. In fast-growing trees these rings would have been partially obliterated by this time and on certain species like the Sycamore they are obliterated. Another sign of deterioration is shown in the growth proceeding from the old stools, which in all cases has been nothing but mere scrub during the above period; whereas there exist many examples of an earlier date of a good second crop of timber from such stools. In one case I noted five fair-sized poles from one old stool, and another one, the sixth, had been removed from some cause or other. Curiously enough, while one species appears to be dying out, another species that does not appear to have been at all abundant during the Oak "age," there being very few large examples of it to be found, is taking its place, and that is the Sycamore, which during the past generation or two has increased naturally to an extraordinary degree, the woods everywhere almost being full of young trees of all sizes. Had this been going on for a long period, large old trees would have been abundant; but there are practically none, it being difficult to find trees of the smallest saleable size, viz., 11 inches quarter girth. These facts have often suggested the idea to me that the climate of the locality has grown unfavourable to the Oak and more favourable to the Sycamore, which will soon be the prevailing deciduous tree in this part of the country, as, in addition to its propagating itself fast, it is being planted freely on estates for timber. The tree grows quickly, and is being used in increasing quantities for a great variety of purposes.

J. S. W.

PINUS PARVIFLORA.

THIS Pine is indigenous to Northern Japan, where it attains an average height of 25 feet to 30 feet. In this country it has proved to be perfectly hardy, and when allowed plenty of room to extend its side branches it makes a handsome specimen for a lawn, more especially in places where the grounds are of limited extent. Its habit of growth is conical. It extends its rather long and slender branches in a horizontal direction, and as these are well furnished with small lateral twigs clothed with abundance of rich glaucous foliage which it retains for three years, it makes a fine contrast with others of a more sombre appearance. In spring it produces great abundance of beautiful golden catkins laden with pollen, in consequence of which I have never found it necessary to fertilise the cones artificially. It generally cones abundantly, the cones being of a pretty purplish colour, and are ripe and ready for collecting about the end of harvest time. It thrives on any soil of ordinary texture, providing that it is thoroughly drained, and in soils of a stiff clayey nature I have found it beneficial to mix a little bog earth with the clay, and exposing it for some time to the

weather previous to planting. It is perfectly at home on peat bog, my practice being to mix a little soil with the bog at the time of planting.

J. B. WEBSTER.

THE ABELIAS.

THE Abelias are pretty shrubs, but comparatively unknown in English gardens, although they have long been introduced. The reason why they are not known is probably because they have the reputation of being tender. In the neighbourhood of London and southwards, however, they are hardy when planted against a wall, and few shrubs produce a prettier effect when in bloom. The



Abelia rupestris (reduced).

dwarf *A. rupestris* is hardy enough to be grown unprotected, and it is peculiarly adapted for the rock garden, where its flower-laden slender shoots can fall over a rocky ledge.

There are only about four or five species of Abelia, and they are found in widely distant parts of the world, namely, Northern India, China, and Japan, and two or three in Mexico. The following are all species worth cultivating:—

ABELIA TRIFLORA, a charming shrub, is a native of the mountains of Northern India, between 6000 feet and 9000 feet above the sea, where it forms a small tree or shrub, according to the elevation and situation of the locality. We have not a large selection of hardy trees and shrubs from the mountains of India, but most of them are really valuable; such are the Deodar, *Pinus excelsa*, and *Leycesteria formosa*, a shrub

also belonging to the Honeysuckle family, as do the Abelias. The fragrant Abelia is no exception to this rule, but although it has been in cultivation in this country nearly thirty years, it is rarely seen outside of a botanic garden. Some idea of its ornamental character may be obtained from the accompanying portrait, and anyone who has once seen it covered with a profusion of its fragrant and pretty, though small, flowers will be anxious to possess it. In this country it forms a handsome, slender-branched, deciduous shrub, flowering in May and June. A fine specimen of it may be seen on the east side of the wall bounding the herbaceous ground at Kew. The long, slender, fringed calyx lobes crowning the seed-vessel give the plant a very pleasing appearance for months after the corollas have fallen away. The name triflora does not at first sight appear to be an appropriate one, but it has reference to the three-flowered branches of the inflorescence.

A. UNIFLORA was sent by Mr. Fortune from North China to Messrs. Standish and Noble some forty years ago. The name uniflora is inappropriate, inasmuch as the peduncles are frequently two or three-flowered. In everything except structure this differs very widely from the shrub figured. It has large funnel-shaped flowers with a broad tube, not unlike those of some of the smaller Japanese Rhododendrons, white tinged with pink, about 1½ inches long by 1 inch across the mouth, and borne on short stalks, so that the flower and stalk together do not equal the leaves. In this, usually only two of the calyx lobes persist and grow out and they are oblong, entire, about half an inch long, and tinged with reddish brown. In habit this shrub is low and bushy, with slender, usually opposite, branches, and broadly lanceolate, distantly toothed, rather thick, leathery, dark green leaves. As regards its hardiness, it is stated in the *Botanical Magazine* that it withstood the winter of 1851-2 in the Bagshot Nurseries without protection, and promised to be not only a hardy, but an ornamental shrub.

A. FLORIBUNDA is a greenhouse shrub, and the showiest species of the genus known. It is a dwarf, bushy plant, with small, ovate, toothed leaves usually less than one inch long, and long, narrow, tubular flowers of a bright purple-red colour. In this species all five of the sepals persist and are of nearly equal size, oblong, and fringed on the margin, and the corolla has a long slender tube, as in *Bouvardia*; not broad, as in the preceding species. The native country of this is Mexico, where it grows on the Peak of Orizaba up to the altitude of 10,000 feet above the level of the sea. It was introduced into Europe through the Belgian nurserymen, and reached this country about the year 1847. For some time it bore the name of *Vesalea floribunda* in gardens.

A. RUPESTRIS is somewhat in the way of *A. grandiflora*, but with much smaller flowers clustered towards the ends of the very slender, pendent branches; it has broad, persistent calyx lobes, all five of which are developed. Mr. Fortune found it amongst rocks on the Chamoo Hills, China, and described it as a fine dwarf shrub. Finally, there is the *A. spathulata* of Siebold and Zuccarini, of which there is a figure in the "Flora Japonica." It appears to differ only in the shape of its leaves from the *A. serrata* of Siebold.

GRAFTING OAKS.

THOUGH Oaks as a rule are raised from seeds, grafting must be resorted to when it is desired to perpetuate particular varieties. The grafting of Oaks may be carried out at nearly all seasons, but the usual time and the best is in the spring. Young healthy plants must be chosen for the stocks; they may be grafted in the cleft manner, the same as fruit trees generally are. The scions should consist of the preceding season's growth, and if likely to start earlier than the stocks, may be taken off and laid in the ground in a shady spot to retard them slightly till the sap of the stocks is in circulation; as soon as that occurs grafting may take place.

The scions may also be cut down to the required height before the sap rises. If grafted near the ground the point of union can be covered when the plants are again shifted, and they then possess all the advantages of trees on their own roots, but when grafted at some height from the ground, they, in common with many other trees, are very liable to be broken off by high winds during the first few years after the grafting. Care must be taken to tie the graft on securely in the first place and also to cover the point of union with grafting wax, which must be put on perfectly air-tight. If the stocks are potted they can be

the common British Oaks answer for their many varieties or sub-varieties. The large American species succeed best when grafted on stocks of their own type, though they will unite with others—the Turkey Oak, for instance. T.

TRANSPLANTING EVERGREENS.

The question has often arisen in my mind, Are we right in transplanting Evergreens in winter? The nurseryman must of course go on transplanting from September to May; he cannot stop because it is winter, on account of the extent of

time; others begin late, and drag on a slow growth for a lengthened period. But these do not constitute the majority; most Evergreens begin and finish their growth about the same time. But how to deal with the exceptional cases is the question we wish to settle, and in such a manner that there shall be no losses by removal, and no miserable-looking plants to mar the pleasure one has a right to look for in contemplating the results of an expenditure of money and labour. The only way out of the difficulty appears to me to be to mark the place for every tree, making the first move, whether in autumn or spring, when the earliest trees are in the best state for planting, filling in the spaces left at one or more after periods, as the different trees arrive at the best condition for removal. There is no doubt in my mind that many Evergreens may be transplanted in autumn, even before growth ceases, and in spring after growth commences, in such a manner as to preserve a better appearance in the immediate future than they would do if removed in midwinter. Of course, in such cases, if dry, hot weather should set in at the time or shortly after transplanting, water should be brought into free use. W. P.

PROPAGATING TREES BY ROOT CUTTINGS.

THE number of plants that can be propagated by means of root cuttings is somewhat limited, yet, when it is possible to successfully increase them in this way, it is very desirable, for, after starting, the young plants in general grow as freely as those raised from seeds without any of the branch-like character often seen in plants propagated from cuttings taken from the shoots. I have been successful in raising by means of root cuttings the following trees and shrubs, not a few, but a large number of each: The *Ailantus* grows away rapidly and soon forms large plants. The different species of *Rhus*, especially the large pinnate-leaved Stag's-horn class, among which is included the handsome *Rhus glabra laciniata*. *Koeleruteria paniculata* may also be increased in this way, as also *Paulownia imperialis* and the *Catalpas*, though, as seed of these may readily be obtained, they are most increased by that method. The beautiful and scarce *Xanthoceras sorbifolia* grows from root cuttings, but the quicker way is to graft a shoot on a portion of the root, which soon unites and grows freely. The same principle is generally carried out to increase the varieties of *Althæa frutex* or *Hibiscus syriacus*, but cuttings of the roots will grow freely enough. As so many are grafted, it is often difficult to obtain the variety on its own roots. *Aralia spinosa* increased readily in this way, as also does the new *Clerodendron trichotomum*, which blossoms so late in the autumn. Many kinds of Brambles will grow freely from the roots. The cutting-taking must, of course, be limited to the transplanting season, when a few good roots may often be taken off without in any way injuring the plant.

As it is not always possible to take all the cuttings of one kind at once, a good way is to lay them in till a sufficient number is thus accumulated, when they may be inserted permanently in the ground. A length of 4 inches or 5 inches is very suitable for the cuttings, and in the case of some subjects that taper but slightly, care must be taken not to put the cutting in the ground upside down, as that is easily done if not attended to. We put the cuttings in a bed of light sandy soil, so situated that the spot is sheltered from hot drying winds, and where the soil is never thoroughly parched up.

When inserted in the open ground the cuttings should be placed in a perpendicular manner, and buried deep enough for the upper portion to be about 2 inches below the surface, but the more particular subjects we protect by a frame, and in their case so much covering is not necessary, as the frame shelters them to a great extent from the wind. A covering of about half an inch of soil will be sufficient. T.

Rubus spectabilis.—This North American Bramble is now one of the most pleasing objects in many places, being thickly studded with drooping



Abelia uniflora.

used in a smaller state, and grafted at times other than the spring—during the summer and early autumn. The scion should in this case consist of a partially ripened shoot of the current year's growth, and the stock must not be cut down, or, if even headed, only very slightly. Side grafting is also commonly practised in Oak propagation. After the union of the stock and scion takes place the head of the stock must be removed by degrees. The same care as above recommended must be observed as to tying and covering with grafting wax, and, in addition, the frames in which the plants are placed must be perfectly air-tight and shaded whenever necessary.

The stocks chosen must always consist of a species as nearly related as possible to the kinds which supply the scion. For instance, the Evergreen Oak (*Quercus ilex*) would be appropriate for nearly all the evergreen kinds. Seedlings of

his work, the number of labourers being in all cases more or less limited. But in planting or improving the pleasure grounds of a large estate, it is surely worth while to ascertain the season at which Evergreens can be removed with most advantage. All my experience points strongly to two seasons—the beginning of autumn (September and October) and the end of spring (April and May). As to the former season, I would say choose that period when the new growth ceases and the young shoots begin to ripen and solidify; as to the latter, take the trees just before the new growth commences. A difficulty, however, presents itself here unless the place for every tree is previously marked out, which it is not easy to grapple with. In ordinary planting the subjects required for the plantations are very various, and do not all begin nor complete their growth at the same time. Some begin and finish early, growing rapidly for a short

purplish blossoms. It is an upright growing bush, which pushes up suckers so freely as to soon form a dense mass, for which reason it must not be planted too close to delicate plants, otherwise they are liable to be choked by it. In a fairly moist situation this Bramble is seen to the greatest advantage, as under such conditions it will continue to flower for a long time. This is not the only ornamental Bramble worth growing; *R. deliciosus* from the Rocky Mountains is a shrub all should possess. Its flowers are 2 inches in diameter and pure white in colour. It flowers in the early part of May, and is at that time one of the most ornamental of shrubs, besides which it does well treated as a wall plant. *R. nutkanus* has stout erect stems with large-lobed leaves and pure white flowers, while *R. odoratus* is somewhat in the same way, but more vigorous and with purple blossoms. This last pushes up suckers freely, and resembles *R. spectabilis* in being thoroughly well able to look after its own interests. The leaves of *R. odoratus* are large and handsome.—ALPHA.

EARLY FLOWERING MAGNOLIAS.

THE fact that the propagation of these trees is difficult is no doubt one reason why they are not more extensively planted. When in bloom a large specimen of the Yulan, for instance, is a most imposing object and exhales a most delicious perfume, especially during sunshine. The blossoms, it is true, are often injured by frosts, but this is not invariably the case, as, for example, the present season. The earliest to flower is the Yulan (*M. conspicua*), the largest growing of the whole group, with white blossoms. It is seen to the greatest advantage as a single specimen, but in colder districts the protection of a wall is needed for the sake of the flowers. A little later in expanding is *M. Soulangiana*, which is generally recognised as a hybrid between the last named and the smaller deep-coloured *M. obovata* or *purpurea*. It is rather more spreading in growth than *M. conspicua*, and the outside of the flower is tinged with purple, but the shape of the bloom does not suggest any relationship to *M. obovata*. The handsome new variety known as *Soulangiana nigra*, in which the exterior of the blossoms is of a deep purple hue, is in fact the darkest flowered hardy Magnolia in cultivation. *M. obovata* itself is the latest of the early flowering class, and forms a somewhat spreading shrub with purplish blossoms, smaller and more pointed than those of *conspicua* or *Soulangiana*. This kind varies a good deal in the colour of its flowers, some being of a much deeper tint than others. It is more readily propagated than the rest by means of layers or suckers, and is therefore used as a stock on which they are grafted. *M. Lenei*, supposed to be of the same parentage as *M. Soulangiana*, is much deeper in colour than that kind, but is not so vigorous a grower. A great number of other names exist in different catalogues, but they resemble each other so closely, that no further notice need be accorded them, as the variation is no more than might be expected in a batch of seedlings. The last to mention is the pretty little Japanese *M. stellata* or *Halleana* (for it is known under both names), which assumes the shape of a much branching shrub of rather slow growth. The flowers are pure white inside and slightly suffused with pink on the exterior. In shape, too, they are very different from the rest, as the petals, which are narrow and strap-like, reflex soon after opening, thus leaving the centre of the flower exposed. This kind is quite hardy, but readily lends itself to pot culture, flowering as it does every season under such treatment. All these kinds of Magnolias thrive best in a good loamy soil, and so situated that they are not at any time exposed to extremes of drought or moisture. They are also very impatient of being disturbed at the roots, for which reason the young plants are often kept in pots to be planted wherever desired. While on this subject I may mention a couple of specimens of the American Swamp Magnolia (*M. glauca*) in a low-lying part of the garden here, one of which retains its leaves so thoroughly during the winter as to be practically

an evergreen, while the other, under just the same conditions, has only a leaf here and there, thus being to all intents and purposes deciduous. H. P.

Daphne Cneorum.—Unfortunately this, one of the prettiest of low-growing shrubs, is often difficult to manage, though under certain conditions it will grow and bloom freely without any trouble. I find it succeeds best in leaf mould that is always fairly damp, but it must never be surcharged with stagnant moisture. The best plants of this *Daphne* that have come under my observation were planted on a sloping bank formed of decayed leaves, in which the roots of the *Daphne* ran with the greatest freedom. The only sunshine that reached them was for a little time in the morning, yet they flowered profusely and were in robust health. Another pretty little species in bloom now is *D. neapolitana*, a close upright growing shrub about 2 feet high, with small dark green leaves and clusters of purplish pink blossoms. The flowers of this are also very agreeably scented.—T.

GARDEN DESTROYERS.

INSECTS ON INDOOR PLANTS.

MEALY BUG.—The different operations in plant culture, propagating, potting, training, &c., simply require periodical attention, but insect plagues can only be successfully dealt with by incessant watchfulness and labour. This especially applies to the worst species, such as mealy bug and brown and white scale; the former when it exists on plants kept constantly in a stove temperature increases and spreads at a rate such as to preclude the possibility of successful cultivation without an amount of labour that often can be ill spared, and not unusually unavailable. The difficulty of getting completely rid of this pest is in its differing from other insects in not confining its presence to the plants on which it subsists, but in secreting itself in the wood and brickwork, or elsewhere within the house that affords shelter. So easily is it conveyed from one place to another, that anyone who has been in contact with plants badly affected with it may carry on their clothes enough small fry to stock the occupants of other houses that are free from it.

SCALE, either brown or white, though requiring a stronger application of any insecticide to kill it, is more easily got rid of, from the fact that it confines its presence to plants, and does not take up its quarters in the material of which the houses are constructed. The insecticides brought under the notice of cultivators in recent years must, however, be used on different plants with caution. Take, for instance, *Camellias*, *Gardenias*, *Ixoras*, and a host of others. The leaves and shoots of these are hard enough in texture to enable their being dipped in or syringed overhead with liquid, such as would destroy *Cinéraires*, *Calceolarias*, *Gloxinias*, *Gesneras*, and others almost innumerable that have soft leaves. Nothing short of wide experience can enable anyone to judge correctly as to what remedies may be safely employed and what not. The effects of an absence of such knowledge may be seen in the many instances where plants are either killed or so far injured by the means taken to rid them of vermin, that the remedy becomes as bad as the disease.

PARAFFIN.—Since this has come into use for the destruction of mealy bug, the difficulty of dealing with this pest has been much reduced, particularly in the matter of cost. Any of the other liquid dressings previously in use, in which the active agent was methylated spirits, spirits of wine, or turpentine, involved considerable cost where large numbers of plants had to be gone over. From the low price at which paraffin may now be obtained and the highly diluted state—a small wineglassful to a gallon of water—in which it requires to be used, the cost does not amount to more than a fraction of that which used to be incurred. Notwithstanding the often-urged necessity for extreme care in the use of paraffin, mistakes are

frequently made with it, although, so far as I have been able to observe, it is a safe remedy for plants with hard, or moderately hard, leaves. Woolly-leaved plants of most kinds are not so well able to bear it, especially if their foliage is not in a hard, matured state. In the case of most things of a deciduous character, or that have leaves soft or tender, it should never be used before trying its effects on a shoot or two and noting the result. There are some kinds of plants that appear to have their leaves slightly affected by it, yet not so as to show much injury. In the case of such, I have always found it better to take the precaution of syringing them freely overhead with clean water immediately before dipping or syringing with the paraffin water; and in some cases, where the leaves do not show a trace of injury from its use, the young flower-buds will not bear it, falling off without opening; with these its use should obviously be confined to such times as when flowers in any stage are not present. In fact, although this oil is a real boon as a labour-saver to plant growers, still, too much care cannot be exercised in its use.

OTHER INSECTICIDES.—A mixture consisting of tobacco water, soft soap, and a little turpentine, boiled together, used to be a favourite dressing for mealy bug. I always found, however, that except with such plants as have very hard leaves it did more or less injury. Fir-tree oil is now used much in the way that paraffin is, and by some preferred on account of its being easier to keep mixed with the water, but being so much higher in price than mineral oil, it is not likely to come much into use. Abyssinian mixture will destroy insects right out in two or three consecutive dressings of 4 oz. or 5 oz. to the gallon, applied at intervals of a week or two, provided care is taken that it reaches every part of the plant. Its cost is, however, so much greater than that of paraffin, that it is now much less used than it once was. Gishurst compound has been long known as a favourite dressing for many things, but to destroy bugs or scale it requires to be used stronger than most plants will bear, unless it is used weaker and applied so often as to entail a great amount of labour. For thrips and red spider it is one of the best things I ever tried; it kills them when used in a weak state; 2 oz. or 3 oz. to the gallon is generally strong enough. Tobacco water, to which Gishurst in something like the above quantity has been added, is the best remedy for thrips and red spider on Azaleas with which I am acquainted. Dip or syringe the plants and allow the dressing to dry on the leaves; it kills both live insects and their eggs. Without the addition of Gishurst, tobacco water will kill thrips, but it is not effectual in the case of red spider.

TOBACCO WATER.—For destroying aphides there is nothing in a liquid form that I have found equal to tobacco water; it is both safe and effectual. Tobacco smoke is generally used for killing aphides on indoor plants, but tobacco water effects a considerable saving both in material and labour. It will usually be found that during winter and early in spring aphides make their appearance on an odd plant here and there, and if those that are thus affected are dipped or syringed before the insects have time to spread, the necessity for smoking becomes much less frequent. This particularly applies to such plants as *Cinéraires*, *Calceolarias*, and *Cyclamens*, all of which are so liable to harbour aphides on the undersides of their leaves. *Cinéraires* where grown, as they should be, with the atmosphere about them moist, are liable to have their big bottom leaves injured by fumigating; whereas if odd plants that happen to be affected are dipped in time there is seldom any need for other means being taken. This is a precautionary measure that commends itself to amateurs who happen to have only a single greenhouse, which at certain times of the year, such as when *Pelargoniums* are in flower, cannot well be fumigated without injury being done to the bloom. In like manner for a conservatory or greenhouse that has an entrance from a living room, consequent on which tobacco smoke is more than ordinarily ob-

jectionable, the use of tobacco water as a precautionary measure commends itself. Nicotine soap finds favour with some, many Orchid growers liking it for the destruction of thrips that infest the young growths, particularly of thin-leaved species such as *Odontoglossums*. Applied in a weak state in the form of fine spray, it kills the insects and makes their hiding place untenable; but with valuable and slow growing plants, such as these, care should be exercised in applying insect remedies, or mischief may be done that would take years to repair. The article sold under the name of nicotine powder can be used with effect for the destruction of aphides on plants that cannot well be fumigated, dusting it on just in the way that ordinary Scotch snuff may be used and which is equally effective. The objection to both is their cost and the slow tedious work applying them entails. Amateurs and others whose experience in indoor plant growing is limited will do well to realise the fact that however correctly the general details of cultivation may be carried out, unless insects are kept well under, success will not be more than partial. Where the mistaken course is followed of letting them get to a head, and then making an extra effort to remove them, the plants are not only weakened and suffer in appearance by the presence of the insects, but the severe means that have to be taken to relieve them rarely fail to increase the mischief.

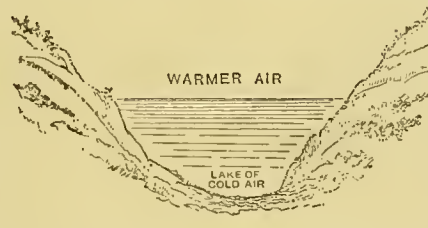
Only a slight acquaintance with the insects in question suffices to show that the worst kinds are easiest dealt with in the dormant season, when they as well as the plants are least active. An effort should be made before growth commences to get the stock as clean as can be; by which means a saving of labour and material will be effected, in addition to the better appearance that may be looked for in the plants. Even where the stock is apparently free from aphides in winter it often happens that a few are lurking out of sight in some snug corner; these soon increase when the sun's warmth returns, and if there is a total absence of the unwanted company within the house, some are all but sure to find their way in when they get numerous outside. It is time well spent to look over such plants as they are partial to once a week, dipping any that may be affected in tobacco water, as already advised. By this means they can best be kept from gaining a footing. Where a considerable number are grown together of any kind of plants particularly liable to the attacks of aphides, such as *Calceolarias* or *Pelargoniums*, it is well during the spring to follow the practice of those who grow these plants for exhibition by fumigating the house slightly once a fortnight, whether any insects can or cannot be detected; prevention is preferable to cure. Few, if any, living thrips survive through the winter, but their securely deposited eggs come to life with the return of warm weather. All plants that have been affected with these insects should now be dipped in or well syringed with strong Tobacco water in which has been dissolved a little G'shurst, as already stated, taking care that the liquid reaches every part of the leaves and shoots, leaving it to dry on, by which means the vitality of the eggs will be destroyed despite their varnish-like covering. The injurious little pest, red spider, is so small as to often escape detection until it has got numerous; but with it, as with similar parasites, it is the best to take timely steps to prevent its increase. It cannot exist where water can reach it. Those kinds of plants to which it has a particular liking, or that have been affected with it during the preceding season should, as soon as the sun gets powerful enough to bring it into active existence, be frequently washed, not using the syringe in the thoughtless way often done by directing the water to the top of the leaves, which instinct teaches the insect to avoid, but by getting it to the under surface, so as to reach every part, without which the work is of little use. Plants that require to be kept under glass altogether, or for the greater part of the year, are thereby particularly liable to the attacks of insects, which require a continual war being waged against them, and unless those who are engaged in the work make themselves acquainted with the nature and habits

of the enemies they have to contend with, they labour under a disadvantage which entails waste of time as well as disappointment.

T. BAINES.

AMERICAN NOTES.

Frosty valleys.—The effect of valley frosts has been long understood by fruit culturists, and cultivated plants and tender fruits are well known to perish frequently in valleys, while on adjacent hills they have escaped. Three causes have operated to produce this result: 1. The air made cold by radiation on clear nights, becoming thus heavier, rolls down the hillsides and settles like a cold lake in the bottom. 2. While winds sweep over the hills and prevent the frosts of clear nights, they do not reach the sheltered valleys where unobstructed radiation to the sky above renders the temperature several degrees lower. 3. The third operating cause is the richer and more porous soil washed into the bottoms of the valleys, and promoting a later and more succulent growth, renders the trees more easily destroyed by winter cold, and promotes more rapid radiation. Numerous instances may be cited where orchards on hills from 100 feet to 300 feet above the common level have borne good crops of fruit annually, while in half the seasons they have perished below. We have known a difference of 40 feet in altitude to produce a very distinct effect, the fruit buds being killed below while they remained alive above. A striking illustration



occurred after a sharp night's frost early in the season. The leaves of the Hickory and of some other trees had recently expanded and were a few inches in length. Being yet very tender, they were easily killed by frost. On driving over a portion of the country which was frequently intersected by creek valleys 20 feet or 30 feet deep, all the young leaves in the valleys were observed blackened by frost, being killed by the lake of cold air which had settled there, while on the level above all were fresh and green. Those who travel on clear cold evenings often observe the sharper cold in valleys when compared with the level above, and in such instances the thermometer has indicated several degrees difference in temperature. These facts should be borne in mind by those selecting sites for new orchards. —Country Gentleman.

American Apples.—Someone, says Mr. C. M. Hovey in the *Massachusetts Ploughman*, has said in regard to the Apple that its natural locality is a belt extending from Virginia north as far as the Canada line. Well, this statement is mainly correct. We have the Western Apple, handsome, large, watery, with big cells, filled up with water. They do not keep like the Vermont and New Hampshire fruit, and we do not want Apples like them. The Baldwin originated near us, and the Roxbury Russet also. The Spitzbergen originated in New York State, and all other varieties of good Apples in a comparatively small area. The Newtown Pippin can be raised only in the climate in which it originated, unlike other Apples, along North River and on Long Island. In New England it is a comparatively worthless Apple. All hardy fruits require a comparatively cool climate. Nature has placed them where they will do best. We have originated others in the same climate and to be kept valuable they must be kept under similar conditions. Any tree, if you wish it to grow with vigour and bear well, never wants the

knife. A knife is a necessity, to be sure, for you want it to thin out some of your branches, but you do not want to cut away limbs so as to let the light into the tree to wither the young crop. Nature always provides about enough foliage. Would you wish to see a beautiful Elm tree? Go into the woods, where you will find those that have never had a knife applied to them. The tree grows of itself in a graceful shape. In the growth of fruit trees there are two objects to be attained, —the growth of the tree and the fruit. Pruning is a necessity, but it must be done with greater judgment than most people show. Anybody can prune a tree who can use a saw or hatchet. But we must be observant, and not cut the branches so as to injure the tree.

EXHIBITION OF ORCHIDS.

MR. BULL'S yearly show of flowering Orchids in his nursery, King's Road, Chelsea, opened on Tuesday last, is as fascinating as any of its predecessors, and, though composed of pretty much the same kind of material as heretofore, there is a freshness about it which is quite delightful. The crowds of everyday Orchids which it contains are so leavened with all that is new and rare, that connoisseurs must derive much interest from it. From now onwards to the close of the London season this charming exhibition will be a great attraction. It is held in the same building, as on previous occasions, but it eclipses its predecessors in some respects—the natural outcome of experience gained at previous shows. Thus the grouping system is carried out more liberally, and the result is, the general effect is enhanced, and, moreover, the plants, thus brought together, show themselves off to increased advantage. Their rich, brilliant, varied hues are softened by crowds of Maiden-hair and other Ferns, while intermixed with the taller plants are numbers of stately Palms, Aroids, and other fine-leaved plants, which add much to the beauty of the scene. Though at the present time Orchid bloom is not at its best, being, as it were, midway between the first flush of spring bloom and the main summer display, there is, nevertheless, a wonderful array of flowering plants, consisting of such early kinds as *Sophranitis*, *Oeologynes*, &c., and later flowering kinds, chief among which are *Cattleya Mossie* and *gigas*, *Odontoglossum vexillarium* and others. There is, therefore, a great diversity of species and varieties of which a long list might be made. To enumerate them here would be like taking a leaf or two out of Mr. Bull's catalogue, so we will confine ourselves to a few of those at present in flower to which the visitor's attention may be directed. One of Mr. Bull's strongest points is *Masdevallias*, and of these he holds a matchless collection of varieties, particularly of *M. Harryana*. These he has collected from all sources, but the greater number has cropped up from the extensive importations of this plant from time to time.

THE MASDEVALLIAS alone would make a show, and a brilliant one. It is scarcely credible that one genus is capable of yielding such a diversity of form and colour. Rarest on the list is *M. Schlimi*, a plant of which carries a four-flowered spike. It is not showy, but the subtle shades of olive-green and cinnamon, which make up the body colour of the flower, are pleasing. In the same category as *Schlimi*'s plant is the Humming-bird Orchid, *M. trochilus*. It has bulging flowers about the size of a humming-bird's body, and of a reddish brown, while their long, attenuated tails are yellow. Another weird-looking species is *M. Peristeria*, called the Dove *Masdevallia*, on account of the petals and column being in the form of a miniature dove. Coming to the *Harryana* section, we have rich colours enough to give a glow of brightness to the whole house. Nothing can excel the superb tints of these *Harryanas*, not even the most brilliant aniline dye. There are a good number of named varieties of *Harryana*, probably half a hundred in this collection alone, but their distinction, in most cases, being one of colour, it

is useless to attempt to define their distinguishing character. We would specially commend the following sorts to the notice of visitors, viz.: *acanthifolia*, always recognised by the little spine on the leaf-stalk. The flowers of this variety are of an intensely rich magenta-crimson, so rich, in fact, that the colour seems to drop out of the sepal ends, as there it is the deepest. The same splendid colour pervades the varieties named *atropurpurea*, *Reginæ*, *vivicans*, *sanguinea*, *regalis* (with very large broad flowers) *insignis*, *illustris*, *brilliantissima*, and others. These may be seen in bloom side by side, so that their subtle differences may be appreciated. Then there is a group of varieties which partake of the bluish tint of the *cœrulescens* variety. These form quite a separate

some time to come. The innumerable forms of *Alexandræ* and *Pescatorei* will afford a special charm to the visitors who look to real flower beauty, but orchidists will probably find more to interest them in the multitudes of hybrid *Odontoglossums*, which throughout the season they may reckon upon finding here, these being one of Mr. Bull's specialities, and he loses no opportunity to enrich his collection with them. At the present time one may find many of the so-called hybrids from such well-known ones as *Andersonianum*, *Ruckerianum*, to some which have flowered this season for the first time. One of these, named *lutescens*, is particularly noteworthy on account of the delicate flush of yellow which broadly margins the ivory-white sepals. It is like

beautiful *D. albo-sanguineum*, a species not often seen, being so difficult to manage. It is well worth any trouble on account of its beauty. Its large flowers are creamy white, inclined to a buff tint, while the lip is adorned with a heavy blotch of vinous crimson. It would be instructive to know how these fine flowering plants have been treated. At every turn in the show one comes upon the lovely silver and gold flower clusters of *D. thyrsiflorum*, to which the exhibition owes a deal of its beauty. Everyone who sees this Orchid is fascinated by it. It is indeed the embodiment of elegance and colour beauty, and fortunately it is plentiful and inexpensive. Besides the common *D. nobile*, is a variety of it named *princeps*, which is only second to the new *nobilis*, and which



An Austrian Mountain Stream. (Engraved from a photograph.)

set easily recognised. Another group has been raised with respect to the form of the flowers, and noticeable among these is *conchiflora*, so named on account of the flowers being shell-like. *M. Veitchiana*, *igneâ*, and varieties, and numerous other species are in bloom; in fact, the *Masdevallias* alone form quite a study.

ODONTOGLOSSUMS *vexillarium*, *crispum* (*Alexandræ*), *Pescatorei*, and *citrosimum* contribute largely to the exhibition, combining as they do such elegance of growth with chaste and delicate tints. Of *O. vexillarium* there is a splendid group, so arranged as to present at a glance the wide variation of tint now to be seen in this lovely Orchid. From one with flowers almost wholly pure white there is every gradation to a deep rose-purple, as represented by the variety *rubrum*. This group is formed of the earliest flowering plants of *C. vexillarium*, but they are few, indeed, compared with the hundreds of specimens just bursting into bloom in another house, and these will take a prominent part in the exhibition for

a yellow *Andersonianum*, and different from any we have seen in the same class. The true *hebraicum*, showing the curious mosaic caligraphy on the sepals, is to be seen as well as *polyxanthum* and a variety of *gloriosum*, named *pratiosum*, distinguished by the flowers being profusely spotted. Another new variety of the luteo-purpureum type is named *bellinum*. Its flowers are extremely handsome, being chestnut-brown, and the broad lip is pure white. Among other commoner kinds some groups of the forms of *O. Rossi majus* have a charming effect mixed with Ferns. This Orchid, like the *O. Alexandræ* and *Pescatorei*, will be admired, and especially because it is cheap and can be easily grown.

DENDROBIUMS.—Seeing that the *Dendrobium* flowering season is fully a month past, a large number of species is not to be expected in May, but Mr. Bull has contrived to keep some back and hastened others on, so that he has a goodly number of representatives of the genus. Besides the commoner species, one may see numbers of the

probably will never be surpassed. Among other *Dendrobies* is the lovely *Devonianum*, whose long, slender growths are densely wreathed with transparent fringed blossoms of white, purple, and orange; *D. Jamesianum*, with clusters of white and gold; and, lastly, *D. primulinum*, to which most orchidists give the palm as the loveliest of all *Dendrobies*.

CATTLEYAS AND LÆLIAS.—It is scarcely the best season for *Cattleyas*, being rather too early for *C. Mossiæ*, *Mendeli*, and *gigas*, but there are numbers of each of these species and some very lovely varieties of them, particularly of *C. Mendeli*, some being remarkable for large size of the flowers, others for their colour. Among the plants of *C. Mossiæ* we singled out as the finest one called *Lawrenceans*, remarkable for large size of bloom and splendid colouring, and among the *gigas* section in flower none compared with *imperialis* both for size of flower and richness of tint. The *Lælias*, however, are the one great feature just now, and the *purpurata* varieties make

a show in themselves. These range from the purplish sepalled type to the snowy sepalled alba, and one form of the white variety called gloriosa has a splendid maroon-crimson labellum, adorned with a white tip, and another, atro-sanguinea, has an extra deep lip. *L. elegans* is now in full beauty, and of the various forms alba and Schilleriana are the finest. These *Lælias* and *Cattleyas* are arranged in groups, so that they show to much better effect than if intermixed singly with other plants.

CYMBIDIUM LOWIANUM is in great perfection, and the specimens of it here we should say are unequalled in any collection. For instance, there is a huge plant in a pot 2 feet across carrying no fewer than 152 flowers on seven spikes. These spikes are about a yard long, and as they hang on all sides of the plant they have a beautiful appearance. Even in this species one may detect some well marked varieties, some having flowers with deeper green sepals, but the greatest difference is in the depth of the crimson colour in the lip. The ivory-white *eburneum* is just commencing to bloom, and the hundreds of plants which are here will afford a succession for some time to come. For richness of colour no Orchid that we saw here compares with that of the flowers of *C. pendulum atro-purpureum*. These are about 1½ inches across, produced on a long drooping spike, and each is of an intensely deep velvety crimson, with a spot of golden yellow on the crest, yet it is an Orchid not thought much of, and has long been relegated to the classes that are considered to be not worth attention.

ONCIDIUMS in bloom comprise the yellow *Marshallianum*, whose wide-spreading branching panicle of flowers has been aptly compared to swarms of golden butterflies. It is among the choicest of all Orchids, one that cannot be overpraised. One of the Orchids that most attracted us was *O. falsiloquum*, a new species, not showy, but exquisitely beautiful and graceful. The flowers are small, creamy white and purple-spotted, but are very numerous and set on branching spikes. *O. hæmatochilum* and *Krameri* will, of course, be a great attraction to those interested in flower mimicry, as these resemble insects very closely. Among other genera are *Aerides decorum*, a beautiful new species in the way of *A. quinquevenerum*, but different from it and quite as beautiful; the sepals are lilac heavily tipped with carmine, and the whole flower densely freckled and spotted. *Saccolabium miniatum citrinum* is a real gem. It resembles in growth *S. curvifolium*, but seen side by side they are quite distinct. The new one has smaller and less open flowers, thickly set on an erect spike, and of a sort of Venetian red. Other interesting kinds include *Chysis Limminghei*, *Cœlogyne Massangeana*, *Vanda tricolor planilabris*, numerous *Cypripediums*, including *caudatum*, *Lawrencianum*, *Warneri*, *Dayanum*, *Hookeri*, *Catasetum Gnomus*, rare and curious; *Sophronitis grandiflora*, late plants; *Epidendrum glumaceum*, an old species seldom seen in flower; *Odontoglossum hastilabium*, and *Oncidium concolor*, the clear chrome yellow of the latter being conspicuous throughout the show.

Cypripedium pubescens — The first flowers of this have just expanded. This and *C. spectabile* do better in pots than any others of the hardy species. I cannot complain much of *C. acaule*. That singular species does well for some years, but dies off suddenly and unaccountably; perhaps we have not exactly the right potting soil for it. Nevertheless, all of these Lady's Slippers are very interesting as pot plants, and if they cannot all be kept in vigorous health year after year, in most instances they can be renewed at a cheap rate by means of imported plants purchased in winter and potted as soon as received.—J. DOUGLAS.

Cattleya Skinneri alba.—This rare *Cattleya* is now in flower at Kew—a small plant, bearing a raceme of the most beautiful white flowers, which are as large as the flowers of the type. Except for a small blotch of pale purple on the lip and a yellowish shade about the inside of

the tube formed by the incurved edges of the labellum, the flowers, of which there are six, are of the purest crystallised white, and being of good substance and form they are likely to remain in perfection for some time yet. There are very few plants of the true white form of this *Cattleya* in cultivation, although such plants have been known to exist in England since 1877, when Messrs. Veitch exhibited a flowering specimen of it. We could understand a beautiful white-flowered Orchid like this selling for a high price, which is more than can be said in regard to some of the "white varieties" for which there is such craze just now, but which are often less beautiful than the comparatively despised types. Perhaps some of our enterprising collectors will think it worth their while to send home a large importation of good specimens of this most beautiful Orchid, the home of which is Costa Rica.—B.

AN AUSTRIAN MOUNTAIN STREAM.

A TOUR in the mountain districts of Lower Austria, which, though it cannot be compared with the picturesque and wild vegetation of Upper Austria, Styria, and the Tyrol, has nevertheless its interest. The Austrian Pine (*Pinus austriaca*) is generally met with in hot dry parts, seeking for scant nutriment amongst the stones; sometimes it is mixed with deciduous trees, but generally it grows in dense masses in stony places where hardly any other tree could exist.

In more fertile places the Scotch Fir (*Pinus sylvestris*) is also to be found, most picturesque on account of its light reddish trunks; the Silver Fir (*Abies pectinata*) and the Larch form extensive forests, especially in the parts near the Styrian Alps. The wood is a great article of industry either for building purposes or burning. In fact, the majority of the inhabitants of these parts are either wood-cutters or engaged in industries connected with wood. At higher elevations, where alpine plants begin to grow *Pinus Pumilio* is frequently met, often in dense masses impossible to walk through.

Of deciduous trees the Beech and the Hornbeam are found in great masses, and of Beech especially there are extensive forests, and the wood of it is an important article of commerce. The white Birch, English Oak, Turkey Oak (*Quercus Cerris*), Field Maple (*Acer campestre*), and *Acer platanoides* are at home in some places. During autumn the scarlet fruits of *Sorbus Aria*, Mountain Ash (*S. aucuparia*), wild Service (*S. torminalis*), the fruit of this sort being edible; Hawthorn (*Crataegus oxyacantha*) are conspicuous in the woods.

Early in spring two shrubs (*Cotoneaster vulgaris* and *Aronia rotundifolia*) which grow on the chalky rock are covered with white flowers, whilst *Cytisus biflorus*, *Genista pilosa*, *Potentilla verna* var. *cinerea* are one mass of rich yellow. Later on *Daphne Cneorum* flowers freely on open sunny places; in cool shady spots amongst trees *Daphne Mezereum* and *D. Laureola* are met in colonies. *Anemone Pulsatilla*, *Hepatica*, and *Adonis vernalis* are some of our finest native spring flowers; not forgetting *Primula acaulis*, *officinalis*, *elatior*, and *farinosa*. During summer masses of *Calamintha alpina*, *Globularia cordifolia*, and *Polygala Chamæboxus* are a very pleasing sight.

Laxenburg.

L. KROPATSCH.

Tough soil (p. 406).—I have always found a good dressing of stable manure to prevent clay soil from cracking if placed on the surface in summer. It is also useful round the roots of trees, Roses, and most other plants in winter. Cocoa-nut fibre refuse is also invaluable worked into the surface or spread over it if manure and leaf-mould cannot be had. We have to deal with stiff clay here, and I think we can grow most flowers, fruits, and vegetables on it well, though I do not pretend to make silk purses out of sows' ears. We work in plenty of stable manure, and think of trying sea sand, which the railway company deliver at our station at 6s. a ton. Of course manure, sand, leaf-mould, Cocoa-nut fibre refuse, &c., all cost money, which some cannot spare.—J. DOUGLAS.

KITCHEN GARDEN.

NOTES ON CAULIFLOWERS.

Now that we have a good selection of early and late Cauliflowers, it is a comparatively easy matter to maintain an unbroken supply of either Cauliflowers or Broccoli. A gap may be caused owing to the destruction by frost of some of the most delicate Broccoli, but, as a rule, this can be prevented, and they may still be fairly abundant after the earliest Cauliflowers are fit to cut. We usually winter a good number of autumn-raised Cauliflower plants in old frames, but the earliest supplies are obtained from those wintered thinly in handlights. If by any chance the late Broccoli is destroyed, a slight hotbed is formed early in the year, and on this is placed a large rough frame and a good depth of loamy soil is placed on the bottom. The plants are set about 15 inches apart each way, and, being duly protected, soon grow strongly, and, with the aid of constant supplies of liquid manure, yield good serviceable heads. The forcing varieties are best for this purpose, but I have grown both the Dwarf Erfurt and Early London in the same manner, and have been enabled to cut medium-sized heads early in May, and find close heads fit for exhibition by the middle of that month without, too, any protection except mats. Cauliflowers to be fine must be grown quickly, and rapid growth is not made either on land poisoned with manure or very poor. In either case "buttoning" usually occurs to a surprising extent. In fact, I have seen large breadths of plants absolutely refuse to grow on ground that had for a long time been over-manured and lightly cropped. In order to render such land fit for Cauliflowers it should either have a liberal dressing of quacklime, or else a portion of the subsoil, if this is of a fairly workable character, should be raised and mixed with the surface soil. When the plants after having been some time put out can be easily pulled out of the ground, that is a sure sign that the roots are in an unsuitable medium. Buttoning or premature hearting will also occur on cold badly drained land, and that evil is almost certain to happen if the plants do not quickly take to their fresh quarters. As a rule, Cauliflowers succeed most satisfactorily on fresh land to which has been added a liberal dressing of good solid manure, and that is the reason why Cauliflowers grown in open fields are so much better in quality than the generality of those grown in private gardens. I have always grown the finest Cauliflowers on ground previously occupied by Celery, taking care to add a dressing of solid manure, as it is quite certain the Celery leaves but little food behind. The plants are usually moved carefully so as to secure good balls of soil about the roots, but I have no faith in pot plants, as these with us are the most liable to button. We plant rather thickly, the small early forcing sorts being set 15 inches apart each way. Early Dwarf Mammoth and Veitch's Pearl we put 18 inches apart each way, and Eclipse and Autumn Giant 2 feet each way. Every inch of ground is thus utilised, and we find that the heads are always as large as required. Supposing a few were wanted to be extra fine for exhibition, rather more space would be given them; isolated rows are best, and these directly they are fully grown would receive heavy soakings of liquid manure—preferably drainings from a stable or cow yard; very large close heads would thus be the result.

In order to secure a good succession without much trouble a judicious selection of varieties is necessary. We winter a stock of plants in rough frames of Early Forcing Dwarf Mammoth, Veitch's Pearl, Eclipse, and Autumn Giant. Several rows of each sort have been recently put out in two different quarters—one being much earlier than the other—and from these we hope to have a succession of heads lasting till late in August. To succeed these more plants of the three last named are raised in March on a slight hotbed. These are now being pricked out on an open border. Another sowing of Autumn Giant was made late in April (early in May would have been soon enough), and

these late-raised plants may do us good service in November. At one time it was still more necessary to have a late batch of the Autumn Giant, but now that we have the Cauliflower like Veitch's Autumn Protecting Broccoli there is less need for them.

W. I. M.

RIDGE CUCUMBERS.

THESE should be grown by all who have no glass house, pit, or frame in which to grow more choice varieties. They may be raised, grown, and fruited successfully in the open air from May until the end of September. Notwithstanding the name, ridges are unnecessary for them; on the contrary, they succeed very well on level ground; indeed, I have gathered many bushels of them from our kitchen garden borders. In May and June it is an advantage to have them up on a slight hotbed, but from July until the end of the season they grow and fruit as well as anyone could possibly desire on level ground. A slight hotbed may be formed by collecting together lawn mowings or old vegetable refuse of any kind which will ferment a little. From two wheelbarrow-loads to two cartloads will make beds to suit different requirements. Two or three plants may be raised and grown on two or three wheelbarrow-loads of material, and they may be grown plentifully on a larger heap. The materials should be made into a ridge about 2 feet in depth and the same in width, treading it down firmly; then place about a barrow-load of soil every 2 feet apart along the top. This should take the form of a mound and should consist of three parts loam or ordinary garden soil and one part of good manure. Make each mound very firm, and then insert in its centre two seeds a few inches from each other and about 3 inches below the surface. This completes operations so far, and in a fortnight or so the plants will be up and growing freely. Care must be taken that slugs do not destroy them, and as soon as the shoots push forth, train them outwards from the plant; never allow them to become crowded. Stop them when they begin to straggle away and always cut the fruits off before they become yellow in colour. They are maturing then, and that will cause the plants to cease fruiting. In warm dry weather give copious supplies of water, and if bearing heavily, let the water be liquid manure. In order to grow them without hotbeds or any artificial aid dig a few forkfuls of manure into the surface of the soil in a warm, sheltered corner of the garden; plant the seeds in one or more such places, and they will soon grow. See that while young they are not eaten by slugs, train out the shoots as they grow, and attend to watering and cutting the fruits as may be required. I am acquainted with a small garden in which ridge Cucumbers are grown near some bushes over which the Cucumbers are induced to climb, and in the fruiting season a pretty crop may be seen hanging from the branches; others scramble over bundles of old Pea sticks placed near them and grow and fruit freely. The short prickly or Gherkin variety is only suitable for pickling. Stockwood is a good kind, but King of the Ridge is a better, as it produces fruit from 12 inches to 14 inches in length, and is excellent in quality.

CAMBRIAN.

CULTURE OF SAVOYS.

SAVOYS are usually grown as successional crops, and therefore it is a mistake to sow so early as many are in the habit of doing. When sown in March or early in April, the plants very frequently have to remain in the seed beds, or in some cases, where pricked out till they have spoilt each other, some of them perhaps commencing to heart prematurely; whereas in most districts if the seed is sown in an open position, either late in April or early in May, the seedlings will be in a fit state for removal by the time ground is ready for their reception. No greater mistake can be made than to sow seed of the Brassica tribe on rich land; this causes rank growth and renders transplanting less easy. I would always prefer having plants from open fields; these may, perhaps, be stunted and more blue than green in colour. But when

sufficient rain has fallen to moisten the soil, sturdy little plants may be drawn and dibbled out without experiencing the slightest check. Leggy, overgrown garden-raised plants, on the contrary, are slow to recover from the serious check experienced in transplanting, and are long a prey to slugs. In the case of Savoys there is no necessity to sow early in order to secure an early supply, as those miniature varieties, such as Little Pixie, Tom Thumb, and King Koffee, are frequently fit to cut long before they are wanted. These are closely followed by the Early Dwarf Elm; Dwarf Green Curled succeeds this excellent variety, and the Drumhead completes the list. This season Gilbert's Universal Savoy will be tried, but whether it will replace either of the foregoing remains to be seen. It is almost useless to plant Savoys on poor ground or in shady fruit borders, as when thus treated they seldom attain a useful size. If the land is poor, it ought to be enriched and made firm again after digging. Loose, rich ground encourages rapid growth, but as the plants are supposed to stand severe frost, it is unwise to grow them too rankly. Some of the best Savoys I have yet grown were planted in succession to Strawberries and without digging the ground. This position we now annually assign to Broccoli, as being the more valuable crop of the two, and Savoys succeed Leeks, Broccoli, Turnips, or any crop that may be cleared off the coldest and most exposed borders. The ground being usually manured and dug for the preceding crop, no further manuring or digging is attempted. Prior to planting drills are drawn with a heavy hoe; these are filled with liquid manure, twice if necessary, and this enables us to plant with a trowel, thus giving the plants a good start. Large heads not being required, we prefer to plant rather thickly; the small early sorts are placed in front and about 12 inches apart each way. Dwarf Elm, being the next dwarf, comes next, and behind these the Green Curled, the plants of each sort being set 15 inches apart each way. Drumheads, being the latest, are usually planted on a separate border 18 inches apart each way. It is usually found advisable to water them twice, but when well established they get no further assistance beyond an occasional hoeing or weeding.

W. I. M.

Butter Beans forced.—I have been trying to force these, but with little success. Sown at the same time as the Ne Plus Ultra variety, they are some weeks later in fruiting, and the crop is not anything like so heavy as in open quarters. Last year I had one or two dwarf Butter varieties which produced a prodigious crop in August, and I thought they would be a great gain forced, but this has not been the case. My opinion is that the dwarf Butter Beans are very useful in the open, but inferior when forced.—J. MUIR, *Margam*.

Runner Beans mixed.—Any combination of the more ornamental kinds of vegetables tending towards making kitchen gardens interesting or attractive appears worthy of adoption, provided of course utility is not diminished. With this end in view it is our practice when sowing runners to mix the seed of the Scarlet and White Dutch sorts equally in the rows. This mixture succeeds admirably—growing, blooming, and cropping simultaneously; the White Dutch if anything bears best, and in cooking no difference in quality is noticeable in the pods.—A. MOORE.

SHORT NOTES.—KITCHEN.

Pea failures.—"K. J." (p. 402) would be glad to hear what reason can be assigned for the failure of undoubtedly new and sound Peas. The simple reason is that they were "wrinkled" Peas, which never can be made sure of vegetation if sown before April 25. This is my experience.—R. GILBERT.

Cabbage Lettuces.—I have this evening taken a general survey of the garden under my care, and among the more notable things is a west border planted with Cabbage Lettuces consisting of three varieties—viz., All the Year Round, Tom Thumb, and Hardy Hammersmith, the latter of which is now in use, and very much superior to the other two.—R. GILBERT.

Late supplies of Seakale.—At the end of April we commenced cutting some excellent Seakale obtained in a very simple manner. We make a single row of crowns across a large quarter in the kitchen garden. They are put in 9 inches apart, and on each side of the row is a clear space of 18 inches unoccupied. Early in spring, as soon as we see any signs of growth in the crowns, we take the earth from each side of the row and make a straight mound of soil over the crowns about 9 inches high. As soon as we see the growths peeping through the soil we begin to cut for use. In doing this we have only to remove the earth on each side of the row, and fine sticks of Kale are revealed as perfectly blanched as anyone could desire. By this means we get Seakale quite ten days later than by any other plan of growing it. If rinsed in clean water as soon as cut every particle of dirt or grit is removed.—J. C. C.

OBITUARY.

WE have to announce the death at the Victoria Nurseries, Reading, on May the 1st, of Mr. GEORGE PHIPPEN, aged 49. He was born at Horton, Bucks, in 1836, and at the age of 18 became gardener to Mr. C. J. Andrews, Reading. Having married early, he soon afterwards went into business on his own account. For twenty years he had the management of the Reading Horticultural Society's shows, and was highly esteemed by the committee and exhibitors. He was also a successful exhibitor, especially in the way of table and floral decorations, in the execution of which he displayed great taste. For the past twelve years he managed the public gardens in the Forbury, under the corporation of Reading. He was well known in most of the southern counties, and greatly respected in Reading. His only son succeeds him in the business.

LATE NOTES.

Pelargonium F. V. Raspaill.—I send you a truss of this double zonal Pelargonium which, I think, is somewhat remarkable for its size and shape.—O. T. HODGES.
* * A fine truss, very dense and measuring over 6 inches across.—ED.

Monstrous Narcissus (J. Whitfield).—The double flower is merely a fusion of two flower-stalks. The flower is not, therefore, double in the usual sense of the term.

Monstrous Odontoglossum (J. Collier).—Two-lipped flowers of *O. crispum* are not uncommon. The occurrence is merely accidental.

Birmingham Botanic Garden.—An extensive range of glasshouses recently erected in the Birmingham Botanic Garden will be opened on the 13th inst.

Monstrous Cyclamen.—A curious deformed Cyclamen from Mr. Burne, Cromer Hall, has three perfect flowers and two leaves produced on one stalk—a monstrosity that has not hitherto come under our notice.

Pruning Dendrobiums.—The following is the result of a pruned Dendrobium nobile that flowered this spring at Brethorpe Holt, Kendal, under the care of Mr. McGregor. The plant had fifty-two growths averaging 3 feet long; these bore eighteen flower-trusses, each truss mostly producing three flowers. This gave at the lowest calculation 2500 blooms. The plant is now breaking very strongly again, and may be seen by anyone interested in the matter.—A. I.

Naming plants.—Four kinds of plants or flowers only can be named at one time, and this only when good specimens are sent.

Names of plants and shrubs.—*J. H. L.*—1, *Narcissus Empress*; 2, *N. incomparabilis* (Butter and Eggs); 3, *N. Telamonius plenus*; 4, appears to agree with what is known as *Priocaulis acaulis altaica*.—*J. Bennet*.—Double Daffodil is *Narcissus odoratus plenus*, other is a variety of *N. Tazetta*; *Dendrobium* so far as we can tell from single flowers is *D. triandrum*.—*T. W. J.*—Double Jonquil.—*R. J. S.*—*Fuchsia procumbens*.—*C. A. N.*—1, *Fritillaria pyrenaea*; 2, *Saxifraga hypnoides* var.; 3, *Arabis albidula*.—*Mrs. M.*—1, *Narcissus Horsfieldi*; 2, *Polygala Chamæbruxus*; 3, *Homogyne alpina*; 4, *Cardamine trifoliata*.—*Collins & Gabriel*.—*Scilla verna*.—*E. M. G.*—1, *Amelanchier canadensis*; 2, *Pittosporum undulatum*; 3, *Amelanchier Botryophyllum*.—*Mrs. K. W.*—Both forms of *Gentiana acaulis*.—*W. F.*—1, *Begonia nitida*; 2, *Adiantum Sanctæ-Catharinæ*; 3, *Abutilon Thompsoni variegatum*; 4, *Leucopogon Cunninghamii*.—*J. Crook*.—*Phlox divaricata*.—*E. C. M.*—1, *Narcissus biflorus*; 2, *Lavandula Stoechas*; 3, double *Nerium Oleander*.—*G. F. G.*—1, *Saxifraga crassifolia alba*; 2, *Borago orientalis*; 3, *Doronicum Pardalanchæ*; 4, *Rubus spectabilis*.—*W. H.*—Next week.—*Mrs. Leach*.—*Ferns* are *Oncidium japonicum*, *Pteris cretica*.—*J. S. S.*—*Ranunculus amplexicaulis*.—*A. W. Wills*.—*Dendrobium secundum*.

WOODS & FORESTS.

THUJA GIGANTEA AND LIBOCEDRUS DECURRENS.

MR. NICHOLSON, of the Royal Botanic Gardens, Kew, favoured us recently in *Woods and Forests* with a very full and minute description of *Thuja gigantea* and *Libocedrus decurrens*, which ought to have fixed their correct nomenclature for the future, but we still find in some private pinetums, and also in public nurseries, that the confusion in naming them continues to exist. We are also puzzled to know which of these beautiful Conifers is meant by your correspondents who have frequent occasion to mention them. An instance of this will be found in an article by your excellent contributor, Mr. Webster, of Penrhyn Castle, in *THE GARDEN* of April 18 (p. 355), in which he recommends *Thuja gigantea* as a substitute for the Larch. Knowing from a former notice of his that he means *Thuja Lobbi*, I hope his suggestion may induce others to give this tree a fair trial, but I fear that in some cases the wrong tree may be planted. "W. B., in *Woods and Forests* of October 22, 1884 (p. 657), is of opinion that matters would be put right by calling *Thuja Lobbi* *Thuja gigantea*, and the tree which has been wrongly named, as the latter, to be called in future by its more distinct name, *Libocedrus decurrens*, and doubtless this would in some degree correct the existing confusion. I would venture, however, to propose that *gigantea* should be dropped altogether, having been the original cause of our perplexity, and *Thuja Lobbi* and *Libocedrus decurrens* should henceforth be accepted as the proper designations of the trees. By this means there would be no longer any doubt as to the identity of either, and the name of William Lobb, Messrs. Veitch's enterprising collector, would be deservedly associated with the beautiful Conifer which he introduced to this country in 1853.

WM. BAXTER SMITH.

THE EVILS OF TRANSPLANTING.

Is it because of any natural weakness that trees of all ages or sizes are blown down by an ordinary storm? My opinion is that it is weakness brought about by artificial treatment. It is a great mistake to suppose that a young forest tree is in good condition because it has a great quantity of short fibrous roots. There can be no doubt the tree is in a better condition for transplanting when it has an abundance of short fibrous roots than when it has only a few bare ones; but I am fully convinced that transplanting forest trees weakens them and fosters disease. No wonder, then, that our forest trees are subject to so many diseases.

Much has been written about "rot" in Larch and Spruce, but no cure has yet been found. Soils, extreme seasons, &c., have been blamed as the causes of rot and other diseases in these trees; but I feel sure that the plan which I propose will be an effectual remedy for rot and other diseases common to forest trees—viz., by the simple plan of raising our forests from seeds dropped in the soil where they are to attain their full growth. Were this plan to be adopted, not only would our forest trees be exempt from many diseases, but they would be in a better position to resist storms. I am confident that nursery treatment is the cause of this want of resisting power. Plants drawn from the seed-bed show the natural disposition and quantity of the roots; plants taken from the nursery lines show the artificial disposition and quantity of the roots, these latter being all trained in one direction, and when they are inserted in the ground by means of the T or H notch, they are confined to one direction, and therefore easily blown down. This, in my opinion, has been abundantly proved by the storms of the past winter. I would here take the liberty of suggesting that foresters and others who may have it in their power should raise a pinetum of seedling Conifers, thereby showing all the trees in their true character. How many of the finest specimens in pinetums are completely disfigured by transplanting? By proper arrangement this could be

effected at a small cost, and in the course of time would afford much valuable information in the art of forestry. S.

PREPARING GROUND FOR PLANTING.

A GOOD deal has been said and written of late on the utility of tree planting in Ireland, and as it is admitted on all hands that such is a matter of national importance, I think it a pity that there now seems to be a lull on the subject. I was under the impression at one time that Government would take a favourable view of the matter, and step in and purchase barren tracts of land in different parts of the country, and commence a series of public works, such as draining, fencing, road-making, construction of embankments, viaducts, and bridges, all of which put together would not only afford work to a large number of labourers, but after trees had been planted and established on such ground the advantages to both landlords and tenants holding farms in the vicinity of such plantations would be immense. Notwithstanding the nakedness of some parts of Ireland as regards trees, one of the greatest drawbacks of the climate is excess of moisture, which at first sight one would be apt to think should have the opposite effect. But Ireland does not stand alone in this respect, as we find the western isles of Scotland, as well as Orkney and Shetland, where tree culture is almost *nil*, to be affected as regards excess of moisture in the same way. One of the great drawbacks which agriculturists have to contend with in Ireland is to prevent as far as possible the sudden and heavy floodings which occasionally occur after a heavy and continued fall of rain.

A wet year over the entire surface of the country is fraught with ruin and disaster to both landlord and tenant, and if something is not done to counteract such excesses of Nature and prevent as far as possible such a wide-spread catastrophe, such will happen again and again to the sad disappointment of many a poor tenant. But it may be said that man cannot reduce or modify the wild atmospheric tornado, but man, with a full knowledge of the past, can anticipate what may happen in the future; and although he cannot command the elements, yet, by directing his energies in a proper channel, he can reduce and modify the evil results arising from such excesses. The preliminary step, then, to attain such an end is to drain and plant the sloping flanks of the mountains that are unfit for tillage, and as the present is a suitable time for draining and preparing the soil, no time should be lost in making a commencement.

Ordinary soil should be drained at least six months before being planted, and wet boggy ground had better be drained at least one year before planting operations are commenced, in order to give the bog time to dreep and cleanse itself of all impurities, and render it firm and in proper condition for the young trees. All surface herbage and Heather should be removed from the surface of boggy ground, in order to allow the rays of the sun to lift and evaporate the moisture more readily and bring the bog into proper condition. When land is prepared in this way, the stagnant surface and subsoil water is removed and the temperature of the soil increased, so that the trees get a favourable start at the commencement, and if the planting has been carried out in a skilful, careful manner, the results cannot fail to be highly satisfactory.

When once a forest has become established on such a position the battle may be said to be won, as the trees will then condense the sudden atmospheric moisture which occurs during a deluge of rain, and in place of the water finding its way down the hillsides in torrents, as formerly, the formation of vegetable mould from dead leaves will arrest and retard its progress by retaining the moisture and giving it out gradually, by which means the sudden rising of floods will be prevented. Such improvements properly carried out are of the utmost importance in rural economy and estate management, and perhaps it would not be far from the mark to say that land in the

vicinity of such plantations will be increased in value about one-half through prevention of floods destroying and sometimes sweeping away crops, and the shelter afforded by the trees to sheep and cattle grazing in the locality.

J. B. WEBSTER.

DRAINING LAND FOR PLANTING.

THE draining of land being an expensive operation, it is necessary that it should be carried out economically, and in a manner calculated to attain the best results. This cannot be effected by any haphazard system or by adhering strictly to any given rule, as it is often found, even in fields adjoining each other, that to do the work efficiently the depth and distance apart at which the drains may act in the one case would be but imperfectly performed if they were placed in a similar position in the other. It is therefore necessary, before proceeding with draining operations on land that requires a regular system of drainage, that a definite plan, and one that is likely to prove effective, should be first decided upon. The chief points on which this plan should be based are the position of the main drains, the depth and distance apart of the minor or secondary drains, and the direction in which they are to run.

The first consideration is the position of the main of carrier. This should be placed, all circumstances being favourable, in the lowest portion of the field, and in such a position as to have a sufficient fall. Sub-mains may be run into this where it is impracticable to carry all the minor ones into it. The depth of the mains will depend on that of the smaller drains, but in all cases they should be half the diameter of the pipes intended to be used, deeper than the latter, so that the low edge of the openings for the small pipes may be in the centre of the large ones, and unless there be a heavy run of water no interruption will take place with the inflow. Various opinions exist as to the direction in which the minor drains should run, but where sufficient fall can be obtained they seem to act most efficiently when placed at an acute angle to the direct inclination of the ground. They are thus in a position to intercept the natural gravitation of the water that may arise from springs or that which falls on the surface. The depth of the minor drains and their distance apart should be regulated by the nature of the soil. Thus, in an open or porous one a depth of from 3 feet to 3½ feet, with a width between of about 24 feet, will prove effective; while on stiff or clay soils a depth of 3 feet, with a distance of about 18 feet apart, will be quite enough. There are, however, occasions when it is desirable to go to a greater depth so as to reach a sound bottom, but otherwise, owing to the excessive cost of deep drainage and the imperfect manner in which it has hitherto acted, the depth seldom exceeds 3½ feet now. A. S.

Lopping deciduous trees.—It is apparent to everyone who knows anything of the subject that trees and shrubs of an overgrown character must be cut and kept within proper bounds, both on account of their own appearance and that of the landscape of which they form a part. To see finely-shaped, good specimen trees ruined from close proximity to inferior ones, or trees of a coarse or rapid growth, is, to say the least of it, annoying. Perhaps the most noted instances of this occur in the case of large Poplars and Elms, many of which exist in most extensive demesnes. By coarse trees I mean such as were originally planted for nurse purposes, and which, no doubt, were intended to be removed as soon as they began to interfere with trees planted at the same time for permanent embellishment. The landscape gardener or planter originally entrusted with the formation of the work may, however, possibly have been to blame in not giving implicit instructions in writing of what was to be done in regard to thinning and pruning, also in not stating the proper time at which the removal of certain trees was to take place, the kinds to be permanently retained, and the distances at which they were to stand. In some cases I find, however,

that written specifications for carrying out planting operations are but little studied after such works have been finished, and that according to contract.—J. M.

THE PAST AND PRESENT OF FORESTRY.

THE more intently one looks back through centuries into the conditions under which trees have been grown in Britain, the more strongly one becomes impressed by the fact that, with all our "forest laws," "forest rights," "forest privileges," and "customs," we have been a people singularly destitute of sylvicultural ideas. The forestry of the present is linked to that of the past, and bears in every essential feature a strong resemblance to it, but neither the forestry of the past nor that of the present can be ranked as sylviculture. Without doubt there are many important exceptions, but, taken generally, the forestry of the present is as much "cabined, cribbed, confined, and bred in darkness" as was the system out of which it has sprung. The forester of to-day may not be required to allocate different parts of his forests to as many different herds of swine, or to supply to certain consumers an indeterminate amount of fuel as their "privilege," but the practices of modern forestry are, in the majority of cases, not one whit less prejudicial to the well-being of a forest. Viewed in the light of a rational sylviculture, the "game laws" of to-day are in many respects as absurd as the "forest laws" of William the Conqueror, and, like them, are fatal to sylviculture.

Forestry has been, and still is, the supple slave of a tyrannical inconsistency. It has not been esteemed exclusively for the beauty, the practical utility, and the commercial value of its peculiar products, but in great part for the facilities it has offered for the carrying out of certain modes of life. What has been the result? We have a forestry trained to giving to the sportsman his sport, to the game-bird its shelter, and to the rabbit a place to burrow in and barks to gnaw at, but we have no sylviculture. But this is not all the result. Our forester has become to a great extent moulded by his circumstances, and has tried to colour his practice with the mere pigments of science.

Is it not true that the theory of the "circulation of the sap" in trees has been used to prove the soundness and to justify the adoption of practices that set every rational principle of sylviculture at defiance? And is it not true that this theory of "circulation," being untenable, is being gradually discarded by scientists themselves? If we are to have a scientific sylviculture, we may expect that physiological botany will bulk largely in it, but we may also rest assured that the laws that have hitherto regulated and determined, and that still regulate and determine, the geographical distribution and the growth of trees will naturally take the first rank. It will then be seen that sylviculture is the child of earth and air, the veritable first-born of geology and meteorology. But till the absurdity of attempting "to grow the greatest amount of timber of the best quality" on lands otherwise devoted to semi-barbarous pursuits is fully appreciated, sylviculture will not, at least to the full extent of its capability, bless our country and our people.

A.

Uses of Hornbeam wood.—Notwithstanding the fact that the wood of the Hornbeam is remarkable for its close grain, even texture, and consequent strength, it is seldom used for structural purposes. To a certain extent this is attributable to the tree not usually growing to a very large size, and also that when it does so it becomes shaky. In France and Switzerland it is preferred before other woods for charcoal, not only for forges and cooking, but also for making gunpowder. At the great gunpowder factory at Berne scarcely any other wood is used. Hornbeam has, however, been of late more used in this country than formerly, it having been found to be peculiarly adapted for making lasts used by boot-makers. It is being sent into this country in

considerable quantities from France. It is packed in sacks, each sack containing a number of small blocks roughly shaped in the form of a last. The advantage of Hornbeam over Beech, which has hitherto been mostly used for this purpose, lies in the fact that with the former, on the withdrawal of the nails the boles close up. This is not the case with the Beech and most other woods.—G. C.

INTERMIXING TIMBER TREES.

IN forming our new plantations, pits for the reception of the plants are dug from 5 feet to 6 feet apart. The hardwoods are not planted until after the Larch, but Laurel boughs or shoots are distributed in the holes at from 12 feet to 15 feet apart previous to the planting of the nurses to represent the hardwoods the Laurel shoots being counted before distribution; by this method a correct account of hardwoods, required can easily be ascertained, and the arrangement of the masses and the judicious disposal of groups can be better managed after the nurses are planted than before. I use nothing but the Larch as nurses for hardwoods; it does not take up so much room as evergreen Firs, allows a freer circulation of air, and is, in fact, the best and most profitable plant for such a purpose. If shelter be required, I prefer planting a screen or strip of Pines on the most exposed sides—Austrian, Corsican, and Scotch Pines are the most suitable, the former on the outside, as it excels all others as a shelter tree, filling up with Scotch Pines as nurses. If game cover be required, Silver or Spruce Firs, planted in clumps and filled up with Larch as nurses, answer the purpose better than indiscriminate planting. I plant the hardwoods of each sort in distinct, irregular-shaped, sectional masses, according to the nature of the soil and exposure.

The old-fashioned plan of planting indiscriminately probably a dozen or a score of different sorts of trees over an acre of ground regardless of soil or situation suited to the different trees, cannot be too strongly deprecated. In disposing of the different sorts of hardwoods I plant masses of Beech and Sycamore on poor lands and on exposed sites; next to these Wych Elm and Sweet Chestnut, and in the best land and most sheltered situations Lime, Oak, and Ash. For the sake of ornamental and landscape effect purple Beech is introduced in clumps amongst the common Beech, the Norway and red Maple amongst the Sycamores and Sweet Chestnuts, and groups of the white and Lombardy Poplars and American scarlet Oak amongst the Oak and Ash. The system I adopt here to ensure almost certain success in planting operations is to buy two or three-year-old plants from the nurseries and grow them on in our private nursery, shifting them every two or three years until they are large enough to plant out. The Larches that were planted out this season averaged about 5 feet high, with the stems nearly as stout as walking-sticks, and fibrous roots like those of pot plants. The hardwoods averaged about 7 feet high with clean stems and good leaders, having all undergone nursery pruning, and none of them having stood longer than two years without moving. The park trees had stout stems 3 inches or 4 inches through, with well-balanced heads and roots—a mass of fibres like door-mats. Another reason why success is pretty certain—they are lifted one day and planted the next, the roots never being allowed to get dry. Wherever extensive forest and ornamental planting is carried on a home nursery is almost indispensable.

FORESTER.

Selection of timber for felling.—I consider "D. J. Y.'s" remarks on this head as somewhat misleading. My experience is that where "an estate carpenter" is employed there is generally an estate woodman as well, and it is the latter who thins the plantation. I certainly never before heard of a carpenter being appointed to that duty, and I know a great many little estates where no regular forester is employed, but where a professional woodman is invariably employed to set out and value the trees to be felled, and who

as invariably marks the trees, judiciously setting out as far as practicable the broken-topped, disfigured, and sickly trees for the axe if any have to be left. This is usually the aim of the woodman at all events.—WOOD AGENT.

SEASONABLE WORK.

DURING the present month the forester's chief aim should be to secure his Oak bark, and to prepare it for delivery to the tanner in the best possible condition. The bark season will probably prove a short one, for if warm weather sets in the trees will rush rapidly into full leaf, after which the stripping will be difficult, and the loss of weight will be considerable. For the time, therefore, all other operations in the woodlands should give place to this. At present very low prices are offered by buyers, not more than £4 per ton in the woods; but neither the stocks on hand nor the quantities which are likely to be offered during the season warrant the acceptance of such a price, and if vendors remain firm prices must shortly improve.

Every possible exertion should now be made to clear away from the coppice all poles, faggots, and brushwood, and to take up whatever has been laid upon the stools to facilitate carriage from the falls. No horses should be allowed to remain unmuzzled in the falls after the appearance of the young shoots, and to ensure an early clearance of the produce, the conditions of sale should be strictly enforced. Even with the most careful supervision a great deal of mischief is done to the cut stools in coppices by the feet of horses and the wheels of heavy carriages where the produce is not carried to the sides of brushed roads for loading. To avoid unnecessary traffic in the falls the stripped bark should be staged near the sides of clearance roads, and the fallen trees, together with the tops, should also be speedily removed. Injured stools may still be thinned off smoothly and evenly with the adze, and where it is customary to thin out the shoots in falls made two years ago, this operation should now be performed. By selecting from four to six strong shoots, according to the strength of the stool, and removing all the others, a much more valuable crop of poles will be grown than can be obtained by allowing all the shoots to grow on together until the period of falling. This practice is remunerative under all circumstances, and where the produce of coppice bark is a principal object it is indispensable.

Wherever plants of a large size have during the past season been put out into the woodlands, these will now require going over and treading up. Evergreens in exposed situations may also require staking and tying. Wherever it is now considered advisable to remove Evergreens of large size, these should remain out of the ground as short a time as possible, and such as have to be carried a considerable distance should either have a ball of earth attached, or else their roots should be well puddled as soon as the plants are taken out of the ground. With careful removal and one copious watering, such plants may be considered safe.

In the nursery, finish the sowing of coniferous seeds, and protect those young plants which are just appearing above ground from the ravages of birds and from destruction by late frosts. The transplanting of coniferous seedlings should be finished as soon as possible, and all seed beds should be carefully weeded by hand before the weeds gain sufficient hold of the ground to cause the disturbance of the young plants by their removal. Wherever the seed beds have become battered and the surface hardened by the late heavy rains, a careful rolling with a light, spiked, wooden roller is a much safer plan of loosening the surface than raking. The hoe will now require to be kept constantly going between the rows of young plants, and the frequent use of the fork among those of larger size will greatly promote the growth of fibrous roots. The beds from which strong deciduous plants have been taken should now receive a good stirring with the fork, and have all the broken roots removed from them,

preparatory to the planting of the green crops, which, with a liberal dressing of manure, should precede the next tree crop.

Now that there is little danger of sharp frosts, the trimming of evergreen hedges, such as Box and Holly, may be at once completed. When this is done too early in the season, the frost is apt to whiten and render unsightly the cut leaves and branches. Wherever labourers are plentiful, draining, enclosing, and road-making for future nurseries and plantations may be proceeded with; compost may also be made, or turned over and mixed with lime for future use; hedges may be cleaned, grafts attended to, and have the clay renewed where required. Grass seeds may also still be sown in wood-rides, or in situations where they may be required to increase the cover for game. The best results will be obtained upon land which after a thorough cultivation is well rolled down before the seeds are sown and lightly bush-harrowed afterwards. The lighter Grass seeds are covered the better.

NEW PRUNING SAW.

THE common saw is such a well known and simple instrument, that everybody has a clear idea of its form and use. One point seems to have been irrevocably settled, that it must be made to push outwardly—at least, I am not aware that anything different has yet been introduced. But in the general training and pruning of trees, whether in the garden or forest, the ordinary form is not always practicable or convenient. I have sometimes had occasion to meet the difficulty of cutting off rotten or deformed branches when too high for a ladder, or when so placed that a workman had no means of reaching them or fixing himself, to use either a saw or a hatchet. I have, therefore, found it necessary to arrange a saw in another way, *i.e.*, to draw downwards, and I am happy to say that this downward action has fully answered my expectations, for if the handle is long enough, very thick and high branches may be cut with the greatest ease, only, as in everything else, a little practice is required to work the same with dexterity, and in some cases two workmen are indispensable. It may be well, too, to have several handles of different lengths, and in this case the iron socket should be furnished with a fixed screw so that the handles may be changed as circumstances may require. At the same time it is worthy of note that a handle of 10 feet or 12 feet long will usually be found quite sufficient. It does not often happen that the branch to be cut is much beyond that reach; thick deformed branches are generally much lower—not more than 8 feet or 10 feet from the ground. They are chiefly met with in gardens that have been long neglected, or in avenues where the trees have never had any kind of training, simply because the work has been considered too difficult or expensive; perhaps, too, owing to a confirmed prejudice against pruning or cutting of every kind. Rotten branches for the same reason have been left for the wind to thin out, and sometimes they fall with serious results just when people are passing underneath.

For heavy work in a wood or forest, the saw to be used in this way must be large and strong, of firm steel, and at least 4 feet long. But for light work about the garden, a saw of moderate dimensions will be more suitable, especially for amateurs. As the weight of the handle makes it easy to work the saw downwards, it sometimes happens that it will get out of the cut, and to avoid this inconveni-



ence I have thought it well to have a slight bar of iron fixed at the upper end. A little practical utility is preferable to fanciful ingenuity, and for that reason I think my simple contrivance is worthy of notice.

P. F. KEIR.

THE CORK TREE.

THE Cork Oak (*Quercus Suber*) closely resembles the Evergreen Oak (*Quercus Ilex*), so well known in English parks and gardens. It is indigenous to the mountainous regions of Spain, Portugal, and the south of France. It grows from 30 feet to 40 feet high and from 2 feet to 3 feet in diameter. Spain and Portugal supply the greatest portion of the cork which is used in Europe; abundant supplies are also received from the south of France, at the foot of the Pyrenees, the islands of Sardinia and Corsica, and the forests of Algeria. When this tree is about five years of age, the cork which composes the greater part of its bark begins to increase in a very remarkable manner. Nearly all its vegetative activity seems to be concentrated on this part, which grows unusually large, thick, and spongy. If left on the tree, it becomes cracked and so deeply fissured, that it is unfit for use. It is therefore removed before this happens. Its removal does not injure, but is beneficial to the tree, for if the cork is allowed to remain on its stem, the Cork tree seldom lives longer than fifty or sixty years; if, on the contrary, it is removed, the tree flourishes sometimes for upwards of 150 years. After the tree is thirty years old its cork may be removed at intervals of from six to ten years.

The first crop is generally inferior in quality, and is principally used for making floats for fishing-nets. The harvest is generally in the months of July and August. Two opposite longitudinal incisions into the bark are made the whole length of the stem, and then several transverse ones about 3 feet apart. The bark is now beaten to separate it from the subjacent layer, and detached in cylindrical pieces for inserting under it the handle of the instrument, which is carved and made thin at the extremity for this purpose. In effecting this removal, great care is taken not to injure the newly formed suber or cork, *viz.*, the living layer of cork beneath. After barking, the pieces of cork are slightly charred to close the pores, then loaded with weights to flatten them, and finally stacked in square masses in some dry place, where they remain for two or three months. In drying they lose about one-fifth of their weight. Only when the trees are forty or fifty years old is the bark sufficiently matured for making good cork. This substance is valuable for bottle corks, because it is light, porous, compressible, and sufficiently elastic to adapt itself to the neck of a bottle.

Grafting *Libocedrus decurrens*.—I had several times put in cuttings of *Libocedrus decurrens*, but failed to strike them, though in many cases they formed a callus as large as the top of one's thumb, when, having a number of suitable stocks of *Thuja Lobbi*, I grafted a number of the *Libocedrus* thereon, with the result that a union took place in most cases, and the plants seemed in a thriving condition until about a year after, when they began to die off without any apparent cause, and at the end of the next twelve months they were all dead. The stock perished as well as the scion, though the other *Thuja Lobbi*, which were not grafted and were planted out in the same manner as the *Libocedrus*, did well. Having obtained a supply of seeds, no more grafting was necessary, though I have since been told that the *Libocedrus* will effect a lasting union with *Biota orientalis* if grafted when young.—W. T.

Substitute for Larch.—*Thuja gigantea* has been recommended as a good substitute for Larch, but I think a better substitute is the Douglas Fir (*Abies Douglasi*), which is the best of all the Spruce tribe; but, like the rest of them, it should be planted in tolerably good soil and in a somewhat sheltered position. When planted in poor land, or exposed plains, it loses its beautiful colour, and the leading shoot is very liable to

die back. In suitable situations it is a most vigorous grower, and there is every probability of its proving one of the fastest timber-producing trees of good quality that we have. With *Pinus Laricio* for high-lying and exposed plains, and *Abies Douglasi* for hill-sides and valleys, planters will find a good substitute for the Larch on land where the latter has been affected with disease.—FORESTER.

Felling trees by the saw.—These articles on forest machinery are very interesting, and when I saw the chapter on the steam saw tree-feller I read it carefully, for nothing would please us better than to discover some handier means of felling timber than the axe affords, but at present I do not see much prospect of that tool being superseded. The most that I have known a good feller cut down with the axe in one day in winter, at the felling season, was about two tons of 40 feet each, hard and soft wood together, at 3s. per ton, but few earn more than 4s. There are serious difficulties in the way of using the steam saw described at p. 329, *viz.*, the transporting of it and the boiler and fuel about, and I doubt if it can cut closer to the ground than a man can fell by the axe, because a good feller always fells off flush with the ground, and it is as easy for him to do that as not. It would, however, be interesting to learn what has been done practically in felling trees by the saw. There is now a double-handed hand-saw provided for that purpose, but on estates where it has been got it is very little used. Men do not like it and it is laborious work, owing to the position in which the men have to work.—WOOD AGENT.

Harvesting timber.—Notwithstanding the neglect which this branch of forestry has sustained, it is one of the greatest importance, as we shall show that heavy losses are frequently due merely to improper management as to the period of bringing the timber of a plantation to the market. Trees should be felled as soon as their growth becomes unprofitable, and this is the case whenever their annual increase of growth is of less value than the interest upon the sum for which they could be sold. It must be evident that, though the value of a plantation may increase £10 annually owing to a yearly increase of bulk, yet it must be our interest to cut it down if, by bringing it to market, we could obtain £15 interest per annum for its value. We by so doing not only gain £5 a year, but the ground otherwise occupied by the wood becomes available for other purposes. It should, therefore, be the object of the forester to ascertain the period when the growth of the plantation is unprofitable. This knowledge can only be obtained by repeated measurements and comparisons of the growth of one year with another. Signs of decay are easily distinguished, but they should never be allowed to make their appearance in the trees of a well-managed plantation. We often hear it observed of a tree, "it should be cut down, for it has done growing; it is beginning to decay," or "it is dead"; whereas it is more than probable that the trees should have been cut down many years, perhaps generations, before, and the proprietor has all this time been sustaining a great annual loss. There are instances in which the loss sustained in this way may be proved to be immense.

Effect of wind on trees.—Trees which grow in exposed situations have their tops always leaning away in the opposite direction from the prevailing winds, and the casual observer concludes that the branches have been bent by the constant pressure of the wind and retained their position. Now, although such trees have the appearance exactly of trees bending under a gale, still it is not pressure in that way which has given them their shape. The fact is, they have grown away from the blast and not been bent by it after they grew. Examination of the branches and twigs will show this. We hardly realise the repressive effects of cold wind upon tree growth, which it partially or altogether arrests, just according to its prevalence. Conifers show the effects of this more distinctly than other trees. Owing to the horizontal habit of growth of the

branches, they point directly in the teeth of the gale from whatever direction it comes, and cannot, like the Oak, lean over and grow in the opposite direction; hence coniferous trees growing in exposed situations produce good long branches on their lee side, while on the windy side the branches retain their rigid horizontal position, but make comparatively little growth which is simply suppressed. Example, I measured the branches of a Nordmann's Spruce growing in a position fully exposed to the north and south. One branch on the north side of the tree had fifteen annual nodes or growths and was 7 feet long, and its opposite had the same number of nodes, being the same age, but was nearly $2\frac{1}{2}$ feet longer or $9\frac{1}{2}$ feet, and all the lateral branches were proportionately long and well furnished.—Y.

Drying Conifer seed.—In the Harz Mountains, where the cones of the Spruce Firs are collected in large quantities by the government, they are, when first brought in, laid up in rooms with perforated walls, so as to admit a continuous current of air through them. By means of a kiln about 60 bushels of cones are dried out in a day, and each bushel yields on an average $1\frac{1}{2}$ lb. of clean seed. They are dried out at a temperature of from 129° to 128° Fahr. The drying is carried on in large wire drums, which can be put in motion from the outside of the drying room, and out of these the seed falls on to the floor.

Soil for Larch.—Some time ago I gave the dimensions of Larches which equal most of the kind to be found in Yorkshire, but which thrive in a soil the reverse of deep, although porous, for it is of the thinnest description and not a good soil, being thin and poor upon a dry rocky subsoil. About twenty years ago a scientific land agent subsoiled a portion of the fields where these Larches grew in order to deepen the shallow tilth. The old men shook their heads, and said neither Corn nor Potatoes nor any other crop would grow where so much of the yellow bottom was brought up, and neither did they, as the agent found to his cost, for nothing would grow till after many years' manuring and cultivation; but, strange to say, many kinds of trees, including the Larch, thrive in the same soil undisturbed.—YORKSHIREMAN.

Wood for gunpowder.—The conditions prescribed by the British Government on the manufacture of gunpowder for the public service provide, among other things, that the wood (Dogwood) for the charcoal shall be of the utmost cleanness, any traces of bark adhering to it constituting an impurity ensuring its immediate condemnation, and the wood must also be cut in the spring of the year. If the latter operation is performed when the sap is rising, the bark is easily removed and the wood left perfectly clean; but wood cut later in the year or in the winter is quite as good, only in this case the bark is removed with much greater difficulty, as the process of separation then involves the boiling of the wood, or if this is impracticable the whole of the bark must be shaved off with a knife. The principal objection to this boiled and shaved wood is, that it does not keep so well in stack as the spring-cut wood.

Live telegraph poles.—A statement was recently made respecting the number of telegraph poles required to add to those at present in use for putting up more wires to meet the increase of business when sixpenny telegrams come in, but instead of going to Norway for these, or rather for others to replace them, by-and-by when they decay, which it appears they soon do, why not plant Larch along the lines at suitable distances and have living posts? or will they not do? If they would answer to fix the insulators to for the support of the wires, a heavy expense for renewal would be got rid of, as a Larch would stand for many, many years, and in soil where they refuse to grow freely other trees could be planted instead. It would take a time, of course, to get them up to the required size and strength, but then they would be there for a long future and not so likely to snap and blow down as the poles now in use. If living trees will answer, and to me they seem the right thing, surely the matter

is worth taking up and the planting carried out, when the season comes, as quickly as possible, that we may be more independent of foreign supplies to maintain our telegraph system, which now threads the country like network.—J. SHEPARD.

A-SCATTERED PINETUM.

THERE is a piece of common land at Ashampstead, in Berkshire, where, planted among Beech, Oak, and other deciduous forest trees, are to be seen at their best, perhaps, in winter some noble specimens of Conifers, affording by their deep green tints a fine contrast to the bare trees of the forest. The present lord of the manor has ascertained, within a year or two, the dates at which the Conifers were planted by the late John Hopkins, of Tidmarsh, then the owner of this beautiful spot. The first planting was done by Robert Hopkins, of Tidmarsh, some sixty years ago, but he only put in avenues of Spruce and Scotch Firs, mixed with Larch. Still, though not of rare species, they are grand trees, some of them measuring about 80 feet of timber, and of great height.

Of the more choice varieties none have been planted quite thirty-five years, and their growth, considering that fact, has been very great. These were all planted, several out of pots, by John Bunce, gamekeeper, who looks on them as his children. He is well known in the district as the surest judge of the size and worth of timber. He lives on the picturesque common, and is at all times too pleased if any admirer of Conifers will ask him for information concerning them.

One of the most interesting specimens is a *Pinus romana*; such is the name assigned to it by the gardener of Pampisford, a very good authority on Conifers. Another fine Pine is *Lambertiana*. But the Douglas, of which there are eight or nine, is perhaps the chief glory of the common. The following Conifers have been measured accurately:—

	Height. Feet.	Girth. Inches.
<i>Pinus romana</i>	32	43
<i>P. Lambertiana</i>	37	47
<i>Cedrus Deodara</i>	68	68
<i>Wellingtonia</i>	43	64
<i>Abies Douglasi</i>	60	63
<i>Arucaria imbricata</i> ..	24	32
<i>Taxodium sempervirens</i> ..	33	43

There are fair specimens of *Picea Nordmanniana* and *Lawson's Cypress*, and there is a tree just blown down which is unique in the fact of its cones growing in circles round the branch. It is said to be *Pinus muricata*. Such is the sketch of this scattered pinetum of thirty-five years' growth.

R. I. H.

Abies Douglasi.—Your article (p. 408) respecting the wood of this tree does not commend it more than it deserves. This prince of trees of the forests of Oregon and Washington territory makes the best ship timber in the world. A principal quality of the wood is a flexibility and tenacity of fibre rarely met with in trees so aged. It can be bent and twisted several times in contrary directions without breaking. Masts and spars made of Douglas Fir are exceptional for dimensions and superior qualities, such as strength, lightness, absence of knots, &c. After testing all the wood obtainable for ship-building, it was reported that none approached the strength of the Douglas Fir and the Pitch Pine, it having required a weight of 280 lbs. to break a bar of these woods $1\frac{1}{2}$ inches square. Between the Douglas Fir and the Pitch Pine, whose strength was equal, there was this difference, that whilst the latter snapped short off, the Douglas Fir yielded unwillingly, with a rough and long rend.—Y. D.

Loading timber.—The figure of a four-wheeled timber carriage at p. 383 shows the kind of vehicle in common use, the two-wheeled carriage being less frequently employed. During the felling season we have generally three or four double-wheeled "cuts," as they are called locally, employed, each carrying four or five tons of 40 feet at one load, but I never heard of them being loaded on "the principle of the inclined plane,"

the method described by your correspondent; nor do I see how they could be loaded in that way. The "three legs," a tripod made of three stout Larch poles with a pulley and rope under the apex, is employed in all cases. The legs, about 10 feet high, are placed on the road or plank gate near where the timber has been lotted, the carriage is drawn under them, the chain at the end of the rope is put round the tree to be loaded, and the rope running through the pulley is pulled by one or two of the horses till the tree is swung over the carriage, and a push with the hand puts it in its place.—YORKSHIREMAN.

Shelter.—If such a difference as that recorded recently is found between the branches of a single tree standing alone in the open, one may guess of how much importance shelter is to all kinds of tender trees and shrubs, and how much depends upon the choice of a situation for orchards, arborescences, gardens, &c. When damage is done to trees by frost it is done suddenly, and we see the effects and are struck by them, but except in the case of subjects killed outright or greatly damaged, it is probable that injury to trees from frost is almost *nil* compared to that worked by cold winds. These considerations should influence everyone who contemplates planting, whether it be woods or single trees, but in either case it cannot be doubted that the more dense and loftier the enclosure, whether by means of belts of trees or hedges, that protects plantations of any kind from cold winds, and the harder the subjects used for cold positions the better.—S.

Pruning & thinning for timber.—There are two classes of timber growers, those who thin their plantations early and freely and prune afterwards, cutting off awkward limbs to induce straightness, and those who, with an eye to economy, trust to judicious crowding to obviate thinning altogether and produce straight trees. The last has always seemed to me to be the cheapest and most natural plan. On one very extensive estate in the north, where scientific forestry was the aim, much parade was made of the pruning of trees in over-thinned plantations. Squads of men, each with a boy, long chisels on the end of a pole and mallets, perambulated the woods and chopped off the offending limbs in a workmanlike manner. The plan was necessary under the circumstances, but less thinning would have effected the same end as well. Beeches, Oaks, Elms, Sycamores, Chestnuts, and almost all trees grow perfectly straight in the trunk, and produce good timber when just allowed top room for their heads and no more.—YORKSHIREMAN.

Planting the Isle of Man.—One of the most pleasing examples of the effect of planting hill-sides with trees is to be seen at Glen Ellen, in the Isle of Man. Not many years ago this glen was quite bare and treeless. The proprietor conceived the idea of turning it into a pleasure resort, and with that view he planted a million or more of Larch and other trees, threw rustic bridges across the stream here and there, built Swiss cottages, and now it is, perhaps, the greatest and most attractive resort for visitors on the island. The approach to the glen, or rather a portion of the glen itself, remains as it was—unplanted, but as soon as the traveller enters the wooded portion of the glen he is at once struck with the magical transformation. The trees are still comparatively young, but they grow thickly and cover the slopes from base to summit; a bare hill-side has been transformed into one of the most beautiful prospects in the island, and simply by planting trees judiciously. Many similar landscapes could no doubt be furnished in the same way, and the timber would in time turn out valuable. The characteristic features of our mountain landscapes are their bare ravines naked as the mountain tops. Many of these ravines are not cultivated in any way, do not lie high above the sea, possess good soil, and would produce a great variety of timber. It is of little use, however, planting in scraps in such situations—that is, in poor little patches; broad belts and masses are what are needed to produce an effect, and to shelter game and also the trees themselves.—YORKSHIREMAN.

"This is an Art
Which does mend Nature : change it rather : but
THE ART ITSELF IS NATURE."—*Shakespeare.*

THE ORCHID CONFERENCE.

THE exhibition of Orchids at the South Kensington Conference this week was full of interest to the general public, as well as to those who devote special attention to these beautiful plants. Certainly there were not many big specimens of the "flower-show" type present, but then this was a source for congratulation rather than for regret. As a whole, the plants brought together were most instructive, and many more species and varieties were represented at this exhibition than have ever been brought together at any previous time. It must therefore take high rank if we remember that from beginning to end it was a labour of love to all concerned in its origin and management. To have made the affair a perfect success a little more detailed organisation would have been necessary, together with longer notice to those who were expected to send their plants. Indeed, in view of other conferences, many and varied to come, it is a question for consideration whether a general programme should not now be drawn up for, say, the next five years, so that both the exhibitors and the management might be more fully prepared for such occasions. The society was most fortunate in having Sir Trevor Lawrence to the fore on an occasion like this; his remarks were listened to with much interest. So also was Mr. Veitch's paper, which was a most instructive history of the origin and progress of the hybrid Orchids raised at Chelsea and elsewhere during the past thirty years, and it was rendered still more instructive in being illustrated by specially prepared diagrams and living specimens, showing the birth and babyhood of the seedling plants, the genera represented being *Cattleya*, *Dendrobium*, *Phalenopsis*, and *Cypripedium*. Especially interesting were the chronological details relating to the blooming of the different crosses. For example, say A crossed with B might bloom in four years, while B crossed with A required a longer time. Moreover, Mr. Veitch did well to emphasise the fact that the hybridiser's practice often proves for us that the botanist is either right or wrong—that hybridism is in fact a true test of natural botanical affinities, while guess-work over dried specimens too often results in mere assertion. Every day brings more forcibly to our minds the truth that if one cannot study plants "at home," i.e., in their native habitats, the next best thing is to study them alive under cultivation in a good garden, keeping the "dried mummy worship," as Goethe called it, as the last and most convenient resource. This view was years ago adopted by Mr. Baker, at Kew, whose life's work is none the less valuable to the botanist because he also made it intelligible to the amateur and the gardener! Valuable, however, as were the president's remarks and the papers read, the Orchid Conference failed in the one great point of nomenclature, and we think this burning question ought to have been the first subject brought forward. The one great reason, indeed, for a conference on Orchids was this bewildering question of names. On all

sides we hear complaints of the utter confusion into which Orchid names have fallen, and it is this confusion which induces many Orchid amateurs to avoid purchasing unless they actually see the plants in bloom. Surely it is not a satisfactory state of things that *Cattleyas* and *Odontoglossums*, not one whit more distinct than *Chrysanthemums* or *Primroses*, should receive Latin names. It is a matter of extreme regret that Prof. Reichenbach, who for the past thirty years has named our Orchids, should now hesitate to help us in clearing up the confusion into which we have been led by his system of naming. This matter, we are told, was deferred on account of the enforced absence of Prof. Reichenbach, but it was quite evident that other botanists also shrank from the responsibility which, sooner or later, must be undertaken. In a word, during the last fifty years or so botanical names have been piled upon each other like a house of cards, and even the botanists are to be pitied rather than blamed if these names now fall around us in confusion. Let all principal wild types be named in Latin as a convenience, but to give such names to mere garden hybrids or to natural seedling variations is interminable, and must, of course, end in dire failure, as is really now the case.

RAILWAY GARDENING.

MANY are the good gardeners among station-masters and their subordinates, and the railway companies do wisely and kindly in offering substantial encouragement to their servants towards the care of their little gardens. It not only increases the men's welfare by pleasantly, and perhaps profitably, employing their odds and ends of spare time, but it adds materially to the interest and refreshment of the company's travellers. Many are the pictures of plant beauty one can remember at country stations. The otherwise bare boards of the waiting sheds draped in a mass of thickly-flowered *Wistaria*—what might have been the blank wall of the "goods" a sheet of bloom of cluster *Roses*—an angle of the same shed, earlier and later in the year, beautiful with *Japan Quince* and with the flower and berry of *Crataegus Pyracantha*; a long paling smothered in the glossy foliage and alas-never-quite-satisfactory flowers of the double *Macartney Rose* and its undeniably beautiful buds; railings wreathed with *Hops*; signal-boxes clothed with major *Convolvulus*, *Canary Creeper*, and carefully trained *Scarlet Runners*; the butt-like structure (technical name unknown), that arrests the progress of wandering trucks at the extreme end of a siding, with its raised earthy end and glowing bed of *Nasturtiums*, covering the top and flowing over the sides in wreaths of scarlet and orange, the solid walls of thick black planking being perhaps the most becoming ground they could have. These are a few instances, vividly remembered, of glimpses of flower beauty most welcome to the traveller amid the noise and worry of a journey by rail. The only thing to be deplored is the many examples of misdirected labour and defective taste in the way of needless and unsightly adjuncts. I think it will be generally noticed that station-masters have an unhappy passion for flints. Now flints, especially in a chalk country, are very good for making an informal edging, though best when half, or more than half, covered with little plants such as *Stonecrops*, *Houseleeks*, *Aubrietias*, &c. But I have seen stations where flints were used as bedding plants, and where the designer evidently

thought them of greater importance than flowers, and where, after a year or two, the flints growing dull and some wild *Strawberries* rambling among them tried to veil their hard ugliness, the stony beds were remorselessly weeded and white-washed!

A remarkable instance of misdirected labour and ingenuity was committed lately at a station where a steeply rising bank of sandy rock, crowned with a group of fine *Scotch Firs*, offered rare advantages for making a piece of rock garden of exceptional beauty. A little scooping away of sand to expose a rock surface, some spaces of well-prepared soil for the roots of climbing plants, a few *Hops* and *Vines*, one or two free climbing *Roses* and the hardiest *Clematis*, a few of the commonest alpine, such as *Arabis*, *Aubrietia*, and *Stonecrop*, and a rock garden of the highest beauty might have been made, with hardly any labour and simply by a judicious use of the natural conditions. Instead of this, there is an elaborate monstrosity of heart-breaking hideousness; the steep bank, stiffly terraced and walled with glaring flints (exotic to the soil), and in the flint walls startling patterns in coal or clinker. Some of the terraces are paved with chalk, some with coal-ash, some with brick-dust; the natural beauty of the bank is utterly destroyed and buried under this misapplied mass of artful ingenuity, which cost weeks of careful labour. And yet the designer of this unhappy garden is a true lover of flowers and an excellent practical gardener, so that one the more regrets the lack of true taste that has led to the mistake. I know another station where the edging is of inverted jam-pots, half sunk in the ground, and another where it is a three-row-deep, carefully cemented, perfectly even line of whelk-shells, a piece of work so well executed that one cannot but admire the ingenuity and perfection of the handiwork. But all this is not gardening, and if the railway companies, in offering help and prizes for well-kept station gardens, suggested that flowers were of more consideration than flints, jam-pots, and such-like accessories, they would be encouraging true taste and discouraging a frivolous waste of time. In the minds of working folk there is apt to be an over-great admiration of ingenuity, cultivated at the expense of their sense of what is reasonably beautiful.

Railway men seem mostly fond of flowers. I remember once (when a compartment in which I was a traveller was drawn up at a country station abreast of an engine taking in water) watching some careful and cautious movements on the part of the fireman. First, he wiped his oily black hands on a lump of cotton-waste, and then unlocked an iron box on the outside of his engine. It was done with so much care and deliberation, that I lazily fell to wondering what was in the box, or might be coming out of it; whether it was his dinner, or some of his clothing, or gear belonging to the engine, when—out came a grand bunch of *Cowslips*! *Cowslips*, fresh and fair and beautiful, out of the boiling, snorting engine—a bunch as big as his head! The iron lid was closed, but not locked, and the man left the engine and went along the platform. In five minutes he came back with a large bunch of *Wallflowers*, which was deposited, also with much care, in the iron box. The box was deep and narrow, and the arrangement of the bunch was a matter of careful manipulation and some thinking; perhaps there was a mug of water at the bottom. By that time the boiler was filled and the engine backed away

and was gone, but the impression remained, and I have often since looked at a railway engine as a possible receptacle of some good bunch of flowers, and at the grimy fireman as a probable, or at least potential, gardener. G. J.

NOTES ON RECENT NUMBERS.

Wild Violets (p. 416).—In our garden, not only at the foot of a greenhouse wall, but in the wall itself, a number of the little sweet Violets have formed a colony. In a crack between the edge of a terrace pavement and a stone balustrade they seem each year as if they would flower themselves to death, and form for weeks together masses of dwarf blooms nestling along the stones. One has not the heart to pick them, and so they are left to be appreciated. A runner has made its way through the balustrade, and hangs down the wall in such graceful fairy festoons, the roots here and there finding some crevice to cling to. They seem to get about as much nourishment as a *Ruta muraria* does on the top of an old wall, but yet year after year they never fail, and one could not wish them to grow more prettily. I believe that Violets would flower very much more freely if given in the soil a greater quantity of sand than they are usually allowed. The flowers, perhaps, might not be so large or the stalks so long, but the profusion and abundance of bloom would make up for that in places in the open air where not required for picking. Two other plants worth sowing in "wall cracks" are *Corydalis lutea* and *Meconopsis cambrica*, both of which are pretty and graceful, and, of course, a number of others might be mentioned which would like nothing better than a gravel walk itself.

Transplanting Evergreens.—In all probability, in nine cases out of ten when an Evergreen is transplanted it is taken from a spot where it was growing close together with other plants, and is set out in a bare open position "with room to grow." The protection plants afford each other from sunshine and light is often but too clearly seen; we are careless sometimes in exposing them, when moved just before winter, to the combined effects of rain, frost, and wind! One of the chief advantages in transplanting in the late spring, instead of autumn (apart from the question of root action), is that you do not let in the cold to the young buds and half-hardened leaves and bark. Unfortunately, we do not always find out when a plant has merely "caught cold;" it is only when it "catches its death" of cold (or, as would seem more correct, its "death catches it") that we discover that it is not in the rudest of health!

The past and present of forestry (p. 434).—I have read through "A."s remarks very carefully, and the only conclusion I can come to is that in some way or other the Game Laws must have disagreed with his digestion, and in my stupidity I fail to see what he was driving at. Will he be good enough to explain what is the difference between "forestry" and "silviculture," beyond that one is a good old English word, the other a new invention that does not figure in many dictionaries? That "the forestry of the present is linked to that of the past" I was not surprised to hear, but certainly I did not expect to see it called "the supple slave of a tyrannical inconsistency." Why should forestry be "esteemed exclusively for the beauty, the practical utility, and the commercial value of its peculiar products?" If pleasure can be combined with beauty and use, what objection is there? "We have a forestry trained to giving to the game bird its shelter." What harm do the pheasants do to the trees by roosting in them? Does "A." propose to net in the tops or erect scarecrows to keep out the rooks and pigeons? The rabbits no doubt will burrow about the roots, but they prefer an open place if possible; one squirrel will do far more mischief among the leaders of firs than any number of rabbits "down below." I was glad that "our forester has become to a great extent moulded by his circumstances;" most people will say he would have been wrong if

he had not. A man who cannot read, but who has lived among trees all his life and kept his eyes open, would be capable of setting right a scientific theorist on many points. "A."s last paragraph is beyond me entirely!

Saws (p. 433).—Your correspondent who describes his new pruning saw cannot have seen what claims to be "the fastest saw in the world," which, as perhaps its name would suggest, hails from America. It cuts at each pull both backwards and forwards, and clears the sawdust out as it goes. The chief objection to it is the great amount of sharpening required; partly, perhaps, on account of its being made of softer steel than our English weapons; partly on account of the teeth coming to so fine a point. A pruning saw made like your illustration is apt to "fly off" without biting from a hard branch high up as it would from a poker, and the length of the handle usually prevents any great pressure being applied. It is astonishing how hard an old dead bough, of a Silver Fir for instance, may be; a rotten branch of Oak does not require anything more elaborate than a good blow to bring it to the ground. The pruning saws generally sold are curved in shape so as to get a certain amount of grip or purchase on their victim. I have just had one made for me more curved than any I could get for extra high pruning. The steam saw for felling trees, which was illustrated a few weeks ago, is intended, I suppose, chiefly for hedgerow timber, as it would be impossible to send a big steam engine careering about in a wood, especially on sloping ground, without doing, in all probability, more harm than good, by barking the stems and roots of the trees it would have to squeeze past. "Wood Agent" asks for information as to "what has been done practically in felling trees by the saw." We never throw any trees for timber except with a cross-cut saw, though an axe is often freely used in "setting out" the tree ready. It seems to be the general practice in this district, and I always thought was the same elsewhere (excepting, of course, in a certain park in North Wales where we hear of the axe doing great execution!). The American handles are "cutely" arranged so as to screw on either parallel or at right angles to the saw itself.

Susser.

C. R. S. D.

Boronia heterophylla.—Some time ago we drew attention to this new *Boronia* which has been introduced to Kew by means of seeds forwarded by Miss North when on a painting tour in Australia, and which is now in flower in the conservatory (No. 4). Its nearest ally is *B. elatior*, which is, perhaps, the most useful of the *Boronias*, owing to its free habit and pretty flowers, but which has yet to be brought into that prominence to which its excellent qualities as a garden plant entitle it. In *B. heterophylla* the flowers, instead of being rosy carmine, as in *B. elatior*, are rich vermilion, with a zone of pure white round the base of the cup-like corolla. These flowers are produced from the axils of the long pinnate foliage, which is rather thinly arranged along the erect, though slender, branches. In addition to their beauty the flowers of this species have a delicious almond-like odour. We saw the same species, or what appeared to be the same, in one of the London nurseries a few months ago, so that we may hope to see this beautiful greenhouse plant in general cultivation shortly. It is difficult to awaken an interest in Australian plants now-a-days, but there is still hope that some of the *Boronias*, and amongst them *B. heterophylla*, will not be totally lost to cultivation through the apathy with which hard-wooded plants are as a rule viewed.

Rhododendron glauco-hybridum.—You described lately a *Rhododendron* which you had received under the name of *R. glauco-hybridum*. This is a hybrid sent out by us some years ago, but *R. præcox* was not one of its parents. We have recorded "ciliatum and others" as the pollen parents, and we believe *R. Hendersoni* was one of the varieties used to obtain the cross. Our *R. Rosy Bell*, the flowers and foliage of which are very similar to *glauco-hybridum*, was in the same batch of seedlings, and we find it to be

more hardy and quite as free blooming. We may add that only in one instance have we succeeded in obtaining a cross with *R. præcox*, but the seedlings died off when quite small.—ISAAC DAVIES & SON, Ormskirk.

Paris International Show.—The great flower show to be held in Paris on the 20th inst., and continued till the 31st, promises to be an important affair. It is organised under the auspices of the National Horticultural Society of France, and in connection with it there will be a botanical and horticultural congress, which will take place at 84, Rue de Grenelle, on 21st and two following days. The subjects for discussion at the congress will include the following, viz., Railway charges for the conveyance of plants—rules for the naming of garden varieties and hybrids—influence of the electric light on vegetation—influence of the moon on vegetation—influence of age on the germination of seeds and plants raised—sexes of plants—doubling of flowers—striped flowers—fertilisation of Orchids—modifications of plants by culture—temperature of water used in plant culture—causes of variegation—chlorophyll in *Caladium* leaves—use of bottom-heat in the conservatory and greenhouse—consideration of the theory of Van Mons as to the raising of fruits—production by white flowers of seedlings with coloured flowers—raising Orchids from seed—use of charcoal in Orchid culture. Programmes of the congress will be forwarded on application to the president of the National Horticultural Society and those desirous of attending must previously communicate with the president, who will furnish applicants with admission tickets. The official language of the congress will be French. The secretary is M. Ernest Bergman.

PARKS & PUBLIC GARDENS.

HIGHGATE WOODS.

THE Corporation of London has unanimously and cordially accepted the munificent and graceful offer made by the Ecclesiastical Commissioners, through Lord Stanhope, of the Gravel-pit Wood, having an area of 69 acres, at Highgate, for the perpetual use and enjoyment of the inhabitants of the metropolis. Not only London, but the northern suburbs generally, may be congratulated upon the prospect of having at an early date one of the finest pieces of woodland scenery to be found near London. The important suggestion made by the Coal and Corn and Finance Committee, through its chairman, Mr. Garrett, that the great city companies should together purchase the adjoining wood and present it to the Corporation for the health and recreation of the people, will be very generally endorsed. The Churchyard-bottom Wood has an area of 50 acres; it is separated from the Gravel-pit Wood only by a public road, but it differs in many respects from its neighbour, and has a variety and charm of its own. Looked at from the Archway Road across the deep cutting of the railway, its southern border may be traced through a lovely valley with richly wooded scenery; from this valley the ground rises in a dense growth of underwood and trees, forming a unique piece of sylvan beauty which would be difficult to surpass. The two woods would together form a much-needed and matchless pleasure ground of 120 acres, a space about equal to the wants of this rapidly-extending portion of the metropolis. The sum asked by the Ecclesiastical Commissioners—viz., £25,000, for their interest in the Churchyard-bottom Wood as a place for recreation is much less than wealthy persons in more northerly districts occasionally give for much smaller and less advantageous sites for public parks. £25,000 for a public park of 50 acres cannot be regarded as a large outlay. Such an addition to the open spaces of greater London would be an inestimable boon, not only to the present, but to all future generations. The destruction of this unique piece of woodland would be nothing less than a public calamity.

TREES AND SHRUBS.

THE RED-WOOD TREE.

(SEQUOIA SEMPERVIRENS.)

In referring to what I wrote about this Conifer, "C. R. S. D." says it is stated "that this tree is not in the least degree fastidious as regards soil, and, no doubt, it will grow in very different positions; but there is a great difference between a well-grown tree with thick green branches down to the ground and some of the miserable, scraggy specimens one often sees. Our largest now girths 8 feet 6 inches a yard from the ground . . . whereas another which was planted, I believe, at the same time is not half the size; the one is certainly handsome, the other is not. Was the nature of the wood for timber described by Mr. Webster from British-grown or foreign specimens?"

The nature of the wood as described by me is both of Irish and foreign growth. Is "C. R. S. D." aware that there is a variety of this tree that never attains very large dimensions, and that such variety answers his descriptive particulars in every respect? I have planted both kinds under similar conditions as regards soil and situation, and found the species to be a tree of rapid growth; whereas this inferior variety planted under the same conditions proved to be worthless either for ornament or utility. This variety differs from the species not only in being of slower growth, but the branches are shorter and the foliage less dense, of a smaller size, and of a pale green colour, and altogether wanting in substance and that rich glossy green colour so characteristic of the former. A practical eye can distinguish the one from the other at the first glance, and not only by the bare, unfurnished appearance of the branches, but likewise by the bark of the stem, which is never so thick upon the one as the other. "C. R. S. D." gives us no information regarding the soil, subsoil, and exposure where his trees are growing, all of which are of importance in tree culture; but I am strongly of opinion from what he says that these circumstances have nothing to do with the case in question, and that the difference really is in the trees themselves. But, apart from this altogether, it is a well-known fact that trees planted and growing in the immediate vicinity of one another do not always attain the same dimensions in the same time, even although soil, elevation, and exposure are apparently the same. Sometimes the texture and quality of the soil can be clearly traced as the cause of the difference in the size and healthy development of the trees, and at other times the soil and geological features are so nearly alike, and the size and difference of the trees produced upon the same formation so dissimilar in size and form, that it is rather difficult in many cases to say what the real cause has originated from.

Hardy indigenous trees growing in their natural habitats—some on rich, deep soil of a uniform texture in the straths and glens of their native home, and others on the sloping sides of the mountains, and up to the highest pinnacle of arborescent vegetation—often exhibit a great variety in size, outline, and general appearance,

and when such is the case with trees of native growth, we need not be surprised that trees of recent introduction exhibit a difference in outline and development in a similar manner. The quality of the timber produced by trees of recent introduction into this country is a subject of deep interest and importance to tree planters and proprietors, but a considerable number of years must elapse in order to allow the trees time to perfect their growth before reliable information can be gathered and brought to bear upon this subject; at the same time, it is a step in the right direction that cultivators record their experience from time to time as far as opportunity may occur, as well as the nature of the soil and exposure which appear to be most suitable for the growth of the different species, all of which cannot fail to be

branches hang perpendicularly downward.' Upon reading this we at once sent an order for some of the trees, and received them the following spring. These were the first received in this country. It proved to be one of the most popular trees ever introduced here, and its popularity continues to this day. As an erect-growing, graceful tree, with pendulous branches, it really has no equal. The first tree we planted out some thirty-four years ago was cut down a few years ago to clear the ground. The one of which we send you a photograph, planted some twenty-five years ago, is now 50 feet in height. The trunk is 5 feet 3 inches in circumference near the ground, and branched from 4 feet above the ground."

As will be seen, this tree is a very fine specimen of what we have always looked upon as the most ornamental as well as the most valuable weeping tree that exists in cultivation in this country.

PYRUS JAPONICA.

THERE is now blooming in Mr. Dobree's garden at Byfleet a scarlet flowered *Pyrus*, which I think better illustrates the great worth of this wall shrub than any plant I ever saw. It is a good sized specimen, covering a fair amount of wall surface, but it is not its dimensions that I wish to refer to so much as the remarkable way in which it blooms, a result which is apparently due to the way in which it is managed. The treatment consists simply in a systematic course of pinching back in the growing time; it is attended to exactly in the same way as wall fruits, or, as Mr. Kirk says, "just in the same way as I do my Peaches." As everyone knows who has anything to do with this *Pyrus* as a wall plant, the lower portion of old specimens is apt to become bare, especially when the shoots are allowed to extend at will, so that after a few years the great portion of the blooms are on the upper part of it; but in the case of the tree in question the crowd of bright blossoms extends almost to the ground, forming from the base to the tips of the topmost branches a mass of glowing scarlet, through which in places the young growths have barely room to push. Mr. Kirk tells me that it blooms in this way every year. I used to think it impossible to keep a large specimen clothed with flowering wood right down to the base, and that the only way to flower it well was to grow on the extension principle. I now see, however, that a tree may be confined to a small space and may yet be made to cover the same with blossoms every year if kept well pinched through the summer. *Pyrus japonica* is so handsome as to merit this amount of care; it lavishly repays the time bestowed on it in this way.

J. CORNHILL.



The Cut-leaved Weeping Birch (engraved from a photograph for THE GARDEN).

not only interesting, but highly instructive and useful to the cultivator. J. B. WEBSTER.

THE CUT-LEAVED WEEPING BIRCH.

THE annexed engraving represents a cut-leaved Weeping Birch in the grounds of Messrs. Ellwanger and Barry, Mount Hope Nurseries, N.Y., who kindly sent us a photograph of the tree, together with the following brief sketch of its history: "In the summer of 1848 the late Mr. Henry W. Sargent, of Fishkill, on the Hudson, was travelling in Europe and wrote to the late Mr. A. J. Downing about this tree. In the famous Booth Nurseries of Hamburg he wrote: 'Among other trees and shrubs rare to me I noticed a Weeping Birch peculiar to Germany. It had descending shoots 32 feet long; the

Cornus florida, or the flowering Dogwood (p. 403), is a curious plant quite common in gardens, and yet rarely seen in flower. Other species of Dogwood bloom freely enough, but this *Florida* species differs from most others in having its flower-heads garnished by four large white bracts, which remind one of those of some tropical *Mussaendas*. Our British species, the dwarf sub-alpine *C. suecica*, is also rendered effective when in bloom by having showy white or pink-tinted bracts. For years I only knew the flowers of

Cornus florida from having seen the figure in an early volume of the *Botanical Magazine*, but last spring Miss Lavinia Hutchings was so kind as to bring flowering branches to our garden from a domain in Co. Cork, where it grows and blooms most freely. It would be interesting to hear from other successful growers of this shrub as to the conditions essential to its blooming.—F. W. B.

NOTES ON EARLY BARBERIES.

THE first to flower is the well-known Darwin's *Berberis* (*B. Darwini*), which in the event of mild winters will flower more or less continuously for months together till the return of spring, when the whole plant becomes a mass of bright orange-coloured blossoms. Even when not in flower the dark coloured evergreen foliage renders it a valuable ornamental shrub, and though it does not always fruit freely, yet under favourable conditions it generally bears a crop of plum-coloured berries covered with a bloom like that of a well finished Grape. Pheasants are said to be very fond of the berries, and this circumstance, combined with the thick, bushy habit of the plant, has caused it to be somewhat extensively used for covert planting. Such a use would seem to indicate that it can be increased pretty readily, and that is indeed the case, for seeds are easily procured and will germinate freely enough if sown in the open ground, while layers strike root in a short time. Besides this, from its habit of pushing up suckers, which produce roots on their own account, a bush may often without danger be split up into several parts all sufficiently well rooted to grow. *Berberis Darwini*, though first discovered by Mr. Darwin, will form a lasting monument to its introducer, William Lobb, for without it we should not have the other equally beautiful (perhaps under some conditions even more so) *B. stenophylla*, said to be the result of a cross between *B. Darwini* and the smaller-growing *B. empetrifolia*.

B. STENOPHYLLA is rather later in expanding its blossoms than Darwin's *Berberis*, for which reason it often escapes the sharp spring frosts that are disastrous to that kind when the blooms are far advanced. It forms a bush of most graceful outline from the long arching, partially pendulous branches, which when laden with blossoms give the whole plant the appearance of a golden fountain. As a single specimen on the lawn, or in similar situations, this Barberry is well suited; and it is withal so vigorous in constitution, that even in an overcrowded shrubbery border I have seen it doing well, and pushing out its long slender shoots wherever an opportunity offered. I once saw a wall completely covered with this *Berberis*, and a grand sight it was, for the blossoms were just at their best. The wall was about 8 feet high, and the plants had been secured to it till the whole was covered, when no further pruning or tying had been indulged in, unless absolutely necessary. Left thus to themselves, the plants grew away freely, and the whole wall presented but a mass of long flexible shoots, which depended gracefully from it, and, except here or there, completely hid the brickwork from view. Of course, such a practice could not be followed out where the space at the foot of the wall was required for any purpose, as the plants took up so much room, but when the only object is to hide an unsightly wall, I know of no more desirable subjects for that purpose than the *Berberis* as I saw it.

B. EMPETRIFOLIA, one of the parents of *B. stenophylla*, is a graceful little bush, but it is frequently met with in anything but a flourishing condition. Another South American kind that flowers in the spring is *B. dulcis*, which forms a somewhat stiff-growing sub-evergreen shrub with large deep yellow blossoms. The flowers are solitary and not borne in clusters, as in *Darwini*, but they are arranged pretty thickly, and being on unusually long footstalks are more conspicuous than would otherwise be the case. Though not so showy as the better-known kinds, this Barberry is very handsome, and forms a pleasing variety.

The earliest to bloom of the deciduous section is *B. sinensis*, a dense growing bush with slender arching shoots. Early in the spring these branches are studded with the young tender green foliage, at which time also the flowers are borne. They depend in great profusion from the undersides of the twigs, and in colour are sulphur-yellow inside and a sort of brownish crimson on the exterior, this latter tint being especially noticeable in the bud state. It is a desirable little shrub, as when not in flower the neat roundish foliage is very pleasing, and, besides, it assumes a bright crimson tint in the autumn before dying off. This *Berberis* is often met with under the name of *Thunbergi*, and is quite different from the *B. sinensis* of London, which, as figured, bears a good deal of resemblance to the common kind.

THE *MAHONIA* section of *Berberis* also contributes to the list of early-flowering kinds, as the large pinnate-leaved *M. japonica* will, during a mild season, commence to open its lemon-coloured blossoms by the end of January, and after that come the numerous forms of *Aquifolium*, *repens*, and *fascicularis*, which will thrive almost anywhere, and whose golden blossoms are so valuable during early spring. They may all be increased to any extent by means of suckers or seeds, but plants raised by this latter means vary a good deal in leafage, habit, and freedom of blooming.

ALPHA.

POPULUS ALBA BOLLEANA.

IN 1879, Prof. Sargent published a translation of the notes of Dr. Chas. Bolle, of Berlin, in regard to the rare beauty and value of this upright form of the white Poplar. He said: "The bark, even in old specimens, is smoothed out, as if it were polished; it is of a clear, bluish green colour, without spots or cracks. The ramification is strong and characteristic. The brilliant white of the lower side of the leaves, which remains unchanged throughout the summer, makes a strong contrast with the shining dark green of the upper side, producing a striking effect and rendering this tree visible for a long distance. The wood of this fastigate Poplar is of finer quality and more highly esteemed here than any of the other Poplars. It is an ornamental tree of the first order, and I cannot too highly commend it."

When I first saw specimens of this beautiful tree in South Russia, and was told that it was native of Turkestan, I was fearful that it might not prove an ironclad in the north-west, but we afterwards found grand specimens in the Volga region, and learned that its range was up to the 54th parallel in Central Asia. With a view of testing its capacity to endure low temperature under the most unfavourable circumstances, we grafted it last spring on the crown of one-year *Populus Wobsty* plants standing on very rich garden soil. The scions made an upright growth of 6 feet, yet 35° below zero has not browned the finest terminal points.

I wish to direct the attention of eastern and western propagators to this tree, as it is certain to become a general favourite over a large part of the continent as soon as its merits become known. It is so unique and peculiar in habit and expression of foliage, that the introduction of single specimens here and there will create a demand for the plants which our nurserymen must supply, as it is not easy to propagate from cuttings, except by skilful management. If put out in the spring in the usual way of propagating the Poplars and Willows, not one cutting in 500 will grow. To insure success, the cuttings must be placed in a propagating pit in autumn, with bundles inverted, as we manage the Grape and Mulberry.—J. L. BUDD, in *Rural New Yorker*.

Thuja Phippeniana (p. 403).—Mr. Hopkins deserves thanks for bringing this little-known Conifer into notice. But I must ask Mr. Hopkins for more definite information, *i.e.*, is this *Thuja* a seedling? If so, what was the seed-bearing parent name? Did Mr. Phippen hybridise the seed-producing parent with pollen of any other

species or variety? Or, thirdly, on what species (supposing the origin to have been vegetative) did the bud or branch sport occur which Mr. Phippen perpetuated, as a cutting or as a graft? The origin of any new species or variety is so important, that definite information of its production is in all ways desirable.—F. W. B.

STRIKING CONIFER CUTTINGS.

MY experience of propagating the smaller kinds of Coniferae, such as *Thojas*, *Biotas*, *Retinosporas*, *Junipers*, &c., from cuttings is that shoots with only the juvenile or immature foliage, which is generally more or less needle-shaped, strike root much more readily than those in the adult state, which are for the greater part clothed with small scale-like leaves. Thus, for instance, in the case of the Chinese Juniper the shoots from the lower part of the plant with long acicular leaves strike root readily, while cuttings taken from the upper portion are by no means to be compared with them in their freedom of rooting. Again, this is very apparent among the *Retinosporas*, of which *R. ericoides*, *squarrosa*, and *dubia* strike much more readily than the others, while *R. obtusa*, which may be taken as farthest removed from the juvenile type, is the most difficult to root. The *Retinosporas* are, however, on the whole, about the easiest class of the Coniferae to strike from cuttings, while of those mentioned above the *Biotas* are the most difficult; indeed, in the case of a form of the Golden Arbor-vitae, known as *sempervirens*, out of some 300 cuttings I only rooted half a dozen, so I now propagate that kind by grafting.

In thus advocating the employment of the juvenile shoots as cuttings, I do not allude to the weak, misshapen sprays which occur towards the interior of the plant or close to the ground, but rather to the strongest and best ripened shoots in which the primordial leaves only are developed.

T.

The scarlet-berried Elder (*Sambucus racemosa*), p. 403, is worthy of all the praise even "G. N." can give it, and more. We have a fair sized bush of it here 15 feet high, and this is every year covered with bright scarlet clusters of berries in the autumn months. I am half afraid "G. N." does not possess more than a book knowledge of this fine shrub, which most visitors to Norway in autumn dream of ever afterwards. I should describe the fruit as being in small, dense axillary cymes, and even if I came across a description which described them as resembling miniature clusters of Grapes, I should be anxious to add that the Grapes were those of *Zante* or *Corinth*, and not of the *Gros Colman* variety. Our specimen laden with its little clusters of yellowish green flowers has been pronounced by competent authorities to be one of the largest ever seen; and it grows so well in the Irish climate, that all good gardens in Cornwall and Devon should shelter a bush or two of it, especially as cuttings root very freely.—F. W. B.

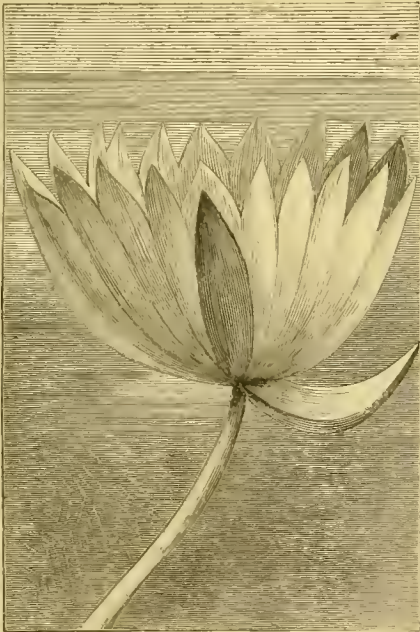
Picea Breweriana.—Mr. Sereno Watson thus describes a new Californian Conifer in the "Proceedings of the American Academy: "Branches slender, often elongated and pendent, puberulent; leaves 5 lines to 12 lines long, half a line to 1 line wide, strictly sessile upon the slender base, obtuse, smooth and rounded or slightly carinate above, stomatose beneath on each side of the slightly prominent mid-nerve; cones 3 inches long, narrowly cylindrical, attenuate at base; bracts linear-oblong, 2 lines long, a fourth of the length of the puberulent scale, which is obovate, with the rounded, thickish summit entire; seed 1½ lines long, the wing 4 lines long by 2½ lines broad. This unusually distinct species has been found by Thomas Howell, in June, 1884, only at high elevations in the Siskiyou Mountains, California, on the head waters of the Illinois River, in rather dry rocky ground. It grows to a height of from 100 feet to 150 feet, and a diameter of from 1 foot to 3 feet; bark reddish. The specific name is given in compliment to Professor W. H. Brewer,

who, in connection with the Californian State Geological Survey, had so much to do with the botany of the State both in the field and in the after disposal of the collections of the survey. As he took special interest in the trees of the coast, and collected a large amount of material for their study, it is fitting thus to connect his name with the forest trees of California.

FLOWER GARDEN.

NYMPHÆA FLAVA.

IN Vol. XXIII. of THE GARDEN will be found a plate representing the flowers of this yellow species and *N. gigantea*, and in the text accompanying this it was pointed out that *N. flava* differed from all other known *Nymphæas* in the form of its rootstock and in the manner of its reproduction. In the majority of Water Lilies one, or sometimes several round solid tubers, as large as Walnuts or sometimes larger, are formed at the base of the plant each year, and from these plants are developed in the year following; whilst in a few other kinds a thick rhizome is formed, not unlike what is found in the German Iris. Of the former *N. gigantea*, and of the latter *N. alba* and *N. tuberosa* may be considered examples. The rootstock of *N. flava* is, however, of very different formation from either of these, as will be



Flower of *Nymphaea flava* (half natural size).

short roots joined at their apices, and bearing in their centre a bud, which are produced from the main rootstock, and which, when they become detached, are capable of developing into plants;



Leaf of *Nymphaea flava* (natural size).

these are represented at letter *d*. I have always found the main rootstock shorter and thinner than is here represented, and that after the first year it perished, leaving the stolon plants and these little bundles of short fleshy roots to reproduce the plant in the following year. All this goes to show that in *N. flava* no such provision is made for lengthened periods of drought as we find in the rest of the species, and that, therefore, if we would succeed in wintering this yellow-flowered Water Lily successfully, it must not be subjected



Rootstock of *Nymphaea flava* (much reduced).

seen in the annexed woodcut, which presents the peculiar root growth of this species. It will be seen that at *a* a stem is formed which in full-sized plants is as thick as the little finger, and is covered with a layer of nodules of scale-like appearance. This stem may be considered the central axis of the plant, and from its apex young sagittate leaves are first developed, followed by the mature leaves, one of which is here represented. These arrow-shaped leaves are always submerged, the rotundate ones being the floating leaves found on mature plants. As the growth of the plant proceeds, roots are pushed from the top of the stock, and these roots are what afford a supply of food to the growing leaves and flowers. From the sides of the rootstock stolon-like growths are developed, on the end of which a bud is borne, and this bud when strong enough pushes forth leaves and flowers and roots, so that when the stolons perish—which they do the winter following—a colony of offset plants has become established. In addition to these stolons shown at *b* there are also some curious handlike bundles of fleshy

to total dryness, such as is sometimes practised with the other kinds when at rest. This, of course, applies only to the cultivation of this species in pots; when planted in the bottoms of pools or lakes, the case is very different. So far, experiments made at Kew with a view to establishing the yellow Water Lily in lakes and aquaria out

doors have not resulted in complete success, as, although plants have been got to make leaves out of doors, they have hitherto refused to flower. Cultivated in a warm-water tank along with the rest of the Water Lilies, *N. flava* has been very satisfactory at Kew. On the other hand, it is recorded that at Goddard's Green, in Kent, and in several other places in England this species has become established in ponds and lakes, and has flowered freely several years in succession. Naturally *N. flava* is known only in the still waters in Florida, where it is found often in great abundance, its delicate, soft yellow blossoms making a most beautiful picture during the time it is in flower. It is only in recent years that *N. flava* has been known even to American botanists, and so far no picture of it has appeared anywhere except in THE GARDEN, as above mentioned, although a drawing of it has been made for the *Botanical Magazine*. The flowers are 4 inches across, cup-shaped, and a clear pale yellow, except on the outside of the outer whorl of petals, which is tinged with purple. They last about a week on plants grown under glass, opening about noon and remaining expanded till sunset. The leaves, one of which is represented here life-size, have dark reddish blotches on their upper surface, disappearing as the leaf matures. The under surface is wholly of a dull red colour with numerous small dark purplish spots, scattered all over it. Altogether this Floridan Water Lily is of singular interest to horticulturists because of the beauty and lasting qualities of its flowers and the ease with which it may be grown, and to botanists owing to the remarkable character of its rootstock and the curious stolon-like growths and bundles of fleshy roots which are meant to serve the purpose of reproduction.

W. W.

NOTES ON BEDDING PLANTS.

MAY is always a busy month in the flower garden, so much attention in the way of preparing beds and putting out plants being required. In the northern and colder parts of the country it is unsafe to plant out *Pelargoniums* and all half-hardy subjects before the end of the month, but in the south and in warm localities planting may safely go on from the first week in May. Where the beds have been filled with spring blooming plants, all worth saving should be taken up carefully and replanted in some corner of the kitchen garden or elsewhere. The flower beds should then be made ready for their summer occupants. Where the soil is poor, add plenty of good manure, and fork or dig it deeply in for all deep-rooting subjects; but for surface-rooting plants, such as those used in carpet beds, the manure should only be placed immediately below the surface, and if it is thought that leaf soil or any other kind of manure will suit the plants better than that from the cow-house or stable, use the most suitable that can be obtained. In turning over the soil, the beds should always be put into the form it is desired they should bear during the season. Some may rise very sharply from the edge, others may slope very gently to the centre, while borders may be much higher at the back than the front. The surface should be made quite smooth, and all large stones or refuse should be taken away. When all work of this kind has been finished, measure and mark off the position which each kind of plant is to occupy. Any kind of bed or border filled up with scarlet *Pelargoniums*, and edged with one or two rows of yellow *Calceolarias*, will not require much marking off, but fancy carpet patterns will require very careful tracing and planting. Some begin to plant their beds from the outside and work towards the centre, but I could never see any advantage in this plan; we, therefore, invariably begin to plant in the centre or back, and work our way to the edge. Every plant is lifted from the pots, boxes, or frames in which they have been growing with as much soil attached to the roots as possible, and this we try to preserve in planting. Drawing plants up without any soil attached to them places them at a great disadvantage, and renders all previous work useless. When lifted with balls

of soil the plants receive no check; they begin growing at once and become effective weeks before those roughly handled do. The soil in which they are growing should be made quite wet before any attempt is made to lift them, which should be done with a trowel, and as each plant is taken up, firm the soil about the roots. The holes for their reception should be both wide enough and deep enough to admit the ball comfortably without any pressure. Plants thus carefully handled grow away well from the first, while those badly treated will not become effective until a good part of the season is over. As soon as all have been planted, if it should not rain, give a thorough watering, and in a few days when the surface has dried run the Dutch hoe between the plants to loosen the surface; after this little or no attention as regards watering or other assistance will be needed. M.

HARDY ORCHIDS.

WE seem to be no nearer a solution of the difficulties connected with the cultivation of hardy Orchids now than we were when the late Comte de Paris was carrying on his experiments with them at Orleans House, Twickenham. It was generally believed then, and is to a large extent even yet, that they will not grow well for more than one or two years under cultivation, and this is probably true, but only to a limited extent. Localities, situations, general aspects, &c., have more to do with the successful growth of hardy Orchids in the open air than we seem to be aware of, and cultivators will not be long in finding out whether their gardens are suitable or not for their growth. I remember to have once seen a station made for them, on a small scale, like the South Downs. It consisted of chalk, old rubble, &c. The Orchids, mostly native ones, were planted, and the bed, or bank, was covered with *Veronica repens* or *V. serpyllifolia*. In such a situation I have seen the rare *Orchis purpurea*, Morio, &c., almost quite at home, as well as the more common *O. maculata*, *pyramidalis*, *latifolia*, &c., *Ophrys apifera*, and numerous others; and although they do not increase rapidly, they hold their own, a result which may be considered hopeful. I have known good patches of the commoner kinds to be grown in the same spot for years. The Comte de Paris, who at one time cultivated the greater number of hardy European terrestrial Orchids, reported favourably only on *Ophrys bombylifera*, a South European Orchid of little garden value, which, he said, increased one and sometimes two-fold in one year; thus, from fifty bulbs the produce in one year would be from 100 to 150. This, however, was under pot cultivation, and, with care in drying it off at the proper time, protecting it from frosts, cold-cutting east winds, and wet in winter. *Serapias parviflora* and others treated in the same way made perceptible increase. Most of the North American Orchids, on the other hand, inhabit chiefly marshy or boggy situations, and, consequently, are much more amenable to cultivation in our gardens than others. Many growers in this country have been very successful with the majority of them in shady peat beds, low, and well watered morning and evening. *Cypripedium spectabile* and pubescens grow almost as strongly as they do in their native climate. *Arethusa bulbosa*, *Goodyera pubescens*, &c., all do well in bogs, as well as *Habenaria cristata*, *ciliaris*, *Illokeri*, *clatata*, &c. *Il. psychodes* is one of the handsomest of the North American Orchids, and it is not a rare sight when well treated to see it reach from 3 feet to 4 feet in height, a blaze of colour. Ordinarily it sends up a spike about 2 feet in length, the upper part of which is densely studded with large violet-purple flowers, edged with the most delicate fringe; the divisions of the lip are fan-shaped and very pretty. It flowers in June.

The delicate North American *Calopogon pulchellus*, which is represented in the accompanying illustration, is, unfortunately, rarely seen in English gardens, although it may be cultivated, with a fair amount of success in a sheltered and

shady peat bed. It is said to be most abundant and thrifty in Cranberry swamps, but it also grows in grassy marshes; and, by following these conditions as nearly as possible, with protection during winter, it may be had in perfection for an indefinite period. It is figured in the *Botanical Magazine* (tab. 166) under the name of *Limodorum tuberosum*, and is said to have been introduced in the spring of 1788 amongst *Dionæa muscipula*, a circumstance which gives us a clue to its treatment. The roots are in the form of a small



Calopogon pulchellus.

bulb tuber, nearly spherical; the leaf, which is linear with several parallel veins, is of a pale green colour, and glossy on the upper surface. The flower-scape, which grows from 1 foot to 18 inches high, bears from three to six bright or pale magenta-coloured flowers, often varying to lilac. The perianth is composed of five leaflets, slightly curved backwards, and showing off to good advantage the beautifully bearded lip, the hairs on which are yellow, purple, and white. The flowers, which are very fragrant, are produced in July. K.

HARDY FLORISTS' FLOWERS.

AURICULAS.—May and June are busy months in the case of those who grow florists' flowers. If a grower of Auriculas, the entire stock of flowering plants must be repotted except those reserved to save seeds from. Many complain about the difficulty of obtaining suitable potting soil. We are told that leaf-mould, for instance, is "worth its weight in gold." I found this year that ours was not of good quality, and although we have always used it rather than employ bad material, we have done without it and used peat with loam instead. Good show Auriculas are of considerable value, and therefore well worth special attention. As regards soil, a mixture consisting of one fourth decayed manure, as much peat or leaf-mould, and three-fourths loam is most suitable for them, sand being added if necessary. A considerable portion of the old soil should be removed, and if it is, as it ought to be, moderately moist at the time, no water should be given to them for three or four days; by that time the roots will be pushing into the new soil and ready to absorb the moisture. Small seedling plants require pricking out as they advance in growth; by neglecting them at this time a whole season may be lost. Alpine Auriculas out-of-doors are in full flower, and very beautiful they are.

CARNATIONS and Picotees grown in pots require supports; no room can be found for them under glass, and therefore they should be removed from the frames they are in as the work proceeds to an open place out of doors. Those in open borders will also require sticks, which should stand about 2 feet out of the ground. Sparrows have been very troublesome this year, but we have kept them off by stretching white cotton thread just over the plants. Seedlings from seed sown in April prick out in boxes or pans. April is the best month in which to sow seeds of Carnations and Picotees, as the plants raised from them become very strong and flower well next year. In six weeks after they have been pricked out they may be planted where they are to flower.

PINK BEDS require a surface dressing of rich soil. This induces vigorous growth. Pink seeds should be sown at the same time as those of Carnations, and should be pricked out and planted in the same way.

PANSY BEDS ought now to be in full beauty; the blooms are much benefited by giving the plants a dressing of rich manure spread over the surface. Some use Cocoa-nut fibre refuse, but where this has been employed the blooms do not continue good in quality. The Pansy is practically a perpetual bloomer, and very soon exhausts itself. The only way to get it into good flowering condition again is to prick off all the blooms, thin out the growths, and peg those that remain into the rich surface dressing.

PHLOXES are now pushing their stems up vigorously; two-year-old plants from cuttings are by far the best; from three to five stems are a sufficient number from each plant. Phloxes also require very rich, deep soil and a plentiful supply of water as soon as dry weather sets in. There is a way of propagating them practised in some gardens which I only mention in order to condemn it. It is this: the old plants that have remained many years in one place are dug up and cut into quarters with a spade, the divided portions being planted separately, but no good results are ever obtained by this method. Sticks should be placed to the plants as soon as possible now, as even a moderate wind will snap them over at the ground.

NAMED HOLLYHOCKS that have been out in open borders all winter are now looking well; our soil is rather heavy, and they take nearly a season to lay hold of it; but now that they have done so, probably they will give us strong, vigorous growths for next season. We are always fearful of disease attacking the leaves. No amount of watchfulness will prevent it from attacking them, and when it has once seized a collection it is impossible to prevent it from destroying the bloom, at least for that season. Stout sticks should be placed to them at once. If good spikes are desiderated, the laterals should be pinched out, unless

eyes are wanted to form plants, when they must be allowed to grow until they are well formed. For garden purposes it is best to allow the laterals also to flower, as these prolong the bloom and add to the natural beauty of the plant.

DAHLIAS now claim attention. Cuttings of them ought all to be well rooted by this time, and the young plants established in cold frames. It is a good plant to pot them in 6-inch pots in good soil; thus treated, they grow away strongly and form good plants by the first week in June. They may be planted out at that time, not earlier. When planted late they grow away strongly from the first without check. What are termed the Pompon varieties are the most useful; we prefer them to the single kinds for cutting. The quantity of bloom that can be obtained even from a very few plants is astonishing. Perhaps the easiest way to obtain a varied and good selection of single kinds is to raise them from seeds in a hotbed in February. Sown at that time, they make strong plants by the time when they should be planted out.

RANUNCULUSES are now growing freely after the heavy rains. If dry weather sets in when they are coming into bloom, they must be watered. Old florists were very careful not to wet the foliage; they watered between the plants with a small pot and fine rose, a care which is unnecessary, as I have proved, by watering them overhead before they come into bloom. When the flowers are open they would be injured by the water.

The first Tulip flowers are fully open, and others are coming rapidly into bloom. If the weather should be dry from this time we will have a good display. The plants are even in size and remarkably strong—doubtless owing to their being planted in new soil which is deep and rich. A dressing of short manure on the surface is very beneficial to them, preventing evaporation and the rain from hardening the ground. J. D. E.

PRIMROSES FROM SEED.

I OBSERVE that Mr. Douglas counsels sowing Primrose seed in April, and the doing so at that time naturally gives the plants a long season of growth, so that by the end of the season they become good flowering specimens. But I wish to ask him whether he does not find the seeds to germinate more freely if sown as soon as ripe? Some of the high-bred varieties do not seed freely, and one naturally wishes to get up as much of the seed which they yield as possible. Now, I have found that by sowing within a week or two of gathering nearly every seed came up, whilst from bought seed one hardly ever gets a satisfactory yield. Not only is there a marked difference in the germination, but plants raised from fresh seed seem to grow away more freely. I do not see that much is gained by keeping the seed until spring; if sown when ripe the seedlings will grow into sturdy little specimens with three or four leaves to them, and if planted out in September they will the following year grow into large specimens, possessing all the vigour of young spring sown plants with the advantage of having three months' longer season. It is just like sowing Cyclamens in August instead of in January; they are young plants all the same, but get a longer time in which to form blooming specimens. Some plants, indeed the generality of the stronger habited kinds, will throw up a truss of bloom the spring following; this may be picked off, but it is not enough to cause exhaustion—one great advantage attending their doing so being that inferior flowers can at once be weeded out instead of having to give them room for twelve months before being able to do so. This and the more free germination of the seed would, I think, determine me to sow shortly after gathering. Mr. Douglas has, however, probably had more experience in Primrose culture than myself, and he may have good reasons for preferring to sow in April. The sowing in warmth in a moist even temperature, as recommended by him, of course facilitates germination, but I am

inclined to think that the less hardy flowers know of an artificial temperature the better for them. Primroses will come up fairly well sown in the open ground, but it is certainly better to give choice kinds protection, the variations in temperature and moisture are so great and sometimes alternate so rapidly in the open air. The best



Habenaria psychodes (natural size) See p. 440.

way of sowing in the open ground I ever saw was in Mr. Wilson's garden at Wisley; small hurdles were placed to run north, east and west, another being placed on the top, thus giving a certain amount of protection whilst allowing of supervision. But Mr. Wilson's sowing of hardy Primroses is conducted on a scale which is to a great extent prohibitory as to the use of frames and pans; at

any rate I saw at Oakwood as many young Primroses and other plants coming up as would have required a large amount of labour and constant vigilance if the seed had been sown under glass. At a distance the collection of hurdles resembled a small sheep-fold. Where natural shelter is scarce I should think that hurdles would form a fine screen for the choice kinds of Primroses and Polyanthes; they admit plenty of light, and at the same time allow a free circulation of air. Mr. Wilson has hit upon the idea of having his hurdles dipped in tar, done I believe at the gas-works, and thus prepared for use they will last until they wholly wear out, whereas usually they soon give way at the bottom. J. C. B.

PERENNIALS AND ALPINES.

ANEMONE APENNINA.—This well-known Wind-flower seeds itself freely in my garden, and from this cause and its compact habit of growth, it is more valuable than its finer relation, *A. blanda*. One of my seedlings has turned out white. The flowers when closed show a faint tinge of blue on the back of the petals, but when fully expanded in the sun they are pure white. Others range through the typical colour from pale to dark blue.

LINARIA AUREO-RETICULATA.—A more valuable weed than this little Snapdragon can scarcely get into a garden, for as a weed it must be classed, taking possession of any nook or corner and springing up just wherever it likes, but never in the same place for two years running. It is as useful, and I think as ornamental, as the little orange and purple *Linaria alpina*, another annual with perennial tendencies, or perhaps *vice versa*; but, unlike the latter species, it produces considerable variation in the colour of its flowers, ranging from deep purple through pale pink to yellow. It likes a light or sandy soil in the full sun, and occupying as it does only a narrow space of ground to grow in, it never comes up amiss. Even the alpine Snapdragon is not always, in Nature, true to its colours, though I believe it never varies from seed when transplanted into gardens. I have more than once, in the Engadine and elsewhere in the Alps, found a variety of it with flowers wholly purple, the orange on the lip being absent.

SILENE PUMILIO.—This splendid mossy Campanion has flowered with me well for several years past. I wish I could induce its common relation *acaulis* to do the same. Half a dozen flowers or so from a good sized cushion is all I can get from the latter, while all *Pumilio* requires is a light sandy soil in the full sun, with bits of sandstone for it to run about and root under, and plenty of water in the dry season. Once started and well grown, a more notable flower than this for the rock garden cannot be found.

IBERIS SEMPERFLORENS.—Where this variety came from I cannot recall to mind, but if ever a plant was rightly named, this surely is the one, for it never ceases to bloom. It resembles *gibraltarica* in form of leaf and in the colour of its flowers, and might be a cross between it and *corneifolia*. I have it planted out in good strong well drained loam on a low slope of rockwork. It was never out of flower all the winter, and it is now so laden with bloom as to almost entirely hide its leaves. It strikes, too, readily from cuttings.

ERYNGIUM SERRA.—I got this noble Eryngo two years ago, and planted it out with fear and trembling, thinking so fine a foliage plant must needs require the protecting influence of glass. So far, however, it appears perfectly hardy, and though I have not yet seen it flower, it has passed through the last two winters with impunity, and gained much in size and strength. The whole plant resembles a flat-looking *Yucca*, 30 inches across, its deeply serrated leaves starting away from the centre like a huge rosette. I have it planted in rich light loam, in a warm sheltered part of the rockery, fully exposed to the sun.

SOLDANELLA MONTANA.—Of all this group this is undoubtedly the finest, and, so far, as my ex-

perience goes, far the easiest to flower. *S. alpina* will produce a flower or two on a plant, but this throws up a number of spikes fully 6 inches long, each of them bearing several deeply fringed purple bells, which last several weeks in bloom. I find it does best in peaty loam, well sheltered with stones, with a northerly aspect.

ANDROSACES.—As with test objects under the microscope, here we have plants that test the grower's skill as much as some of the rarer *Gentians*, *Campanulas*, or *Saxifrages*. *A. carnea* is one of the freest and best, and, when properly cared for, increases rapidly. Almost any situation seems to suit it so long as there is some substance in the soil. It is now in flower and blooming abundantly amongst stones in my rock garden slightly shaded. *A. lactea* is another free-growing kind which flowers well in rock crevices well exposed to the sun. *A. villosa* and *Chamæjasme*, too, are very beautiful species, not difficult to grow planted in light, rich soil with abundance of stones on level exposed parts of the rock garden. The beautiful *A. sarmentosa*, which is now showing abundance of bloom in the bud in several parts of my rockery, likes somewhat similar treatment to the two last, preferring, however, a slightly sheltered rock fissure with a westerly aspect and a little peat in the soil. But of all this genus, *A. lanuginosa*, when well grown, I think carries off the palm. All through the summer and autumn of last year this lovely species bloomed most freely with me, and attracted everyone with its rich, rosy flowerets hanging in the full sun from the front edges of my choicest rockwork. Even those who have no taste for alpine and who, not to put too fine a point on it, care for nothing below a Cabbage Rose or a Cauliflower, were struck by the beauty of its pink and white rosettes. It is just now recovering from the effects of the winter damp—for I give neither it nor any of the other woolly kinds the least protection—and is throwing out a number of fresh silky growths from its crown, while the shoots of last year, some of them 9 inches long, are all sprouting at their tips. As the whole genus roots deeply, care should be taken in planting to provide them with a good depth of soil. F. M. BURTON.

Highfield, Gainsborough.

NAMES OF DORONICUMS.

DORONICUMS may be conveniently divided into two groups—first, *Aronicum*, including *Clusii hirsutum*, *glaciale*, *scorpioides*, &c., mostly dwarf alpine plants, having large and handsome flowers; the other, *Doronicum* proper, which includes *Pardalanches*, *plantagineum*, *caucasicum*, and others, each division containing about an equal number of species. The main difference between them is that *Aronicum*s have a distinct pappus to the ray florets and are generally dwarf, while the others have no pappus to the ray florets and are much taller and more robust. The species usually found in gardens is the common Leopard's Bane (*D. Pardalanches*). *D. austriacum*, as shown lately at South Kensington, appeared to be nothing more than a smooth variety of *Pardalanches*, as was also *caucasicum* and *Clusii*. *D. caucasicum* of the *Botanical Magazine*, t. 3143, now in flower on the Kew rockery, is a distinct plant, different from that shown. Its leaves are nearly orbicular, cordate obtuse, with a deep sinus at the base. The plant at Kew is only about 2 inches in height, dwarfer than any we have seen described, although it answers to the type in every other particular. The true *plantagineum*, if it be indeed really distinct from *Pardalanches*, is not by any means common; its leaves are said to be ovate, not cordate, at the base, but with a winged stalk and clasping auricles, as in the common Leopard's Bane. The variety *excelsum*, of which the origin is unknown, seems to partake of both the above characters, and may, after all, be the result of a natural cross. Be that as it may, the variety, unless in having larger flowers, does not seem to be very distinct from *Pardalanches*, and merely serves as a link between the supposed species. It would be interesting to know if any of the *Clusii*

section are now in cultivation, and also how many distinct species of the other groups are now to be found in gardens. K.

SOME GOOD SPRING FLOWERS.

NOTHING can be more lovely in spring than the beautiful *Androsace sarmentosa*, the *Primula*-like umbels of flowers of which are bright rose, and the foliage is also extremely pretty. *Androsace coronopifolia* is another desirable plant, the flowers of which are white, and, taken collectively, are produced in a pleasing stellate form. Of the alpine *Phloxes*, words are incapable of describing their beauty; I may name *Nelsoni* (white), *frondosa* (bright rose), *atropurpurea*, and *subulata alba*, the last one of the best of whites; these are all grand carpet plants and flower profusely. *Adonis vernalis*, with its beautiful yellow flowers and elegantly divided foliage, should never be absent from the early spring border. Two *Aubrietias* are a great improvement as regards size of flower and colour upon the old *deltoidea*; these are *olympica* and *Campbelli*, both free growers. *Saxifraga purpurea*, with green flowers tipped with red, forms a pretty cushion. *S. Wallacei*, a white-flowered, mossy variety, must be regarded as one of the most effective. *S. peltata* growing in a bog is in every way a useful kind, throwing up, as it does, its gigantic stems freely. *S. primulina* has yellow flowers, which are very distinct and in every way good. *Ranunculus alexicaulis* should be in every collection. It is elegant in form, and the colouring of its flowers is very delicate. *Linaria anticaria* and *hepaticifolia* completely carpet the ground with miniature foliage and flowers, and creep freely over stones in a charming way. *Doronicum Harpur Crewe* is a magnificent addition to yellow-flowered plants. It is certainly the finest of the family to which it belongs, and it is an early flowerer. Nearly all the foregoing appear to thrive in sandy loam upon slightly raised banks, freely studded with soft sandstone. Plants, such as *Phloxes* and others, which grow close upon the surface, although healthy and free growing in spring and summer, are very apt to be affected by excessive moisture in winter. It is therefore a desideratum that dryness should prevail during that period.

Amongst dwarf shrubs in flower at the present time I might mention *Spirea Thunbergi*, a kind with beautiful spray-like inflorescence; *Andromeda tetragona* and *polifolia*, the former with flowers resembling miniature *Lilies* of the Valley, the latter similar in form, but with blush pink flowers. *Pyrus Maulei* needs no description; it should be found everywhere, being equally valuable for its fruit as for its flowers; *Magnolia stellata* has beautiful white flowers, that remind one of those of a white *Camellia*; *Skimmia fragrans*, as its name implies, bears sweet-scented flowers and is neat in habit; *Polygala Chamæbuxus* is a profuse-flowering plant, admirably adapted for rockwork; *Daphne Fioniana* is, perhaps, the sweetest of the family to which it belongs, and appears to be perfectly hardy, at least in the southern counties.

Amongst plants with pleasing foliage must be named *Alchemilla pubescens*, with pretty silvered foliage; *Carex acuta*, *Sempervivum triste*, the last with very distinct blood-red rosettes; *Festuca altissima*, a small Pampas-like Grass of great beauty; and *Euphorbia pilosa*, the shoots of which have curious golden tips. These may all be grown in gardens with advantage. C. D.

Ivy.—One of your correspondents states that Ivy will not grow on a new wall. My experience is that it will grow anywhere, provided it is tightly nailed to the wall—that is the secret; if blown about by the wind, it cannot take hold.—W. B.

Forms of Primrose.—I send two varieties of the common *Primrose*, one with flowers not larger than the Cowslip, having the petals reflexed, although the foliage is of the usual size. In the other the petals are lacerated and very irregular in length and width; both are curiosities in their way. They were found four years ago, and their peculiarities are quite fixed.—J. M. Charmouth, Dorset.

PLANTING BY SPADE, TROWEL, OR DIBBER.

PROFESSIONAL gardeners rarely use the dibber in planting choice flowering plants, with the exception of small seedlings. In the hands of amateurs the trowel is oftencast found. One has, therefore, surely no need to point out for what and when each of these implements should be used; but, generally speaking, if the spade were taken instead of a trowel, a considerable reduction in the death rate of newly-planted flower roots might reasonably be looked for. How often do we see little holes cut out of hard-set borders just large enough to hold the roots turned round and turned up; the old castings even are not broken up finely, but thrown in lumpy and in a body, instead of by sprinklings. Thus such work is done, and for some things it may do, but with regard to many plants instead of expectations of life and beauty, it would be more consistent to say goodbye to plants so set. The spade, on the whole, is the best planting implement; it need not be large, but light, sharp, and bright. It ensures the breaking up of the surrounding earth, which the trowel does not do, and, where a number of roots have to be set, a trench may be thrown out and then planting in its best style can be done by laying the roots in freshly stirred soil straight down or spreading, as the case may be. Of course, where the ground has been well prepared it is not so easy to go astray, but many do not make that preparation, and the wonder is not that so many plants die, but that so many live, especially in stiff land. The dibber can only be used with profit when one or (better) both of two conditions are present—viz., freshly prepared soil and small-rooted plants. J. WOOD.

Woodville, Kirkstall.

Bedded-out Hyacinths.—What your Halifax correspondent mentions (p. 380) as having happened to his blue Hyacinths also occurred here; while the other Hyacinths did not suffer, the spikes of the blue became detached from their bulbs without any apparent cause. The explanation suggested by your correspondent has much probability in it, and in the absence of any other has a good claim on our acceptance.—RICHARD MARTIN, Heath Cottage, Upton-on-Severn.

Early May flowers.—Walking through the Upton Nurseries at Chester the other day (May 4), I was much struck with the beauty of *Cerasus japonica* var. *Fortunei*, with its graceful semi-pendulous flowers of delicate tint and perfect form. It is to be regretted that this plant is not better known than it is. It is a valuable addition to early flowering trees. *Berberis Darwini* I also noticed in full flower—a perfect blaze of bloom; indeed it is invaluable, as it seems to be perpetually in flower. In going through the *Rhododendron* grounds I noticed a fine breadth of *R. caucasicum pictum* in beautiful condition. The symmetrical trusses of beautiful pink flowers seen in the sunshine of a May morning are simply perfection. This variety seldom fails to set freely, and is very useful for forcing.—E. J. D.

Autumn-sown annuals.—These make our borders gay in May and June, and also help to fill the cut-flower basket. It is surprising how well many annuals stand the winter in a very small state, while when fully grown they succumb to a very slight frost. Last autumn, in addition to *Silenes* and the usual run of plants usually employed for spring-flower gardening, I sowed a number of beds with annuals on rather poor soil in order that their growth might not be too full of sap. They consisted of such things as *Godetia* Lady Albemarle, *G. The Bride*, *Clarkia pulchella* and *C. elegans*, various *Candytufts*, *Paris Daisies*, *Collinsias*, *Eschscholtzias*, *Gilia tricolor* and *alba*, and others, and they did remarkably well. They are now coming into bloom, and I need hardly say that in gardens where the general clearance of beds, preparatory to bedding out, causes a dearth of flowers just at the time when they are much needed, some beds of these as a reserve

would be most welcome to many. They may be sown thinly where they are to flower or transplanted as circumstances may decide, but I find that most of them do best when sown where they are to remain. In mixed borders there are usually vacancies in autumn that will permit of annuals being sown in patches; they come into flower after the early bulbs are over and just before summer flowers are at their best.—J. GROOM, *Gosport*.

FRUIT GARDEN.

FRUIT PROSPECTS.

NEARLY all kinds of fruit trees promise this year to be laden with fruit; there is, therefore, every encouragement to take the utmost care of them. The first to demand attention are Peaches and Nectarines, which, as is usual in springs like the present, are suffering from the effects of aphides. To be able to battle with these successfully dis-budding must be proceeded with, as one cannot cope with them while they have so many lurking places among superfluous shoots, all of which should be taken off at once; not only is their removal necessary for the sake of the trees, but the aphides can then be got at and killed. The number of shoots to leave depends entirely on whether or not the wall is already covered with branches; if it is, no more should be allowed to remain than are absolutely needed for laying in to take the place of those in bearing now and that will have to be pruned out next winter; all beyond these do more harm than good by obstructing the light and sun from the others, and thus preventing them ripening in the way they otherwise would do. As a rule, no more than two are required on each young branch, the one at the base and the other at the point, the latter being essential to draw up the sap and feed the fruit below it. In selecting the shoots, choice should be made of those best situated and not over strong, the right position for all those at the base being on the upper side, where they can be nailed or tied close to the wall. If this is done so as to keep them down instead of allowing them to bend or curve at their junction with the branch, they may be laid in straight and the trees can be kept in good shape. To get rid of aphides there is nothing so safe as tobacco water, as with that there is no risk of damaging the fruit if it is not used stronger than is needed; whereas some of the compounds recommended for their destruction seem to hurt the skins of the tender Peaches and Nectarines, and check their swelling or make them fall off. In cases where only a few of the shoots are affected it is a good plan to have a spray-producer, which will enable those using it to wet every part of the leaves without wasting any portion of the liquid, which the syringe would do. Next to tobacco water, the safest thing to use is tobacco dust, and this may be puffed on regularly by means of a distributor sold for the purpose, the best time for doing this being early in the morning when the foliage is damp, as then it adheres and does its work well, but it is not advisable to leave it on long, as it blocks up the pores and is apt to burn when the sun shines hotly upon it. This being so, it should be washed off with plenty of clear water, driven on by the aid of a good syringe or garden engine, which will dislodge and bring away all insects and make the trees clean. In order to keep them in this state all summer, it is necessary to mulch the ground with half rotten manure, which helps materially to maintain an equable condition of moisture about the roots, and thereby wards off red spider, one of the worst of all pests that assail Peach trees, and a sure visitor if they suffer from want of water either above or below, or have more fruit left on them than they are able to carry without feeling distressed. Thinning should therefore be carried out as soon as it can be seen which are likely to swell off the best, but it is not wise to do too much in that way till after the stoning process,

as they often fall about that time and leave but a small crop.

CHERRIES belonging to the dessert section need pinching and stopping, and to keep the trees from aphides it is necessary to do this early, as they attack the young shoots, none of which are wanted except it may be for laying in to fill bare places, as Cherries fruit on spurs, and the thing is to keep these as close in as possible, in order that the blossom may have the protection which the warm bricks afford. Morellos bear on the young wood, which should be thinned out like that of Peaches and Nectarines, only laying in just what there is ample room for. It then gets properly ripened and pruning is saved, besides which the Cherries colour best when exposed, and both quality and flavour are thereby improved. The only insect that gives much trouble in the case of Cherries is the black aphid, which is very difficult to kill, the best remedy being dipping the shoots in dilute nicotine soap. This finds its way through their oily coat and kills them. The way to apply the liquid is to have it in a bowl or other vessel and dip the points of the shoots in it, which may easily be done as soon as they are long enough to bend, or the insecticide may be applied by means of the spray-producer. Plums and Apricots require much the same treatment as Cherries, but, fortunately, the last named are not subject to any insect except a maggot, which occasionally gets on them and attacks the leaves. The only way of ridding the trees of this pest is to pick it off or smash it up between the finger and thumb. Plums are very liable to aphides, which soon curl the leaves and do irreparable damage, but by timely thinning and pinching back of the young shoots their ravages may be stopped, as they cannot do much with leaves that are firm, and it is an easy matter to wash them off these.

APPLES and Pears are best left till midsummer before they have their shoots pinched back, or they are apt to start at the base and make wood instead of fruit buds, but the thinning out of the fruit cannot be done too early; the sooner the load on the tree is lightened the more rapidly will that left swell and the finer will it become. In thinning out Apples and Pears, the quickest way is to nip them off with a knife by just turning the stalks up against its edge, and letting the fruit drop on the ground. To prevent cracking, which is generally the result of dryness at the roots, causing a contraction of the skin, followed by a rapid swelling through a heavy fall of rain, it is a good plan to mulch round the trees, and every now and then give them a soaking with liquid manure or any sewage ready at hand; and the same with Apples, for though these escape fruit-splitting, they often suffer from red spider on the leaves when we get a hot summer.

RASPBERRIES always pay well for mulching, as to do any good they must have plenty of moisture and a cool root run, which long manure or litter affords, and the one or other should be put on at once. Currants of the red and white kinds are often spoiled by the excretæ from green fly under the leaves, which when exuded is clear and sticky, and thought by some to be honeydew deposited in a different way, the stickiness of it causing dust and dirt to gather or lodge, when after a time this forms a thick coat on the fruit. To prevent this the tips of the shoots should be cut away, as it is there the aphides are to be found; but they ought not to be shortened much, or the loss of foliage will be too great and cause a check to the fruit. S. D.

5347.—**Figs.**—It rarely happens in this country that the second crop of Figs of the preceding year comes to maturity. If the winter is sufficiently mild to admit of their hanging until the following spring, when they sometimes swell under the influence of the rising sap, they do not stand, as they are too forward and too weak to pass through the stage of fertilisation. Well-managed trees should be divested of all Figs larger than Peas when the last fruit is gathered in the autumn in order to give them time to form embryo Figs for the following year. The embryo fruits which are

formed near the points of the shoots, and are barely perceptible when the leaves fall, will be the first to ripen in the ensuing season. These should be carefully guarded from injury when the trees are pruned and nailed in the spring, and they should be protected from the effects of morning frosts by having shading of some kind dropped over the trees at night. The trees on walls this season are exceptionally promising, and will pay for the care usually bestowed on Peaches, Apricots, and other wall fruits.—M.

Vines on the extension system.—It puzzles one to understand how "L." can require the information he seeks on this subject after having read "all that has been said in reference to young Vines and the extension system;" but assuming his question to be a *bona-fide* one, the answer is, that whereas a viney with rafters 20 feet or 30 feet long can be filled with Vines the first year and cropped the next, and constantly afterwards according to vigour, by the extension system, it would take from five to eight years by the "old plan" of leaving only a few feet each year.—J. S. W.

Bees in Peach houses.—Whether or not bees had anything to do with setting the crop of Peaches to which Mr. Muir alludes in THE GARDEN (p. 395) I know not; all that I do know about the setting of Peaches and Nectarines is that I have not yet seen a well managed and properly constructed Peach house in which a good crop of fruit did not set without the aid of bees, whether the crop was forced or not, with the exception of one or two shy-setting varieties, such as the Noblesse and Crawford's Early. These sorts I like to fertilise with a brush, but taking Peaches and Nectarines as a whole, I do not consider that they require either bees or brush to fertilise their flowers. My experience would be singular indeed if I had never seen an indifferent crop of these fruits under glass. That is not my meaning. What I contend for is, that when conditions are wholly favourable, the flowers do not require the assistance of either brush or bees to set them, except, perhaps, the varieties just named. I feel that Mr. Muir has credited the bees with doing more good than they deserve.—J. C. C.

Mildew on Strawberries.—Fungologists generally contend that fungi on plants is the cause of disease rather than the result of constitutional debility or something of that kind in the plant, causing it to fall a prey to disease, but it is difficult to see how the presence of some of those fungus parasites can be due to anything else than a predisposing cause in the plant. The Black Prince Strawberry affords an example of this kind. It is so liable to mildew, as to be almost worthless for forcing purposes unless sulphured carefully at the right stage; and few gardeners force it for that reason, otherwise it is acknowledged to be an excellent forcer and a sure bearer. Indoor fruit and foliage are certain to become completely covered by mildew, and outdoors at times the foliage becomes white with it, the mildew flying in clouds when the leaves are disturbed. Notwithstanding, other varieties of Strawberries may be grown alongside the Black Prince under these conditions, and even in contact with it indoors or out of doors, and yet they will not become affected by the mildew. Vicomtesse Héricart de Thury will ripen off clean, beautiful fruit on a shelf below the Black Prince when the latter is white with the mildew, as it always is before the plants are done and turned out. Other Strawberries are affected with mildew besides the Black Prince, but none so destructively so far as I have seen. I regard this as a singular fact requiring explanation.—S. W.

Forcing Strawberries.—We have just now a fine crop of Strawberries on plants not prepared in the usual way by layering; on the contrary, they were the latest runners of 1883 dibbled into beds 6 in. apart. The intense drought last season not only curtailed the Strawberry crop on light soils, but made the supply of runners very short; therefore when we came to pot up our annual supply we had to depend largely on the plants in beds of the previous year's growth. These were

carefully lifted with balls of earth and potted the same as the others that had been layered, and by the end of the season they were very fine plants. I cannot say that they are better than younger plants, but I can say that it is a good plan to have a reserve of such plants to fall back upon in case of the supply of young runners failing, and I should adopt the same course again if, on taking a garden in July or August, I found no preparation made in the way of runners of the current year, as I should feel more certain of getting a full crop than from runners laid too late to properly fill the pots with roots. I find it to be a capital plan to have a few beds of runners put out in the autumn for any emergency, such as filling up gaps in beds, &c., and if not required for other purposes they may be lifted about this date with good balls of earth, and if placed moderately thick in frames, they will yield a good crop of fruit just before the open-air crops become fit for use.—J. G., *Hants.*

Gooseberry caterpillars.—Birds are very numerous with us, and, unless prevented, prey heavily on our Gooseberry buds. On the other hand, we recognise them as our busy allies in working destruction to the caterpillar and its parent fly. The same means, too, that have to be used for keeping the buds safe have also, we believe, a share in diminishing the numbers of the caterpillars. Several times, while the bushes are leafless, do we find it necessary to go over them with a lime-and-soot wash to save the buds. This mixture is applied unstintingly, dredging it all over the branches with a long-haired new hand-brush; of course, a good deal drops on the ground at each dressing, and this, washed in by rain, cannot be agreeable to the caterpillars buried in the soil. Certainly we are not so much troubled with them as formerly. This pest will soon be appearing now, and notes from your readers as to their methods of killing or checking it might be helpful to others. We are quite unable to spare the time for hand-picking, and the preventive we like best is quicklime. From the time of the first appearance of the caterpillars' ravages a man goes round all the bushes two or three times a week with a pail of powdered lime, and wherever signs of them are visible, a good upward dusting of lime is given. Currants, if attacked, receive the same treatment. If this is followed up closely the caterpillars make but little progress, and it is time-saving and effective. Very little of the lime will be found on the fruit, but even a little of that is preferable to hellebore.—A. MOORE.

DRAWING FOR GARDENERS.

"F. W. B." goes very far wrong in his recommendations as regards a course of study in drawing. The kind of study he recommends, when carried out by amateurs, is the principal cause why purchasers of art-work have yearly to inspect almost acres of coloured drawings which are offered to them with the most perfect confidence as correct drawings of landscapes, flowers, &c., yet which are rarely worth the paper they are painted on. It requires very little thought to perceive that all painting in colour must be drawing with the brush, and the first idea that occurs to anyone unacquainted with art and art teaching is, "Why not begin with that?" Let me tell "F. W. B.," and others who think with him, that that course is wholly impracticable; what he proposes to begin with is the acme of drawing, which requires many years of hard work to reach. What he proposes to do is, as if one who wanted to get to the top of St. Paul's dome, was to stand in St. Paul's Churchyard and make futile attempts to jump there; whereas, he can reach it in a few minutes by going up the stairs. The whole error lies in a nutshell. People who know nothing of art teaching imagine that when a student sits down to his first study, his sight is, to all intents and purposes, perfect; the very reverse of this is the case. I have taught drawing in Government Schools of Art, and elsewhere, for almost thirty years, and have only met with two pupils whose sight required no training. The

training of the eye is, at least, ninety-six per cent. of the work that has to be done in training a draughtsman to perfect accuracy of eye and hand. The whole of the Department of Science and Art course of drawing is based on this fact. Simple ornamental outlines on white paper, giving clear, distinct, and graceful forms, gradually train the pupil's eye to distinguish delicate gradations of form, and it is only after a thorough course of these simpler outlines from flat copies and casts in relief that even students, who afterwards become leading artists, can attempt leaf and flower forms with any approach to accuracy. It is wholly useless for anyone to attempt to teach him or herself drawing; the work must be looked over by some one whose eye is perfectly trained, who can point out errors as they occur, and as it were take the beams out of a pupil's eye before drawing his attention to the notes. People who know nothing of art have no idea how difficult it is. Mr. Val Prinsep, R.A., very aptly told the students of the City and Spitalfields School of Art that with regard to real excellence in art they were just about the level of a musician who could whistle the "Old Hundredth" and "God Save the Queen." I knew something of the work of those students, and that several of the best of them were earning a fair living by art work.

The School of Art course is, no doubt, tedious, but it is the straight road to excellence; all other methods are roundabout methods. It is no more difficult or tedious than a thorough musician's training. Of course, only a very small proportion of those who begin to learn drawing in art schools pursue it beyond the most elementary stage; but that is mainly through want of mental capacity. Those who fail in the School of Art never learn drawing by any other method. "F. W. B." is perfectly right in saying that pen-and-ink drawing should be undertaken; nothing is of more use to an artist than drawing with an etching needle; but if he had to deal with practical teaching, he would very quickly find that pupils like to have something to show for their trouble; it encourages them to find they are making a little progress, and a considerable amount of tact is necessary to keep them going on without getting disheartened. It is a long road they have to go, and it is better that the length of it should be found out gradually. Drawing with black-lead pencil enables the drawings to be kept clean; without erasure a pupil could not tell right lines from wrong ones, and, as a matter of fact, the wrong lines are not erased so that they cannot be seen until the drawing is nearly finished. The School of Art course of instruction has been before the public since 1852, and the majority of our modern painters have passed through it. I think, therefore, "F. W. B." will see on reflection that if the schools do not offer a royal road to excellence, they offer the best road that our modern artists have been able to invent.

Japanese art affords no case in comparison; it aims at nothing beyond a simple decorative treatment of natural forms, in which a few lines are fairly and feelingly drawn, and everything else omitted. There can be nothing worse than sloppy or slipshod methods of learning to draw, and in no form of drawing do such methods show more conspicuously than in drawings and paintings of flowers. Judging from the work that finds its way before the public, both in the horticultural press and elsewhere, there are not a dozen artists who draw flowers and plants with any approach to accuracy. J. D.

Two good *Eranthemums* may now be seen in flower in the T range at Kew; they are *E. albidiflorum* and *E. cinnabarinum*. The first is a dwarf white-flowered species with stems a foot high, opposite dark green ovate foliage, and a terminal cluster of white flowers, resembling both in form and attractiveness a bunch of white Lilac. At Kew this species is raised annually from seeds, which are produced in abundance on cultivated plants. These are sown in autumn, and the plants grown on all winter in a warm moist house, where they are placed on a shelf near the glass. A

group of well-flowered little specimens, such as may now be seen at Kew, is a really pretty picture, which has only to be seen to ensure this plant a place in all collections where stove-flowering plants are in favour. The second species, *E. cinnabarinum*, is a rather tall growing plant with the leaves in pairs, somewhat distant along the stem, on the top of which a long, graceful, curving, branching raceme is developed, and bears numerous large rosy purple flowers, with a dark spot in the centre of each. A coloured plate of this species was given in *THE GARDEN* in 1880. In the winter the flowers developed by this *Eranthemum* are much smaller than those produced under the influence of the warm sunshine of spring.—B.

GARDEN FLORA.

PLATE 492.

CYPRIPEDIUM GODEFROYÆ.*

THIS last addition to the group of Lady's Slippers with spotted flowers, which, previous to the introduction of this new-comer, only comprised the lovely *C. niveum* and *concolor*, has been hailed with delight by all lovers of this beautiful class of dwarf-growing Cypripeds. Though in general appearance and habit, and likewise in the peculiar colour of its foliage, this new *Cypripedium* may be said to be closely allied to *C. niveum* and *concolor*, it is entirely distinct from either of these both in the form and colour of its flowers, which, in most instances, are copiously spotted in all their parts and on both surfaces with purplish magenta on a pure white ground. It partakes of the same variability of character possessed in a more or less marked degree by all imported Orchids to whichever section they may belong. In some cases the flowers are covered with small white hairs and the centres of the petals are ornamented with an almost uninterrupted line of rich magenta-purple extending from the base to the very tip of each of them—the result of a fusion of the spots. The flowers, which are kept well above the foliage, are bluntly triangular in outline; they measure about 3 inches across, and are particularly striking, owing to their dorsal sepal being peculiarly suborbicular or nearly circular, and tinged very faintly with pale green at the apex. Another distinguishing feature is the staminode, which resembles that of *C. niveum*, but is covered with exceedingly fine dots of a very pleasing bright chocolate colour.

Although in all the plants of this Lady's Slipper which have already bloomed the flowers have appeared on robust and densely hairy, though strictly one-flowered, peduncles, it would not in any way be surprising to hear of twin flowers being produced as sometimes happens in the case both of *C. niveum* and *concolor*. One of the best qualities belonging to this new species, however, is the time of year at which it flowers; unlike the two species just named, which bloom regularly in June and July, *Godefroyæ* is principally a winter bloomer. It first flowered in November, 1883, then in November of the following year.

Established plants of it flowered simultaneously in Baron Schröder's collection at The Dell, Egha and in that of Baron Alphonse de Rothschild, Ferrières; and also in that of Mons. Petot, who undoubtedly possesses the most complete collection of Lady's Slippers in cultivation. A little later on a strong plant of it opened its blossoms with Mr. Lee, at Downside, Leatherhead, and from this plant the annexed plate was prepared. It was introduced by M. Godefroy-Lebenf, from Cochin China, a country from which very valuable additions to the Orchid family have lately been

* Drawn in Mr. Lee's garden, Downside, Leatherhead, in January. It was one of the new Orchids exhibited for the first time in this country at the Orchid Conference.



CYPRIPEDIUM GODEFROYÆ

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made. Like *C. niveum* and *concolor*, it grows wild on calcareous rocks on the side of a mountain, where, from 10 or 11 o'clock in the morning until night, it remains continually exposed to the full rays of a very hot sun. It therefore requires plenty of light and a great abundance of water at the roots, and even when the plant is at rest it should be kept moist.

WORK DONE IN WEEK ENDING MAY 12. MAY 6.

Occasional showers and much colder. Thinned turnips (Early Munich) to about 6 inches and asparagus to a foot apart. Continued the digging of ground that has been cleared of Broccoli; weeded rocky garden, planted a few Saxifrages and Sedums in bare places, and trimmed up edgings and walks. Finished thinning Grapes, a house of several varieties, and remulched the inside border with good manure and watered it. Fire-heat will be applied daily to keep the temperature from falling below 60° on cold nights, forcing being done by closing up early, allowing the temperature to go as high as 95° or 100° with sun heat. The early Peach house border has also had its last renewal of mulching and watering prior to ripening, indications of which the fruit now present, and accordingly ventilation will be increased and atmospheric moisture reduced, though we shall continue to syringe the trees at closing time till the fruit begins to colour; by this means we shall hope to keep free of red spider. Every fruit is now exposed to light, either by tying inside of shoots and foliage, or by taking them quite off; the last plan, at this late period, is only practised when the shoots can be well spared, owing to their being over-crowded. Continued Grape thinning. Shifted into larger pots *Solanums* and *Wigandias*. Got plants out to harden; at the same time prepared temporary coverings in case of frost, and from which, unfortunately, we cannot yet feel safe.

MAY 7.

Still showery, with intervals of sunshine; favourable for thinning out kitchen garden seedlings, and all that are ready we have done. Having a number of old stools of Violets remaining over from the transplantings of last week, they have to-day been planted in large clumps of *Rhododendrons*, and in the woods adjoining the pleasure grounds and in all sorts of aspects, and probably we may be able to get flower from them after those in the garden are over, but whether or no, they will assuredly add to the pleasure of a stroll in the woods. Laid Hazel boughs over borders of early Potatoes, and strewed thinly on top of boughs flat Spruce Fir branches to protect them from frost. This kind of covering may be described as a permanent (for it may remain on till all danger of frost is past) and effective one against 4° or 5° of frost, and, if needs be, a covering of mats, canvas, or netting can quickly be added should it be required. Later Potatoes and dwarf French Beans have been earthed up by way of protection. We have done planting hardy kinds of bedding plants, and had begun putting out *Pelargoniums*, but the cold of yesterday and to-day has put the veto on, and no more will be done till we feel quite safe, but meanwhile beds containing spring flowers will be prepared for their summer occupants, the plants being moved and roughly replanted in the reserve garden till such times as leisure can be had for increase of stock by division, and at sufficient distance apart to admit of full summer growth without overcrowding. Nailed in the principal growths of Peaches and Nectarines. It is still too cold to wash the trees with garden hose, and therefore to keep green fly in check, affected parts of trees have been syringed with tobacco water, and over the mulching has been applied a thick dressing of soot mixed with Beeson's manure, and which these heavy rains will quickly wash in, and that the trees will need all such help that can be given the immense crop of fruit is the surest indication. Plums have set well, but they seem to have felt the cold of the last two days, for much of it has a sickly tinge of yellow, which caused us to forego for a time our

intention of giving them the same surface manuring as has been given to Peaches, and in addition, the penance of self-reproach is upon us for removing the protection from the trees too soon. Peaches are better protected with foliage, and the coverings were really doing harm, for the rain could not reach the stems of the trees, at the base of which and close to the wall it was most wanted. It will be difficult this year to name the varieties that are best fruited, for all kinds at present seem to be in that state. Mixed soil for *Chrysanthemums* and began potting them, all being put in the pots in which they are to flower, and, of course, are now arranged in the open garden in the most sheltered and sunny spot we have. Grape thinning and the potting of subtropicals is the only other work we have been able to do about the houses to-day.

MAY 8.

This morning our thermometer registered 4° of frost; and, very fortunately, the cold of yesterday had prepared us to expect this, so that everything that could be was covered up. Potatoes are quite uninjured, though they had no other covering than the branches that were put over them yesterday. To-night it is warmer, but we have again prepared for the worst by covering all we could. Gave Strawberry plots a dressing of soot, with the primary intention of destroying slugs, though it is also a good manure for them. Runner Beans are just breaking through the soil, and a little of it has been drawn over them with hoes to keep them safe from frost, after which we staked them, having more time for such work now than we shall have when frost has ended for the season. Pulled out the seed stems of *Rhubarb* and cut off the same from *Seakale*. The plants of the later propagated by cuttings always produce several shoots, and all are rubbed off except one of the strongest on each plant. Tied up loosely to stakes tall *Delphiniums*, strong growing *Pæonies*, early *Pyrethrums*, and a few of the tallest *Phloxes*. Planted in the mixed flower borders a few clumps of *Salpiglossis*, Sweet Scabious, *Limnanthes*, and annual *Chrysanthemums*. Prepared a south border for planting out Tomatoes, a dressing of fresh loam and a sprinkling of bone-dust being given as manure. The plants are ready for putting out soon as the weather seems a little more settled; each plant will have a yard of space and be confined to one stem, and will be supported with but one stake—exactly the same as are *Dahlias*. It need scarcely be added that the sunniest and most sheltered spot at command has been selected on which to grow them. Potting *Chrysanthemums*, and each plant is secured to a stake as potted. For the present they are stood close together on a gravel walk in kitchen garden that is well screened from wind. Put in cuttings of *Dracenas*, a few more *Euphorbia jacquiniæflora*, and a first lot of *Poinsettias*. Melons now swell apace, and we water them freely till there are signs of ripening, soot water being about the best stimulant for them, as they are in soil that is much infested with wire-worm, and which, in fact, destroyed our first batch of plants. Tied succession plants to trellis and pinched points out of shoots that were showing fruit. Top-dressed Cucumbers with fresh soil and droppings in equal proportions. Abundant atmospheric moisture and a night temperature of not less than 65° keep them in great vigour and clear of insects.

MAY 9.

Fine, but a very cold north-easterly wind that renders it still unsafe to plant out as yet any except the more hardy bedding plants, but such as are intended for putting out soon have been removed from the houses to harden preparatory to being planted at first opportunity. Lifted, divided, and replanted *Primroses*, *Polyanthuses*, and *Daisies*; a moist shady border has been set apart for them, and they are planted in straight lines 6 inches apart and the same distance from plant to plant. Sweeping and rolling walks and parts of lawn are the only other outside jobs that we have been able to accomplish to-day. Saturday's work in and about the houses varies but little, and it is always of a cleansing description.

Besides which, to-day we have potted a few more Tomatoes into fruiting pots to be grown in the vineries wherever there is a little space and light sufficient to set the fruit. Melons that have been sent to us for trial as novelties have also been planted in large pots, and will be fruited at back of fruiting Pine stove. Filled up every available shelf with Strawberry plants, and the plants that have yet to be put in warmth have been thinned out and stood in the full sun; many of them are very nearly in flower, and night protection with tiffany is therefore necessary; a temporary frame made with long poles and keeping the tiffany off the plants. Pinching and tying out shoots of Vines and Grape thinning has also formed part of this day's work.

MAY 11.

Very fine, though still cold. Thinned out the fruit of Apricots; the crop is larger than it has been for at least ten years, and Peaches are a heavier crop than for four years past, and the growth is clean and vigorous. At the present moment Apple trees are a glorious sight, and never before have I observed how varied are the tints of the several varieties. The flowers of *Wadhurst Pippin* are a deep rose colour, streaked with almost pure white. *Ribston Pippin* is the counterpart of *Wadhurst*, except that the tint of pink is of a lighter shade. *Tower of Glamis* is almost pure white; but the gem of all to my thinking is *Lemon Pippin*, which is a mixture of deep purple, light purple, rose, and white. Every kind is so thickly studded with blossoms, that if but a hundredth part of them set, the crop will be immense. Planted out Vegetable Marrows and covered them with handlights till established. The mounds on which they are planted are made up of the refuse vegetable matter from the kitchen garden, lawn mowings, and stable litter that has been previously used as mulching for Vine borders, topped up with good soil that is made porous by intermixing with it the siftings from burnt ashes—materials in which Marrows delight. Began to clear away Curled Kale and sprouting Broccoli, and the ground soon as dug will be again cropped with the main sowings of Turnips and dwarf French Beans. Hoed deep between the rows of autumn-sown Onions, a number of which are running to seed, and these we pull for present use. Indoors the work has been of the same description as for several days past. Watering and getting out plants to harden take up a great part of each day, the remainder being devoted to thinning Grapes and pinching, and tying down the shoots of fruit trees generally.

MAY 12.

Very fine; two degrees of frost again this morning, which warns us not to hurry on bedding-out operations and to keep Potatoes, &c., covered up. Wind and sun being very drying, and the ground hard on the surface from recent heavy showers, we have had a busy day hoeing between the rows of vegetable crops; Carrots, Parsnips, Onions, Spinach, and Peas required it badly. Staked other Peas; they are but just above ground, but we can better afford the time to do them now than a week or two hence. Drills have been drawn in which to plant out a first lot of Autumn Giant Cauliflower; no other sort does so well for supplies at end of summer and early autumn, and by sowing and planting at three different times, at intervals of a fortnight, good heads may be had till the earliest Snow's or Veitch's Autumn Protecting Broccoli are ready. Made up other slight hotbeds for striking *Alternantheras*; the frames of those first struck have to be used for these batches, and therefore we improvise coverings of some sort or other, the favourite plan being a rough framework made with Alder poles, on which rest tarred felt shutters, these again being covered with mats. Potted Trec Carnations and *Pelargoniums* intended for winter flowering. For the present they have the shelter of frames, but very shortly they will be put outside, the pots being plunged in ashes to save watering, &c. Put in the last lot of Roses for forcing; all are required for cutting, and we find they are best retarded if cut soon, as they begin to open, and put in water in a cool fruit room, there to remain till required for use. Thinning

Grapes. A house of Lady Downe's seedling is now in flower, and as they do not always set well, we strive to make certain of this by disturbing the pollen, by a shake of the canes and trellis about mid-day, when the air of the house is driest. Alnwick Seedling has set as freely as Hamburgs; they were artificially fertilised with the pollen of other varieties. Other work has been of a routine character.

HANTS.

FRUITS HARDY AND UNDER GLASS.

APRICOTS.—Where the blossoms were plentiful the set of fruit will be abundant, as we have not had a single night's frost that would affect the most exposed and unprotected trees. In this neighbourhood, as I predicted some weeks ago, the blossom has been unusually light; the flowers were, however, very fine, and the foliage, which is clean and healthy, is unusually free from grub. Why, after an exceptionally favourable winter, so many flower buds fell from the trees when they had barely commenced swelling, it is difficult to explain. The subsoil, it is true, was dry, but not sufficiently so on our cool limestone formation to prevent the roots from obtaining a plentiful flow of sap had the trees shown the slightest disposition to start into life. But so complete and protracted was their lethargy, that the blossoming period was quite six weeks later than usual. After very severe winters it is no unusual thing for Apricots to shed their buds wholesale, but whether the premature rest, almost approaching to paralysis, induced by the intense heat of last autumn, would result in a similar check, many experienced Apricot growers can, I have no doubt, explain. In Peach houses where the trees are over-ripened they frequently cast their buds in the spring, and Apricots on south walls have recently passed through a fiery ordeal. It is yet early to thin, but in favoured districts, when, as is often the case, the fruit has set thickly on the spurs, a few of the least promising may now be removed to give those left room to swell; the final thinning can then be deferred until all danger from spring frosts has passed away. Although the foliage appears so clean and fresh, it will be well to keep a sharp look-out for our lively friend the grub, and to carefully handpick the tree, as a preliminary to a thorough washing out on a mild day with the hose or engine. On light soils resting on the south side of high walls this washing of the foliage may extend to one or more drenchings of the roots, as there is just the shade of a chance of deeply bedded roots yet being dry, and well-drained Apricots, like Peaches, cannot easily be over-watered.

PEACHES.—These will now require daily attention, as aphids seems inclined to be troublesome, and on no account must this destructive insect be allowed to gain the upper hand, otherwise the trees will suffer throughout the season. For some years it has been my practice to remove every shred and tie and to keep the trees quite away from the walls for some weeks in the winter, to wash every twig with soapy water and the walls with a toned mixture of quicklime, and yet trees that were free last year are affected this. Green fly is easily kept under if taken in hand on the appearance of the first curled leaf. But once allowed to spread, its destruction generally means the loss of the foliage and the crop. Insecticides for destroying these pests are very numerous, but there is nothing better than weak tobacco water applied through the syringe. The person in charge of the trees should never allow anything to prevent the daily performance of the cleansing process until the insects are destroyed, when a thorough washing with the hose or engine will most likely set them right for the season.

Disbudding is one of the most important operations pertaining to summer management. The removal of a number of superfluous shoots may appear a very simple matter, but when it is borne in mind that the even distribution of the sap over every part of a large tree is the result of judicious disbudding, and that the operator must be able to select and encourage the growths in

one part while he checks and pinches in another, it will be seen that a man must be well up in his work and thoroughly understand what he is about before he is competent to have charge of a wall of handsome Peach trees. The operation ought to be commenced by the removal of the foreright shoots from the strongest branches; then the others should be gradually thinned away, or pinched to one or two leaves where a young fruit is found growing, until no more shoots are left than can be exposed to light when they are fully developed. Under the modern mode of extension training there is always the danger of laying in too much wood, but the principle of selecting the lowest shoot on the upper side of every bearing branch for succession is the same; others also on the upper side are left at regular intervals of a foot or more, while those intervening are entirely removed, or pinched to two or three leaves where they are sheltering and drawing support to the young fruit. Disbudding should always be commenced near the coping, where the growths are most forward, and it may be carried on downwards with more or less speed according to the growing or retarding state of the weather; it is not, however, a good plan to push the operation when, as at the present time, the mercury falls to or below the freezing point at night and the biting wind is blowing off snow-tipped hills by day.

Protection.—Although broad copings of wood or glass favour an early and tender growth, it will not yet be safe to remove the covering from the trees. The most disastrous morning frosts have, for some years past, come upon us about the end of the second week in May, and at the present time, May 7, the Grass is crisp and the glass registers 6° of frost. A bright day is likely to follow, and tender blossoms in low situations are sure to suffer. With ample experience, then, for our guide, we shall do well to hoist every stitch of covering for the present, as the prospect, so far, is unusually promising. Plums, Pears, and Cherries suffer most from the effects of late frosts. Peaches and Apricots on south walls, which absorb and reflect sun heat, are comparatively safe, as the fruit has the additional protection of a good mass of foliage, but high walls covered with soft foliage must not be deemed sufficient where additional covering can be had.

Watering.—It may seem strange in many parts of England to have to direct attention to the condition of the roots of hardy fruit trees at this early period. It is, nevertheless, a very important matter, as it is a well-known fact that the subsoil was unusually dry at the end of the year, and it is questionable if the rainfall of the past four months has done more than partially moisten the lower stratum on the south sides of garden walls. Apricots and Peaches are the only stone fruit trees that are likely to require an immediate supply. Pears and Cherries on west walls may require it when the fruit is set. Where hose water can be had, large borders can soon be supplied, but unless the water is exposed to sun and air in open tanks or ponds it will be best to forego the hose and fall back upon the barrel and can. Nearly all the Peach trees here were root-lifted, not root-pruned, last autumn. We are obliged to do this every second year, otherwise we should never see an outdoor fruit. The roots were flooded home, but so dry was the surrounding soil, that another good watering was given to these and Apricots when the buds began to swell. Light, dry soils may be well mulched with manure before they are watered; but here, in a low, cold garden, the only spring mulching we can use is an inch or more of old lime rubble. This is bank screened and laid on after the trees are nailed. Rain or artificial watering carries the soluble part down to the roots, and, judging from the colour of the foliage and freedom from blister where blister formerly was very troublesome, it is evident that a calcareous mulch is better than manure in cold gardens. From the preceding remarks it may be inferred that manure is never used for Peaches, but such is not the case. The borders are allowed to absorb all the sun heat until the fruit is on the point of stoning. They are then

well littered down with fresh stable manure fit of the best of all insecticides—ammonia. Wat is supplied as often as may be necessary until the fruit begins to ripen, and when all the Peach are gathered the manure is removed quite down to the clean coating of mortar rubble, which again lets in sun-heat to ripen the roots as well as the wood.

FIGS.—The tropical heat we had last autumn suited Figs on open walls and the dry mild winter favoured the unchecked progress of the embryo fruits, which are more plentiful near the point of the well-ripened shoots than we have seen them for some years. These young Figs, barely perceptible when the leaves fell, and now about the size of Hazel Nuts, will be the first to ripen, that is provided they are carefully protected from May frosts and the wood of the past year has been judiciously thinned. The protecting material need not be heavy, but it should be well secured to the top of the wall, and a few poles let into the ground with their points resting under the coping will prevent it from chafing the fruit when let down at night. Scrim canvas or frigi domo are the best materials that can be used, but where these are not at command, a few light, flat Spruce branches tied to the poles will form an excellent substitute. Figs on open walls do not require much water until the terminal buds begin to break into leaf, but the borders should be well mulched, and when the foliage is fully expanded, copious supplies of warm water at a temperature of 70° or 80° will be found beneficial. Although the introduction of the Fig dates back to the Christian era, and it has been grown as a standard for centuries in the southern and maritime counties, it has received less attention and has been worse managed in the midlands than any other fruit tree found in the best gardens throughout the United Kingdom. Now, thanks to the modern system of annual lifting and root-pruning, trees can be induced to make short spur-like pieces of wood, which ripen well in ordinary seasons and mature good crops of luscious fruit through August and September. It does not often happen that the fruit formed on wood of the current year ripens before the end of September; hence the importance of preserving the points of the shoots from the effects of severe winter frost; neither does late-formed fruit that is allowed to hang on the trees through the mildest winter swell to maturity; all such should, therefore, be rubbed off through August and September, as they exhaust the trees to no purpose, while their removal stimulates them to form more embryo Figs, barely perceptible when the leaves fall, which will stand and ripen during the succeeding summer.

STRAWBERRIES.—If the beds were not mulched in the autumn, they should now be well weeded and dressed with rich manure for the twofold purpose of keeping the surface roots moist and cool and stimulating the plants during the time they are forming and throwing up their flower-stems. Well-rotted manure is most suitable for light burning soils in which old plants of the British Queen class not unfrequently die off suddenly, but this should be covered with a thin layer of fresh stable litter to form a clean bed for the pickers to move about upon and to keep the fruit clean in wet weather. Fresh stable manure spread all over the beds before the leaves get too far advanced answers best on heavy soils, as it absorbs heat from the sun, and the soluble parts get washed down to the roots, leaving a clean, sweet bed, which answers the same purpose as the litter. Moisture-loving plants like Strawberries and Raspberries should never be allowed to feel the want of water during the time they are in active growth. They should, therefore, after dry winters have copious supplies through the hose before they come into flower, and again after the fruit is set.

Forced plants intended for autumn fruiting may be planted out as soon as they are properly hardened. If they have been attacked by spider they should be dipped in a solution of Gishurst compound, and the balls should be kept thoroughly moist during the time they are allowed to remain in the fruiting pots. It too

often happens that forced plants are set aside in an out-of-the-way corner, where they receive indifferent attention, from which they never recover. They should therefore either be thrown away as soon as the fruit is gathered, or be placed in a cold pit to harden, where they can have proper attention until the autumn fruiting bed is ready for their reception. This should be well manured and dug, and firmly rammed to keep in moisture.

No after-watering will penetrate a dry ball, let every plant be well soaked before it is put into the bed; remove the crocks and open out the roots where matted at the base. Give each ball a few handfuls of fresh loam and ram until the surrounding soil is as firm as the ball itself. Let the top of each ball be an inch below the surface. Mulch and give the bed a thorough soaking with the hose. Beds for young plants that have been wintered in the nursery may be prepared in a similar way. A firm, resisting soil, properly moistened balls at the time of planting, and good mulching are indispensable factors in successful culture. Autumn plantations from which the forcing stock is to be obtained should be well supplied with water, to induce the formation of early runners, and all flower-scapes should be removed as soon as they can be seen emerging from the crowns.

W. COLEMAN.

Eastnor Castle, Ledbury.

INDOOR GARDEN.

CINERARIAS, SINGLE AND DOUBLE.

GREAT as the improvement has been in all soft-wooded plants, few if any show it in such a marked degree as the Cineraria. Its flowers some years ago were small and the petals narrow; now they are very large and full, and there are also many double kinds as round and close as a Daisy. Instead, too, of the plants being long and lanky in habit, they are now compact, and the foliage is short and sturdy, and sets the heads of bloom off to the greatest advantage. In Cineraria culture the point is to get a good strain, such as the best raisers grow. The time for sowing is from March to June, according to the season at which they are wanted in flower. Those got up during March come in during winter, and the others follow on till quite late in spring. The way to induce the seed to germinate freely is to well drain a pan, and then fill it with finely-sifted, rich, light soil, which should be pressed quite firm and level on the surface, when, after being watered, the seed may be sown, just covered lightly, and after this is done, have a pane of glass placed over the top. If the pan is then placed in a warm pit or frame, the young plants will soon make their appearance, when the glass should be tilted to prevent damping, and in a day or two removed altogether. As soon as the plants are large enough to handle, they may either be pricked off into shallow boxes or potted singly in small pots, the latter being the better plan, as then they grow right on without further check. Not only may Cinerarias be raised and propagated by seeds, but they may be increased and perpetuated by cuttings or slips, which is the only way of keeping the double kinds, and as these and any fine single ones it is desired to save go out of flower, they should be stood in a cool, damp frame and kept just moist, when they will soon throw up suckers, and if these are taken off carefully so as to secure a few roots with each and potted, they will quickly start into growth. To encourage them to do this, it is necessary to keep them a little close for a time and gently syringed every day, and when they have made a few more they should have more air, and be shifted on into larger pots, after which the best position for them is a pit or frame facing north, where they should be stood on a hard coal ash bottom, which will prevent worms getting up into the balls, and remain damp and cool under the plants. This is a great point towards their successful cultivation, as unless a moist atmosphere surrounds them, they are apt to get red spider or thrips—insects that soon disfigure and spoil them, as do also green fly, to which

Cinerarias are very subject; but they may easily be freed from these latter parasites by fumigating, which requires care, as the plants are very tender in the leaf, and will not bear much smoke at a time. This being so, the safest way is to fumigate slightly each night and morning for two or three days, after which the plants should have a good syringing to wash off any straggling insect or deposit left from the smoke and make them quite clean. Should mildew attack them, the best remedy is to boil a pound of sulphur in two gallons of water, and syringe them with it when the water is cold and clear; this will destroy the fungus without injuring the foliage in the slightest degree. The most suitable soil for growing Cinerarias is a light, fibry loam, which should be made rich by working into it some rotten manure from cows or sheep, and if a slight sprinkling of soot be added as well, the leaves of the plants will be greatly improved in texture and colour.

S. D.

POGOSTEMON PATCHOULI.

THE plant from which the once popular scent known as Patchouli was obtained is a small herbaceous shrub with the appearance of common Mint, to which it is botanically related, both plants belonging to the Order Labiateæ. The Patchouli plant is a native of various parts of India, and until recently was largely cultivated in



The Patchouli Plant.

that country for exportation to Europe, as well as for use among the Indians, with whom the scent obtained from it is still popular. The dried leaves and flowers, as well as the volatile oil extracted from the plant, used to be in large demand for purposes of perfumery, although the peculiar odour was by some considered a disgrace to the perfumer's art—a sort of dry, mouldy, or earthy smell, not very enticing either by description or in reality. It was, however, in great favour among the ladies of this country some thirty years or so ago, and no lady of fashion was perfect unless enveloped as it were in its peculiar fragrance. "Sachets de Patchouli" consist of the powdered leaves of this plant mixed with cotton-wool and folded in paper; these, when placed in boxes or drawers, are supposed to save clothes from the attacks of moths, &c. The Arabs use the dried leaves for stuffing pillows and mattresses, in the belief that they prevent contagion and prolong life. The oil is used for scenting tobacco and for scenting the hair of Indian women. Patchouli is supposed to be the most permanent of all vegetable odours. It is stated that this odour first became popular through its being employed by the Indian shawl makers to scent their shawls, which, thirty or forty years ago, bore a very extravagant price, and buyers were guided by the odour of Patchouli in the selection of these shawls. The French manufacturers found out this secret, and, by importing the plant and using it to perfume

articles of their own make, succeeded in palming off home-spun shawls for real Indian. The odour of Patchouli is very powerful in the green leaves of the plant, which is very easily grown in a warm house, so that anyone wishing to manufacture their own Patchouli may do so by growing a few plants of it and drying the leaves. The flowers of *P. Patchouli* are in terminal and axillary spikes, and are small, white, with red stamens and yellow anthers. The plant is in no way ornamental. It may be seen in the economic house at Kew. B.

Amphicome Emodi.—A beautiful plant for a cold greenhouse, and one which is easy to keep alive and grow so as to flower every spring. It has been again and again referred to in THE GARDEN as being in flower at Kew and in one or two other places, but as yet it does not appear to have become generally known and cultivated for its handsome and freely produced flowers. For those who do not know it we may describe it as being a dwarf Bignonia-like plant with dark green, pinnate leaves, somewhat drooping stems, and terminal racemes of rosy flowers with a yellow throat. Roughly speaking, the flowers may be likened to those of *Gloxinias* both as to size and form, and as they are produced about half a dozen together on the end of each branch, it will be seen how beautiful such a plant may be made to look by a little careful cultivation. Even this carefulness is no more than would be necessary to grow a *Geranium* or a *Fuchsia* well, and where these plants are grown there also may the *Amphicome* find congenial quarters. It may be propagated either from cuttings or from seeds.—B.

Winter & summer Carnations.—Having grown Carnations of all kinds for many years, I decidedly object to be told by "J. S. W." that I am mistaken in a plain matter of fact. We have now, and have had all the winter, more than 500 Carnations and Picotees in cold frames. They number over 100 varieties, and not one amongst them will be in flower before at least the end of June. They were layered mostly in July, but they will not flower a day earlier than those layered in August. "J. S. W." and I cannot mean the same plant. He writes of "border Carnations," and how much can be done with "certain varieties." It will be a great boon to the readers of THE GARDEN if "J. S. W." will name the varieties of Carnations that he is accustomed to bloom from early layers in cold frames during April and May. And further, may I enquire what is the construction of the frames "in which Lettuces are grown in the winter and the like?" Perhaps "J. S. W." means some kind of Pinks, but even from these we cannot get bloom in April and May without steady forcing for six weeks.—J. DOUGLAS.

A worthless flowering shrub.—A few years ago when *Neviusia alabamensis* was first introduced into this country, a great future was anticipated for it as an ornamental flowering shrub, but these expectations have not been realised, for it is here greatly inferior in beauty to dozens of other well-known shrubs whatever it may be in its American home. My oldest bush of it has now been here five years, and I have arrived at the conclusion that it is valueless, after giving it a fair trial during the whole of that time. It was planted against a wall (for doubts were at first expressed as to its thorough hardiness), where it grew away freely after the manner of some of the *Spireas*. The following spring all the principal shoots were terminated by feathery clusters of flowers, the only prominent feature of which was a crowd of stamens resembling nothing so much as the brush-like cluster in the interior of a *Myrtle* flower, but instead of being white they were a sort of yellowish green, so that at a little distance they could scarcely be distinguished. I was greatly disappointed, but thinking that the name of Alabama Snow Wreath might not be such a misnomer as it then appeared, determined to try it under different conditions, but after this lapse of time the poor impression formed of it at first still remains; for

though with me it has proved quite hardy as an open bush, yet it is in point of beauty greatly inferior to the *Spiræas* that flower about the same time. I found no difficulty in getting a stock from the parent plant, as cuttings of the young shoots put in a close frame during the summer months struck root readily, and as suckers are pushed up freely, they may often be detached with a few attendant roots. Determined to give it a further trial, a bush was taken into the forcing house and showed itself very amenable to such treatment, as it was quite a mass of bloom by the second week in January, but though the flowers were less green than those that expanded later on in the open air, yet they were wanting far too much in purity to ever become of any value in this respect while we have such beautiful white-flowered shrubs as *Dentzias*, white *Lilacs*, and others.—T.

FERNS.

PROLIFEROUS ADIANTUMS.

THE genus *Adiantum*, like many other Fern genera, contains several species wholly different from the type. One of the most striking peculiarities belonging to certain Ferns is that of being proliferous or viviparous, and thus reproducing themselves by means of young plants developed at the apex of their fronds or over the entire surface of their foliage—a character possessed to the greatest extent by many members of the *Asplenium* and *Polystichum* genera, the fronds of which are often literally covered with young plants. Even such genera as *Gymnogramma* and *Trichomanes* partake of that peculiarity, although much less developed, as is exemplified in the comparatively new *G. schizophyllum* and in the older, but still rare, *T. floribundum*, two proliferous West Indian species which produce young plants at the extreme end of their fronds. *Lastrea* must also now be added to the viviparous section through the importation from Japan of *L. prolifica*, a curious species whose fronds when mature are covered with young plants. The genus *Adiantum* possesses at present four representatives of the proliferous section, all of which come from the East Indies. These are, *A. lunulatum*, a deciduous species with long drooping pinnate fronds furnished with half-moon-shaped pinnae, and which produce at their apex young plants, which, in their turn, produce others, sometimes amounting to four or five generations during one season's growth; *A. dolabriforme*, a species somewhat resembling the preceding in general appearance, but thoroughly evergreen, and of which a detailed description, accompanied by an illustration, appeared in THE GARDEN of June 16, 1883, Vol. XXIII., p. 534. These are both of a light and cheerful green colour, and distinguished by the shining ebony-black colour of the stalks peculiar to Maiden-hairs in general. The other two, *A. caudatum* and *A. Edgeworthi*, although partaking of the same peculiar proliferous character, are essentially different. Their slender fronds are of a distinct greyish colour, and their stalks, which are very flexible and of a brittle character, are densely clothed with short hairs, which give them quite a distinct appearance.

A. EDGEWORTHII, or *ciliatum* as it is sometimes called, although the smallest of the four, is probably the most interesting; its delicate fronds when young are adorned with a lovely pinkish hue, which none of the others possess, and which gradually shades off into a pale greyish green, thus greatly enhancing their beauty. These four species, and especially the last, are all particularly well adapted for growing in hanging baskets of small dimensions. Thus treated, the graceful habit of the plants is well shown off, as well as the way in which the young plants are produced at the ends of the fronds. Like the other three kinds just named, it is a stove plant and a shallow rooter, requiring, to attain its full development, but little soil, and that of a very light character; peat and sand or sandy leaf-mould are the most suitable materials in which to place it. Although

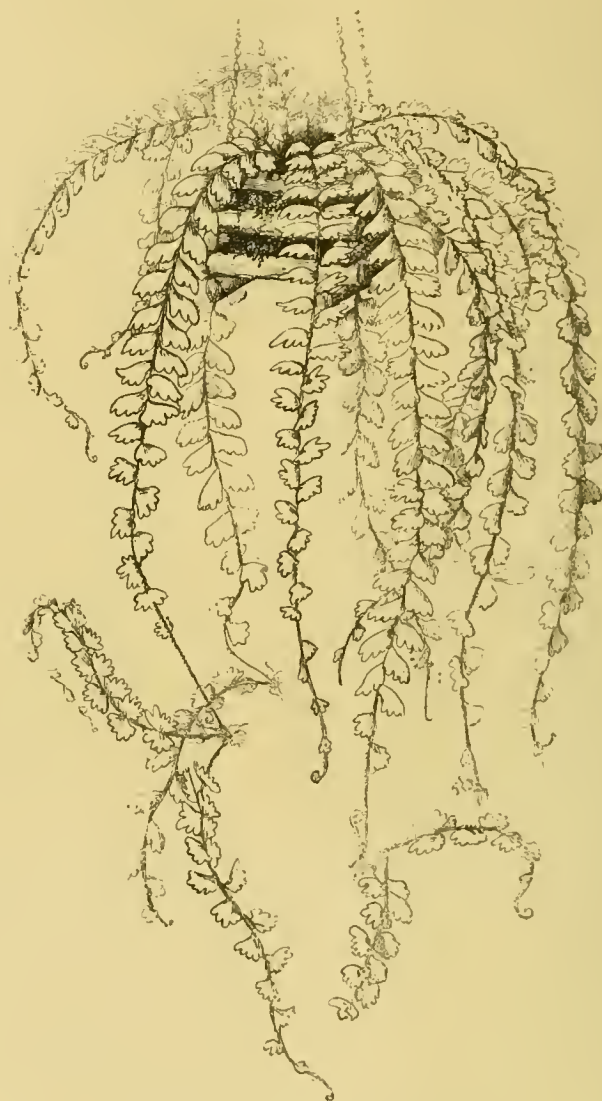
particularly fond of a moist atmosphere, its fronds must not on any account be wetted; they become black and show signs of decay if in immediate contact with water for any length of time. S.

KITCHEN GARDEN.

TOMATOES WITHOUT MANURE.

ONE of the latest discoveries connected with Tomato culture, more especially in the open air, is that we err in manuring too liberally, one

quite another thing. Why manure is objected to is because it induces too gross a habit, this being supposed to be prejudicial to free bearing. Under certain conditions this might be true, but I am confident that plants properly treated are so cropped heavily, even if the main stems are as thick as walking-sticks. In a strong heat and a shallow position the plants naturally become much drawn and do not bear fruit satisfactorily, but in open air it is impossible to grow them without fruiting heavily, provided always they are in way neglected. The plants will grow as strong



Adiantum Edgeworthii, as a basket plant.

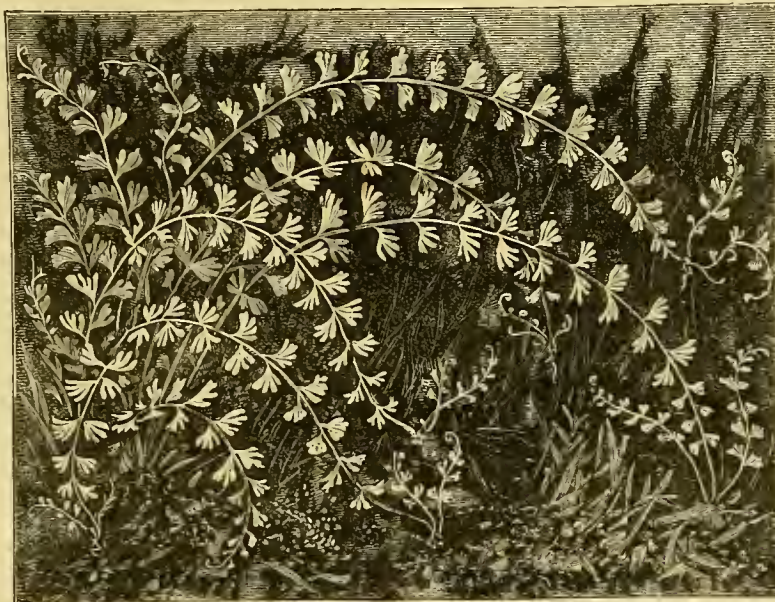
writer asserting that Tomatoes require none at all, or at any rate no solid manure. The substitute is a free use of turfy loam and one of the strongest artificial manures with which I am acquainted; but it is this substitution, in my opinion, that completely upsets this new theory. According to my experience, loam of any kind is very difficult to procure in most places, and turfy loam is frequently quite out of the question. That turfy loam and artificial manure will grow Tomatoes to perfection I readily admit, but that they pay for all this extra trouble and expense is

in turf and artificial manure as they will in a mixture of garden soil, and will be no more certain to produce heavy crops. Probably they would not grow so strongly in unmanured garden soil neither will they produce such a weight of fruit as they would do if properly manured. The heaviest, as well as the best ripened, crops I have ever seen produced against sunny walls were on plants rooted in abundance of spit manure and bone meal, and the grower of them would, I imagine, be hard to convince that it is a mistake to use manure. Growers for market use immense

quantities of solid manure for their plants, the majority of which are grown in open fields and supported with stakes. If manure is necessary for the potatoes in such positions it is doubly so when they are planted at the foot of hot dry walls. As the disease is concerned, I find that plants taken on the starvation system are quite as liable to be injured or destroyed by it as are those grown on nearly all manure. In fact, like the Potato, as I see, it may occur under all kinds of treatment. The earliest season Tomatoes fruited remarkably well grown almost any kind of treatment, and I never where saw so little disease amongst them. It never happens that the haphazard cultivator, with little success, his crops of fruit being overtaken by disease before any have ripened, or may be they are commencing to ripen fully six weeks too late. It always pays to start with good plants, not such as are usually had by sowing seed in February or early in March, but healthy ones raised plants, and which at planting-out time have their first truss of bloom well developed. It would even pay anyone to shift the early raised plants into 10-inch pots and have the first bunch of fruit nearly fully grown. If the cultivator thought such plants would grow too strongly or might experience a check from being transplanted, the remedy would be to stand or partially plunge the pots in the soil at the foot of a warm wall, and to bank them over with a mixture in equal proportions of garden soil and solid manure. They would require frequent supplies of water, more especially before they became rooted into the soil about the pots, but they would well repay this extra trouble by producing extra early and heavy crops. They would crop more heavily than they would under house culture, at least, as usually treated, and the fruit would ripen satisfactorily, but on the other hand they would be liable to disease. This plan is also to be commended for positions where it would be difficult to plant out, and it is also the most successful method of dealing with plants that have been for some time previously fruiting under glass. We have turned out strong plants with numbers of fruit on them in various stages direct from a forcing house (where they were in the way) to a south-east wall, taking care to protect them slightly at first, and it was surprising how quickly they rooted from the tops of the pots and stems into the rich top-dressing or mounding of manure—the crops resulting being all that could be desired. In the case of small plants either singly or in pairs in 6-inch pots or smaller sizes, all that these require is a liberal supply of good rotten manure, such as requires to be or may be dug with a spade, this being well forked into the surface. When buried deeply it naturally encourages deep root-action, and the aim should be to keep them rooting near the surface. Late in May in warm localities and early in June where late frosts frequently occur are good times for planting. A distance of about 15 inches apart is sufficient for wall plants and any that may be trained against temporary screens, sloping boards, or fences, and the plants will require an occasional watering till such times as they are well established, when, if they receive, as they ought to do, a liberal mulching of strawy manure, no further assistance will be needed. Those grown clear of the shelters ought to be planted about 2 feet apart each way and angled, or if only a single line is planted they may be about 18 inches apart. If planted more thickly they are liable to unduly shade each other.

In every case I recommend that each plant be kept to one single stem, which quickly develops three or more heavy clusters of fruit; beyond this the point of the plant may be pinched out. This single stem should be kept closely supported with shreds and nails or tied to any kind of trellis or network that may be contrived, while those in the open ought to have stout stakes. All side shoots should be closely rubbed out and not left till they have attained such strength as to require cutting away. This disbudding is a very simple operation, taking up but a little time, and it has the property of directing the whole vigour of the plant to the legitimate object of perfecting an early and heavy crop. Last season we did not pinch out the points of the main growths, as we were anxious to secure as many green fruit as possible. We find we cannot grow too many of these small green fruit, which are quite as much prized for pickling as are ripe fruit for salads and other purposes. W. I. M.

Early Peas.—Few things are more interesting than occasional trials of vegetables. I am not a believer in making our employers' gardens trial grounds, but it takes only a small plot to prove the value of new varieties. Moreover, our



A. J. M. and Edgeworthi (see p. 448).

employers reap the benefit of such trials, and we gardeners add to our knowledge as to the best selection to make. Our Peas were sown on or about the 9th of November in semi-Celery trenches, well manured and deeply dug. When all was ready, we drew a shallow drill and sowed the seed. The trial consisted of two old varieties and four new ones. I have this evening (May 6) inspected and carefully noted their condition. The first I came to was William I, six rows in full flower right up the row. These are now 18 inches high. The next, Early Kenilworth, looks strong and healthy, but with only a flower showing here and there. They are nearly 2 feet high. The next is Ladybird (Burberry's). These are about 16 inches high, and show flowers from one end of the row to the other, but they are not so fully advanced as William I. Then come Earliest of All (Laxton's). In this the flowers are showing plentifully, but only one or two are expanded. The last is William the Conqueror, which is strong and robust, but at present showing only few flowers. Sangster's Number One was also sown, but my seedsmen supplied me with bad seed, which did not vegetate. The result of this trial will be better understood if I summarise the varieties. William I. is the earliest, Ladybird second, Earliest of All third, Early Kenilworth fourth,

and William the Conqueror fifth. I may be told that those flowering first may not be ready to gather first—a statement in which there may be some truth. However, I shall carefully note progress and report.—R. GILBERT, *Burghley, Stamford.*

Runner Beans.—The plan of sowing runner Beans in alternate rows of white and scarlet flowered is often adopted in the fields by market growers who have some little taste for the production of pleasing effects, and the result during the flowering season is an exceedingly effective one. Generally the white Dutch is the most favoured by the large growers, not merely because the seed is the cheapest, but also and, indeed, chiefly because the pods are invariably of better colour, especially in the autumn when advancing cold is very apt to tinge the pods of the Scarlet Runner with purple. We have so long had in cultivation the finer selections of runner Beans, that the old small-podded forms should ere now have been discarded. Those who grow Beans may often improve their own stocks if they will but take the trouble to mark and save some few of the finest pods. These give seed enough the following year to lay the foundation of a selected strain, and once obtained and the best seed invariably selected, the strain soon becomes constant and reliable. I had a curious experience during the past few years of the sportive nature of runner Beans as far as colour is concerned only, the strain always remaining a fine one. Some time since I ran out of Scarlet Runners. I obtained a white sport giving large pods. This came nearly true for a time, then gave off a scarlet sport of the same fine form. Occasionally this scarlet selection has thrown off other whites, but it has also given a strain with entirely black seed, though retaining scarlet flowers. As throughout the fine form of the pods has always been present, I have thought this sportive character more curious than objectionable, especially as it is not extensive. That old, and with many highly favoured, white and scarlet flowered form, the Painted Lady, seems to retain its correct character with much precision. Still, it is not so good generally as is the finer white or scarlet strains; hence it is now less grown.

Certainly as runner Beans the present strains show a marked advance over those of twenty years since.—A. D.

Tall stakes for Runner Beans.—When seed of Runner Beans is sown on well-prepared ground it is surprising to what a height the plants will grow. We have frequently had them running and cropping heavily all over fairly large standard Apple trees near to which the seed was sown, the length of the haulm being fully 15 feet. At Longford Castle extra tall stakes, probably 9 feet out of the ground, are placed to the plants with the best results. True, when such tall stakes are used the position must be somewhat sheltered from heavy winds, and a step ladder is required for the purpose of reaching the principal portion of the crop. Mr. Ward, however, believes in the practice and finds that by keeping the pods closely gathered the Beans continue to be wonderfully productive till destroyed by frost. In the same gardens I noticed a long row of Kidney Bean Canadian Wonder that had been staked. They had attained a height of from 3 feet to 4 feet, and were producing remarkably heavy crops of long straight pods. Probably a regular selection has much to do with the abnormal habit, but this I shall have an opportunity of ascertaining during the ensuing season.—W. I.

ORCHIDS.

HYBRIDISATION OF ORCHIDS.*

IN a communication "On Hybridisation among Vegetables," by Dean Herbert, of Manchester, published in 1847, in the second volume of the Journal of the Horticultural Society of London, I find the following remarkable passage:—

"Cross-breeding amongst Orchidaceous plants would perhaps lead to very startling results; but, unfortunately, they are not easily raised from seed. I have, however, raised *Bletia*, *Cattleya*, *Herminium Monorchis*, and *Ophrys aranifera* from seed; and if I were not, during the greater part of the year, absent from the place where my plants are deposited, I think I could succeed in obtaining crosses in that Order. I had well-formed pods last spring of *Orchis* by pollen of *Ophrys*, as well as of other species of *Orchis* which had been forced; and if I had remained on the spot, I think I should have obtained some cross-bred Orchidaceous seed. An intelligent gardener may do much for science by attempts of this kind if he keeps accurate notes of what he attempts and does not jump at immature conclusions."

This is the earliest authentic information I have been able to obtain of attempts to raise new forms among Orchids by cross-breeding, and with what success the dean himself has told us in his own words. At that time, and for some years afterwards, there was a prevalent notion among gardeners that muling among Orchids was an impossibility, and so far as I am aware, no one attempted it besides Dean Herbert till it was taken up by Dominy, at our Exeter nursery, about the year 1853. The cause of the prevalent belief of that age in the impossibility of hybridisation among Orchids is not, I think, far to seek.

Dean Herbert was a man of science, and was well acquainted with the structure of Orchid flowers; to him their fertilisation by hand presented no difficulty; to horticulturists and gardeners it was quite different; not only had they, in common with many others, not the slightest suspicion of the fertilisation of Orchids by insect agency, but, moreover, very few of them possessed even an elementary knowledge of botany. They could, it is true, distinguish accurately the stamens and pistils of many flowers familiar to them and they were aware of the functions of those organs, but the confluence of those organs into the solid column of an Orchid flower was to them a profound mystery. It is unfortunate, too, that Dean Herbert's injunction to keep accurate notes of what was attempted was not followed in the early days of Orchid hybridisation, whence the uncertainty that still hangs over the parentage of some of the earlier acquisitions.

FIRST ATTEMPTS AT HYBRIDISING.

It was Mr. John Harris, a surgeon, of Exeter, who suggested to Dominy the possibility of muling Orchids, and who pointed out to him the reproductive organs seated in the column, and showed that the application of the pollinia to the stigmatic surface was analogous to the dusting of the stigma of other flowers with pollen. This simple fact being once fairly grasped, the work of hybridisation proceeded apace. The flowers of the showy species of *Cattleya*, *Lælia*, *Calanthe*, &c., were fertilised with the pollinia of other species, and even the flowers of supposed different, but of course allied, genera were also operated upon in the same way. Capsules were produced in abundance, which in due course proved their maternity by dehiscing, and thus the long and anxiously desired seed was at length at hand. Then arose a great difficulty, a difficulty which still exists, and which our long experience has enabled us to make only a short step towards overcoming—to discover the most suitable method of raising seedlings and getting them established. The seeds of Orchids are minute chaffy bodies of extreme lightness. So minute are they, that an ordinary pocket lens is powerless to enable one to know whether the

seeds are likely to contain a germ or are mere lifeless dust. When growing wild it is evident that the contents of the mature capsules after dehiscence are more or less scattered by the wind, perhaps wafted to great distances until they settle on the branches of trees, on shelving rocks, or other suitable situations where the seeds can germinate and the seedlings firmly affix themselves. Following, or at least believing, that we were following Nature so far as the altered circumstances of artificial cultivation allowed, every method or available means that could be thought of was brought into request to secure the germination of the seed. It was sown upon blocks of wood, pieces of Tree Fern stems, strips of cork, upon the Moss that surfaced the pots of the growing plants, in fact, in any situation that seemed to promise favourable results. But as it was in the early days of Orchid hybridisation, so it is now, we seem as far off as ever from hitting upon a method by which at least a moderate amount of success may be calculated upon; failures were at first, as now, innumerable, and numberless such are without doubt inevitable. Among the most cogent causes of failure in the raising of seedling Orchids, there can be no doubt that the altered conditions of climate, especially the deficiency of sunlight, and the artificial treatment to which the plants are necessarily subjected in the glasshouses of Europe are the greatest. The capsules neither can nor do attain the perfection natural to them in their native countries, and it is more than probable that, independently of the capsules grown in our houses being the production of cross-breeding, they do not yield a fractional part of the quantity of good seed they would do in their native land. And so with their progeny—the tender seedlings are brought into life under circumstances so different from what they would have been in their native land, that it is not at all surprising that multitudes of them perish in their earliest infancy. The capsules are not only less perfect in our houses than they would be in a state of nature, but they also require a longer time to arrive at maturity, a circumstance that must tell against the progeny. The cause of this is also climatic, chiefly of course the enormous diminution of sunlight and sun heat. To make this clear, I will adduce one illustration, and for that purpose I select the New Granadian *Cattleyas* of the labiata group, because they are among the best of subjects for the operations of the hybridist. These *Cattleyas* have their home chiefly in the ravines and valleys of the Cordilleras, at elevations ranging from 2000 feet to 5000 feet above sea level, and between the 2nd and 10th parallels of north latitude. The plants, by being transferred from proximity to the equator, where on clear days the sun darts his rays either perpendicularly upon the place in which they are growing, or at a comparatively small angle to them, to a high latitude like ours, where the smallest angle at which the sun's rays can fall upon our houses is about 28°, and that only for a few days at midsummer, an angle which daily increases, till at midwinter it reaches 75°, suffer an enormous diminution of solar light. Now light, in passing through the atmosphere, even under the most favourable circumstances, is subject to absorption, or is intercepted by it, but the amount varies with the angle; thus, it has been shown that, of a given quantity of light falling perpendicularly upon a given point, one-fifth of it is absorbed or intercepted by the atmosphere; if it fall at an angle of 50° more than one-fourth is intercepted, and at an angle of 75° fully one-half. Hence, in the winter months, even when the days are clear and bright, we can get no more than five-eighths (a little more than one-half) of the solar light which New Granadian *Cattleyas* receive in their native country, on the assumption that other circumstances remain the same. It is quite evident, then, at what a disadvantage we are placed as regards the ripening of capsules of Orchids whose native home is near the equator, to say nothing of local difficulties, such as the smoky atmosphere and fogs of London.

It is not unreasonable to infer, in the absence

of more accurate knowledge obtained by direct observation, that the capsules of the New Granadian *Cattleyas* require but a short period to attain maturity in their native country, and that the period extends only over the two or three months of what is there called the dry season, but which in that region is subject to frequent showers. In our houses, the time required for maturing capsules of *Cattleyas* of the labiata group varies from eleven to thirteen months, for *Lælia purpurata* it is about nine months, for *Phalenopsis Schilleriana* six months, *Cypripedium Spicerianum* eleven to twelve months, *C. insigne* ten months, *Masdevallia* four months, *Calanthe* three to four months, *Zygopetalum Mackayi* when crossed with *maxillare* about six months, *Odontoglossum maculatum*, *Dendrobium aureum*, *Anguloa Clochensis* bractescens, and *Maxillaria Harrisoni* each about twelve months. But, of course, these periods are only approximate; the time required for the ripening of the capsules is considerably influenced by the state of the weather and external circumstances, especially by the amount of direct sun-light during the year. I note that our experience does not differ essentially from that of M. de Bleu, of Paris, who has published in the journal of the Société Nationale d'Horticulture the periods of ripening of the capsules of several Orchids crossed by himself, although it might be expected that in the warmer and drier climate of Paris the periods would be somewhat shorter.

SEED AND SEEDLINGS.

Adverse as are some of the influences under which we work to obtain capsules, there is but little difficulty in getting them, and in abundance too; sometimes even from crosses that, to the systematic botanist, would seem almost beyond belief; but then comes the *crux*. Good seed is the all-important factor in producing healthy seedlings, and this, unfortunately, from cause already partially adverted to, is obtainable but in a very minute proportion of the whole. Seed we get in profusion, but so little of it germinates, that the patience of the most persevering is put to a severe test. The seeds of hundreds of capsules have been sown without yielding a single result. In very many cases only a solitary plant had been raised from a capsule that must have contained thousands of seeds; in very few instances indeed has the number of seedlings from one cross reached a hundred. It is true that we have raised many seedlings in the aggregate, but many of them have appeared when least expected; and when we consider the myriads of seeds that have been sown and the comparatively few plants raised, we cannot be said to have achieved very great success. It may here be noted that, with the exception of *Cypripedium*, which bears the stress of fruit-bearing better than any other genus, many plants bearing capsules become greatly debilitated. During the season the capsule is being matured growth frequently ceases altogether, and when the plant operated upon is not strong, it not infrequently perishes even before the seed is ripe.

If the ripening of the capsules takes place under such adverse influences, the same influences are by no means propitious to the early infancy of the progeny. The period from germination to the formation of the first root—which for want of a better phrase I will call the thalloid state of the young plant, and which sometimes occupies several months—is the most critical in the life of seedling Orchids raised in glass structures; it is especially so with *Cypripedium*, *Calanthe*, and *Phalenopsis*, and seedlings of these we accordingly find to be the most difficult to preserve prior to their getting firmly rooted. A succession of dull, cloudy days in winter, and even a few hours of London fog, will cause a great mortality, not only among these, but among all seedlings in a similar stage.

TREATMENT OF THE YOUNG PLANTS.

The cares and solicitudes of the raiser of Orchid seedlings are by no means diminished when the infant plants are fairly rooted; they must still be constantly tended with the most assiduous care. To neglect the watering, for instance, for a single

* Paper read by Mr. H. J. Veitch, F.L.S., at the Orchid Conference.

ay, or even for a few hours in the height of summer, may prove fatal; and so, on the other hand, an excess of coddling, giving them too much water, or too much water, by stimulating them into growth before their natural season arrives, is equally a source of danger. Nor is it the only one. We know of an instance of the splendid *Dendrobium nobile nobilissimum* being crossed with an aureum; the capsule was matured in due season and the seed sown, but only one seedling was raised. This, as may be readily supposed, was tenderly cared for, but all to no avail; the seedling had grown to about half an inch, when it might a vulgar snail devoured the precious seedling at a single meal. We, too, have had our troubles. Among our earliest *Phalenopsis* crosses I succeeded in raising a single seedling from a hybrid of *Phalenopsis amabilis* crossed with *Wanda*, which we were particularly anxious to succeed in; it would have solved the question of the origin of *P. intermedia* or *Lobbi*, which is a supposed hybrid between the same two species. The seedling had made three healthy leaves; it was established in a small pot, which, to be the more secure from danger, was placed upon an inverted pot that stood in a pan of water. One morning, to the great dismay of Seden, it was discovered that a slug had eaten off two of the leaves, and would, if not trapped, certainly devour the remainder. Anxious to save the treasure, the plant was watched incessantly for hours in the expectation that sooner or later the intruder would make his appearance; to induce him to do so the Moss was constantly plunged into water. The repeated duckings had at length the desired effect; the culprit issued from his lurking place and the plant was saved. The two little circumstances I have narrated speak for themselves.

And now, how long must the hybridist wait before his labours are rewarded with a sight of the flower whose appearance he has been awaiting with longing expectation, and upon which many hopes have been built, too often, unfortunately, to end in disappointment.

The shortest periods from the germination of the seed to the production of the flower yet observed are those of *Dendrobium*, that is, *D. aureum* crossed with *D. nobile*, and *vice versa*, three to four years; *Phaius* and *Calanthe* about the same; *Masdevallias* four to five years; *Chysis* about the same. Then come longer intervals: *Zygopetalum*, five to nine years, according to the cross, thus—*Z. maxillare* crossed with *Z. Mackayi* five years, *vice versa* nine years—a curious, but to us unaccountable, circumstance; as is the case of *Cypripedium Schlimi*, which, crossed with *C. longifolium*, flowers in four years, but the *vice versa* cross takes six years. *Lycaste* takes seven to eight years; *Laelias* and *Cattleyas* may be said to flower from ten to twelve years from the seeds.

I will now glance at some of the results obtained by us from muling. Dominy began to hybridise Orchids at our Exeter nursery in 1853, and continued his operations for some time after removal to Chelsea in 1864. Seden began at Chelsea in 1866, and has worked uninterruptedly from that time to the present. Our experience, therefore, extends over a period of more than thirty years, during which the field of operations has been greatly enlarged, especially of late years, our experiments being made upon a vast number of cultivated Orchids, including many hundreds of crosses, not only between allied species, but also between species of different genera.

THE FIRST HYBRID.

Among the results obtained by Dominy at Exeter, *Calanthe Domini*, raised from *C. Masseyana* × *C. furecata*, will always be regarded with interest, as being the first hybrid Orchid that flowered, and flowered for the first time in October, 1856, on which occasion the spike was shown by my father to Dr. Lindley, who exclaimed on seeing it, "You will drive the botanists mad," an expression quite characteristic of the rigid systematists who flourished prior to the publication of Darwin's "Fertilisation of Orchids by Insect Agency." The first hybrid *Cattleya* that flowered was *C. hybrida*,

a plant now lost, but which was soon followed by the flowering of *C. Brabantica*. The first hybrid *Cypripedium* to flower was *C. Harrisianum*, which justly commemorates the name of Dr. Harris. Among other noteworthy acquisitions raised at Exeter were *Cattleya Dominiana*, *Laelia exoniensis*, *Calanthe Veitchii*, and *Laelia Veitchii*. The last-named flowered for the first time at Chelsea. Dominy also raised some seedling *Vandas*, but they were afterwards lost. Seden's acquisitions are more numerous, and many of them unquestionably prove that substantial progress is being made, in spite of the innumerable difficulties that beset the raising of seedling Orchids. To anyone who has compared *Cypripedium cardinale*, *C. Schröderi*, and *C. Sedeni candidulum* with the original *C. Schlimi*, this progress is manifest enough. And so with *C. oenanthum superbum*, *C. Leeannum superbum*, and *C. Morganii*; nor ought I to omit mention of *Laelia flammea*, still unique in colour among Orchids, *Masdevallia Chelsoni*, *Calanthe Sedeni*, also obtained by other operators, and *Dendrobium micans*.

The following details may prove to be of some interest. Among *Cattleyas* we find that all the members of the *liabata* group, and also the Brazilian species with two-leaved stems, as *C. intermedia*, *C. Aclandiae*, *C. superba*, &c., cross freely with each other and with the Brazilian *Laelias*, which also cross freely with each other. It is worthy of note, too, that those hybrids which have a two-leaved *Cattleya* for one parent and a one-leaved *Laelia* or *Cattleya* for the other, have some stems with one and others with two leaves, and the flowering does not seem to be affected thereby. But neither the *Cattleyas* nor the Brazilian *Laelias* will cross freely with the Mexican *Laelia alba*, *autumnalis*, *majalis*, *rubescens* (better known in gardens as *acuminata*), &c. Numerous crosses have been effected both ways, and capsules have been produced, but the seed has always proved barren. *Laelia anceps* appears to be an exception, for it seeds freely whether crossed with a *Cattleya* or with any of the Brazilian *Laelias*. The period from the germinating of the seed to the appearance of the first flower varies immensely in the different crosses, thus *Laelia triophthalma* raised from seed sown in 1875 flowered in 1883; this is the shortest period known to us. *Laelia caloglossa* from seed sown in 1858 flowered for the first time in 1877, or nineteen years; this is the longest period known; the others have taken periods that may be said to average from ten to twelve years.

HYBRID LADY'S SLIPPERS.

Among *Cypripeds* some very curious facts have been elicited through muling. Thus, the East Indian species cross freely with each other, and a numerous progeny has resulted therefrom. The South American species, the *Selenipedia*, as they are called, also cross freely with each other, and many new forms have been obtained; the hybrids in both sections flower within a few years from the seed being sown. But in the case of the crossing of Indian with South American species, the process has been much slower in producing results. An infinitely smaller percentage of the seed germinates, and those seedlings that survive are so slow in arriving at the flowering stage, that up to the present time not a single plant has produced a flower, although the plants continue strong and healthy in appearance and increase in size every year. One thing is certain: the three-celled ovary of the *Selenipeds* offers no impediment to fertilisation by the pollinia of *Cypripeds* with a one-celled ovary, for we have plants raised from *C. caudatum* × *C. barbatum*, and many other like crosses between other species have yielded seed.

Cypripedium Sedeni was a remarkable cross in many respects; it was in fact raised from two crosses, *C. Schlimi* × *C. longifolium*, and the same two *vice versa*. It will be understood that in this case one of the parents, *C. longifolium*, is much more robust in habit and growth than the other parent, *C. Schlimi*. No perceptible difference was, however, observed among the plants raised from the two separate crosses; they

agreed in habit, foliage, colour of flower, in fact in every particular. No such similar result has been obtained by us among *Cypripeds*. A *vice versa* cross between the same two species produces seedlings that vary more or less from those produced from the first cross. Thus *C. tessellatum* resulted from *C. barbatum* × *C. concolor*, and *C. tessellatum porphyreum* from *C. concolor* × *C. barbatum*. We have also an instance of two recognised species each being crossed by a third, but both crosses producing like results; thus *C. longifolium* × *C. Schlimi*, and *C. Roezli* × *C. Schlimi* produced seedlings whose flowers are indistinguishable from each other, although, as might be expected, the foliage of the *C. Roezli* progeny is like that of its parents, the more robust of the two; hence the specific rank of *C. Roezli* is very questionable.

Not only do recognised species of each section, East Indian and South American, cross freely *inter se*, but the hybrids also cross freely with them. The beautiful *C. oenanthum superbum* has for its parents *C. Harrisianum*, itself a hybrid, and *C. insigne Maulei*. As regards the habit and foliage of hybrid *Cypripeds*, the progeny usually takes a form intermediate between the two parents, but sometimes it is more robust than either.

HYBRID DENDROBES AND PHALÆNOPSIS.

Large as is the field offered by the great genus *Dendrobium* for the operations of the hybridist, comparatively little has yet been effected. Dominy raised the hybrid that bears his name many years ago in our Exeter nursery. It was followed some years later by *D. Ainsworthii*, which appeared in Dr. Ainsworth's collection at Manchester in 1874; plants of the same cross raised by West having appeared about the same time in the Fairfield Nursery, near Manchester, and later, in the collection of Mr. Brymer, at Dorchester, by another operator, the parents being *D. aureum* × *D. nobile*. Subsequently Seden raised *D. splendidissimum* from the same cross, and still later Mr. Swann obtained *D. Leechianum* from *D. nobile* × *D. aureum* or the *vice versa* of the others. The seedlings raised from all the crosses are found to be variable; members of one progeny approaching so closely varieties among the others, that the original distinctions set up between them cease to be appreciable, but, without egotism, I venture to claim for *splendidissimum* larger flowers with more substance in sepals and petals, caused probably through our having hybridised finer varieties of the two parents. Nevertheless, to avoid confusion, the progenies should, I think, to use an academical expression, be bracketed.

Of the eight hybrid *Dendrobes* that have already flowered *D. nobile* is one parent of five, and *D. aureum* of three of the same five, and of one other, so that only two, *D. micans* and *D. rhodostoma*, have yet flowered that have a parentage in which neither *nobile* nor *aureum* participated.

Crosses between species of *Phalenopsis* have been effected by several operators, and capsules readily obtained. We only know, [however, of three instances besides our own where seedlings were raised; the first by Dodds, in 1868, in the collection of Sir John Greville Smith, at Ashton Court, near Bristol, but they were afterwards lost; then Grey, gardener to the eminent orchidologist, Mr. Corning, of Albany, New York, raised some seedlings, but they, too, were afterwards lost; and, lastly, Mr. Hollington, at Enfield, who has, I believe, one seedling still living. Our own experience with *Phalenopsis* dates from 1875; our first cross was between *P. grandiflora* and *P. Schilleriana*, but with that and with several succeeding crosses no results beyond the capsules were obtained. The first capsule to yield seedlings was gathered from *P. grandiflora* × *P. rosea*; a few of these are still living. Then we obtained a few from *P. amabilis* and *P. rosea*, which grew with more vigour than their elder brethren, and may not improbably flower within the next two years. Still later we obtained seedlings from *P. Schilleriana* × *P. rosea*, *P. grandiflora* × *P. Ludemanniana*, and from two or three other crosses.

CALANTHES AND MASDEVALLIAS.

Calanthe has probably received attention from more operators than any other genus in the great orchidean family, a circumstance that can be best accounted for by results being obtainable in a shorter period than from any other genus. It may be that Calanthe being more terrestrial than epiphytal, there is a predisposition to earlier maturity. The capsule of Calanthe usually ripens in three to four months, and the seed takes from two to three months more to germinate; the seedlings under favourable

circumstances will flower in the third or fourth year; hence it happened that, although seedling Cattleyas were in existence before seedling Calanthes, the first hybrid Orchid to flower was a Calanthe. Calanthe Veitchii flowered for the first time in 1859, and was at that time believed to be a true bi-generic cross, but such it cannot be now regarded, as Mr. Bentham, in the "Genera Plantarum," has referred the pollen parent *Limatodes rosea* to Calanthe. Not so, however, is *Phaius irroratus*, raised by Dominy from *P. grandifolius* × *Calanthe nivalis*, and *P. irroratus purpureus*, raised by Seden from *P. grandifolius* × *Calanthe vestita rubro-maculata*, and a third progeny that has not yet flowered, which was obtained by the last-named hybridiser from *Phaius grandifolius* and *Calanthe Veitchii*. These are entitled to be called bi-generic crosses. In one of the cases only a single plant was raised, and in each of the other two the number was very restricted. It is a curious fact, too, that in habit, aspect, and in other respects the progeny is well nigh intermediate between two parents, being neither evergreen like *Phaius*, nor deciduous like *Calanthe*.

Masdevallias were taken in hand at an early date, but failures were frequent, caused probably by the fact that Masdevallia, as a genus, is far more heterogeneous than was at first supposed, whence a mixture of the different sections may not possibly be effected. *M. Chelsoni* was at length raised from *M. amabilis* × *M. Veitchiana*; then *M. Fraseri* from *M. ignea* × *M. Lindeni*, by Mr. Fraser, of Dorncleugh, Aberdeen; but the seedlings were reared by us; and, lastly, *M. Gairiana* from *M. Veitchiana* × *M. Davisii*. Capsules have been obtained from *M. Veitchiana* × *M. infracta*, *M. polysticta* × *M. towarensis*, *M. Harryana* × *M. Veitchiana*, and a few others, but all attempts to intermix *M. Chimæra* and its allies with the brilliant-flowered species have proved fruitless.

COOL ORCHIDS DIFFICULT TO RAISE.

Great as is the difficulty of raising seedlings from Orchids requiring a high temperature for their cultivation, it is still greater in the case of those that receive "cool treatment," if we except

Masdevallia. *Odontoglossum* affords a striking instance of this, paradoxical as it may seem, especially as so many undoubted natural hybrids between different species of this genus have appeared among the importations of the last ten years. Numerous crosses between various species, both Mexican and New Granadian, have been effected, and capsules with apparently good seed have been produced, but with the utmost care that could be bestowed no progeny has yet been raised. Mr. Cookson, of Newcastle, has indeed stated in THE

unfortunately lost within a few months after

germination of the seed. I may here now refer to the late Mr. Bentham, when working under the Orchideæ for the "Genera Plantarum," who I think, have been misinformed when he has placed under *Miltonia vexillarium* (p. 563) that most hortulanorum facile cum *Odontoglossis* varietatibus cum *Miltoniis* generis proles hybridas gigerit. Our experience is the very opposite of this. *Miltonia* crosses readily with the flat-lipped *Phaius* and *Phaius* crosses readily with the flat-lipped *Miltonias*, as *spectabilis*, although thus far we have failed to raise any progeny from these crosses, but often as it has been attempted, no capsule was produced. Thus, while our experience in muling *Phaius* and *Odontoglossum* goes far to prove the statement just quoted, it at the same time confirms unmistakably Mr. Bentham's view of the proper generic place of *vexillarium* and its allies, *Roezli*, *Phalanopsis*, and *Warszewiczii*.

I have already taken so much of your time that I must forebear entering into details of the crossings and results of them, among other genera and into the scientific aspects of hybridisation it is not my province to learn you. Nevertheless, I may be permitted to refer to a few facts that have come under our observation that have a practical bearing as well as a scientific one.

STABILITY OF GENERA AND NOMENCLATURE.

It will be gathered from what I have already said that our hybridising operations have extended over a rather wide field; that they have not been confined to the crossing of different species of the same genus but hundreds of experiments have been made between species of different genera. The question thence naturally arises: How will these bi-generic crosses affect the stability of the genera as at present circumscribed? And what changes of nomenclature will be necessary to place the Orchideæ on an intelligible basis as regards names. Glancing over the whole range of our operations and the results obtained from them, I may safely reply that thus far the stability of the genera is scarcely affected, and the changes in nomenclature need be very few indeed. Leaving

the progeny derived from species of *Cattleya* × *Lælia* out of consideration, the last-named genus being confessedly an artificial one, only two bi-generic hybrids have yet flowered; these I have mentioned above: *Phaius irroratus* and *P. irroratus purpureus*. Many years ago Dominy raised *Anæctochilus* *Domini* from *Goodyera discolor* and *Anæctochilus* *xanthophyllus*, and *Goodyera Veitchii* from *discolor* and *Anæctochilus Veitchii*. Plants derived from both crosses are still in cultivation but the names they bear are simply garden names. We have plants, but which have not yet flowered.



In Windsor Forest (see p. 459)

GARDEN of February 10, 1883, that he succeeded in raising a fine lot of *Odontoglossum* seedlings, of which the pollen parent was *O. crispum* and the seed parent either *O. gloriosum* or *O. Uro-Skinneri*, but which he was not quite sure. He has since informed us that all of them have perished. And so with the *Miltonias*, usually classed with *Odontoglossum*, and grown in an average higher temperature, as *vexillarium*, *Roezli*, and *Phalanopsis*. The only seedlings we have been able to raise were obtained from a cross between the two last named, and these were

raised from *Cattleya Trianae* crossed with *Sophranitis grandiflora*, and from *Cattleya intermedia* crossed with the same species of *Sophranitis*. We have besides a seedling whose parents are *Cattleya Trianae* and *Brassavola Digbyana*, but as the last-named is now referred to *Lælia*, this can hardly be regarded as a bi-generic cross. With these few cases I have exhausted the list. But when we enumerate the capsules with apparently good seed that have been obtained from bi-generic crosses, but from which no seedlings have been raised, the list is somewhat more formidable. Some of the most remarkable of these were produced by *Acanthophippium Curtisi* × *Chysis bracteosa*, *Bletia hyacinthina* × *Calanthe Masuca*, *Chysis aurea* × *Zygopetalum Sedeni*, *Odontoglossum bicktonense* × *Zygopetalum maxillare*, *Zygopetalum Mackayi* × *Lycaste Skinneri*. But on the other hand we have obtained a large number of capsules of the normal size and to all appearances externally perfect, not only from bi-generic crosses, but also from crosses between species of the same genus which contained not a single seed. And, lastly, I may note that *Zygopetalum Mackayi* has been crossed with several species of *Odontoglossum* and seedlings raised from some of the crosses, but everyone that has yet flowered has proved to be simply *Zygopetalum Mackayi*.

The hybridisation of Orchids by the hands of the cultivator is still in its infancy; we are but on the threshold; and now that muling among them has become a pastime of absorbing interest with amateurs, amongst whom special mention must be made of Sir Trevor Lawrence, Sir William Marriott, Sir Charles Strickland, Mr. Bowring, of Forest Farm, Windsor, Mr. D. O. Drewett, of Newcastle, and Mr. Goss, of Torquay, it would be rash, indeed, to attempt to predict what may be in store. But reviewing the sum total of results already obtained, can we, considering the ceaseless watching and assiduous care seedling Orchids require before reaching the flowering stage, look upon them with unmixed satisfaction? How few of the best of them bear favourable comparison with the numberless lovely flowers borne by plants that owe their origin to the unerring instinct of the little winged tribe that unknowingly, and perhaps unconsciously, have performed their allotted task for ages past, and proved by the perfection of their work how inept an operator is man.

THE CULTIVATION OF ORCHIDS.*

THE subject of Orchid culture being almost inexhaustible, I shall only be able to touch briefly upon some of its phases, and in doing so, whilst endeavouring to make some remarks acceptable to all Orchid growers, I shall direct them principally towards the amateur. A glance at what has been written on the subject many years ago proves that there may be rules laid down for the culture of any or all of the Orchids, and that a good result once attained may always be secured by following the same line of treatment. Whenever I read a detailed account of the treatment given to an exceptionally fine plant by some grower of forty or fifty years ago, I find that in our practice of to-day we need not depart from it in the least to ensure the same good results, which ought, however, to be attained by us with much less trouble than by those of the olden time, by reason of the much better accommodation which we now have.

Orchids, from the time of the earliest arrivals, have always been appreciated, and as early as the year 1800, when the lovely *Aerides odoratum* and many other showy species were introduced, their habits and culture seem to have been understood fairly well; but the bad construction of the houses and their defective heating, by means of flues and other contrivances, militated sadly against the culture of the small growers and the varieties requiring cool treatment; and hence, while many continued the culture of the more

robust kinds, and attracted visitors from distant parts to see them when in bloom, no general progress was made until the period between 1835 and 1850, which was perhaps the richest in importations of fine handsome Orchids.

During that period the fine discoveries of Messrs. Veitch's collector (Lobb) with *Aerides*, *Saccolabiums*, and *Vandas*; Griffiths with his *Cymbidiums* and *Dendrobies*; Skinner, Barker, and Hartweg, in Mexico, Guatemala, and along the Andes; and other collectors, made quite a revival among the Orchid growers, and the result of new energy being put into the matter was that with some of the showier Orchids such perfection was attained, that I fear we could not even now match some of the specimens mentioned as being exhibited at the Horticultural Society's shows at the famed Chiswick Gardens, where in those days a good collection of Orchids was to be found. Amongst the best exhibits for many years were those from Mrs. Lawrence's renowned collection at Ealing Park, that home where our worthy president, Sir Trevor Lawrence, first acquired that love for Orchids which he has turned to such good account in forming and keeping up, always in good condition, the best representative collection of Orchids which has ever been got together.

Among the specimens exhibited in 1845-6-7 are enumerated: from Mrs. Lawrence, Ealing Park, *Aerides odoratum*, with sixteen leading growths and between thirty and forty flower-spikes; *Cattleya crispata*, with over twenty spikes; *Saccolabium præmorsum*, covered with bloom; *Epidendrum bicornutum*, with many spikes; *Oncidium ampliatum majus*, with many spikes, forming a head of golden flowers over 4 feet across; and *Odontoglossum grande*, quite worthy of being a leading plant in a collection. Mr. J. H. Schroeder, of Stamford Green, is also credited with *Calanthe veratrifolia*, with eighteen spikes, and many other fine plants. Mr. J. J. Blandy, with *Saccolabium guttatum*, with eighteen flower-spikes. Mr. R. S. Holford, of Weston Birt, with *Aerides odoratum*, with twenty-seven to thirty spikes. Mr. Sigismund Rucker also produced specimens which it is pleasant to read about; and, among other things, Mr. Robert Hanbury, in November, 1845, exhibited a robust plant of the autumn-flowering *Cattleya labiata*, with four spikes, bearing sixteen flowers between them, and forming a specimen which any of our best collections would be glad to give room to at the present day.

Of plants described as being very fine in different places forty years ago, but which are yet rare, and in some cases the specimens mentioned are not to be matched, are *Renanthera coccinea*, in the gardens belonging to Mr. A. Palmer, at Cheam, with seven panicles on a plant, each bearing from 100 to 110 flowers, and an equally good one of it in the possession of Mr. R. S. Holford, on one of the panicles of which were 117 of its showy scarlet flowers; good specimens are also mentioned of the yellow *Calanthe curculigoides*, from the Straits of Malacca; *Angraecum bilobum*, with a dozen long flower-spikes; the rose-coloured *Eulophia guineensis*; and in the gardens of the Horticultural Society, in 1847, a *Lælia superbians*, with nine large heads of bloom.

These notes show that the love for Orchids, which existed from the time the first plants came into the country, has steadily increased, and that their widely-diffused culture of the present day, far from being a modern fashion in flowers, is but the result of the steady progress of that which always existed, and always will exist, as long as that love for flowers, which is one of the chief characteristics of the inhabitants of these isles, remains. For those who want novelty as well as beauty, too, there is as good a prospect still as for those who wish simply for the beautiful, for if we turn to the works of Dr. Lindley, Professor Reichenbach, and other writers on Orchid lore, we there see such a host of lovely things figured or described, but not yet imported, as to prove bewildering even to one, like myself, who has made Orchids a study from childhood. So far as I am concerned, I

never could see that there was any difficulty in growing the greater part of our handsomest Orchids, provided the one who took them in hand had a real liking for them, and a determination to use his own eyes and his best judgment for their benefit. In such a case success follows invariably, for Orchids, like the domestic animals, soon find out when there is one who is fond of them about them, and they seem to be happy and to thrive and establish an understanding with such a guardian, indicating to him their wants in many important matters as plainly as though they could speak.

It is this kind of understanding that should be aimed at, as it goes a great way towards securing success, as well as giving pleasure to the pursuit; and it is the existence, or the want of this kind of relation between the plants and their master, which makes all the difference between a good grower and a bad one—between a healthy collection and a shabby one. Be sure that, except someone takes an unfeigned and steady interest in the plants, they will not thrive; but if one can be found to be watchful over their interests, and apply what knowledge he can get from what he sees or reads of in other collections, a good measure of success is sure; hence some of our smaller amateurs, by their diligence and real liking for their plants, often grow things to perfection which have puzzled more scientific men. In growing a general collection of Orchids, however, many stubborn subjects will be met with, but as the bad doers of the past have given way, those of the present will follow, no doubt, in the case of all who steadily persevere. Every point in Orchid culture is of importance, one neglected item often causing failure in some direction or other. Let us glance at a few of the most important matters, beginning with

THE ORCHID HOUSE.

In this particular we certainly have the advantage over those of former years, in that we now have compact, well-ventilated, and comfortably-heated structures; but these changes were not made until the Orchid growers themselves took to designing their own houses, or advising with builders about them; and from that time a new era in Orchid culture commenced. The running lights, which were so fond of slipping down in the night, were done away with; the swinging sashes on a level with the plants on the side stages were doomed; and neat little sliding-traps at the base of the house and convenient top ventilators were substituted, and many other sanitary matters arranged, which anyone may see to perfection in that fine new *Cattleya* house, and those other recently built structures belonging to Mr. William Lee, at Downside, Leatherhead, where one of our largest, best, and best-housed collections will be found, many of the convenient arrangements in those houses being of Mr. Lee's own designing. At Baron Schroeder's, too, at The Dell, Egham, some of the best of our modern improvements, combining usefulness and ornament, will be found; and as the plants contained in the houses are of the best and rarest, a visit to them is always a great pleasure to any Orchid grower.

In former times it used to be considered imperative to build the Orchid houses running east and west, and many adhere to that plan still; many also consider that a lean-to or three-quarter span facing north is the best for *Odontoglossums* and cold-house plants. For my part, I cannot say that houses of any other aspect are not as good as these, provided they be properly arranged in other respects. A north house is certainly very cool and good for cold-house plants, and particularly *Masdevallias* in summer, but from the very conflicting evidence I have gathered in different parts of the country, I should say that anyone having houses which they wish to devote to Orchids need not be deterred by their facing this way or facing that, or in building new ones, to greatly inconvenience themselves to make their houses run in any particular direction.

Tolerably low span-roofed houses are the best

* Paper read at the Orchid Conference on May 13 by Mr. James O'Brien.

to build for most Orchids, and in building them, no two should be placed together side by side, but each should be built apart, in order to allow of the bottom ventilation being effected by traps opening into the outer air. In some cases where this has been neglected, chambers from end to end, with openings at intervals, and other intricate contrivances, have been resorted to, but all to no purpose, as the houses have gone back to the style of those of very many years ago, and are practically unventilated, as we now understand the word. It is to the even balancing of the ventilation, by means of the bottom ventilator opening into the outer air, and the top ones at the highest point of the house, that we, in a great measure, may attribute our much better culture of *Odontoglossums*, *Masdevallias*, *Cattleyas*, &c., than the Orchid growers of former years displayed. Next in importance after the ventilation comes

THE STAGING.

This, by common consent, seems to be best when an open woodwork staging is raised over a close one, containing either water or shingle, which is kept moist. Some, indeed, grow Mosses on this close staging and Ferns underneath them; but although such an arrangement is perhaps beneficial whilst the Ferns keep clean, they are so liable to thrips and other insects, that they are better kept out of the Orchid houses, in my opinion. The open woodwork staging is certainly very good above the close and moisture-supplying one, and great need of it might be seen formerly in the presence of large numbers of inverted flower-pots for raising the plants.

As a further means of giving moisture and storing rain-water, which alone should be used wherever it can be obtained for watering Orchids, too much space cannot be devoted to open rain-water tanks under the stages. Plants watered with rain-water alone have a great advantage over those watered with water from any other source, and Mr. Bateman records his opinion that they are not attacked by those small snails which are so troublesome where they abound. From my own observation I can say that I believe there is a good foundation for the statement.

WATERING ORCHIDS.

The watering of Orchids is a matter on which much depends. It is now pretty generally understood that all evergreen Orchids, either terrestrial or epiphytal, require plenty of water when growing freely, and less when not growing; that those which lose their leaves, such as some *Dendrobes*, invariably require a period of rest, during which water is entirely withheld and a lower temperature given, and that *Odontoglossums*, *Masdevallias*, and the other cold-house things want water summer and winter, but I find the resting or drying-off system is often overdone, and plants injured accordingly, and that in some collections the plants would be much better if watered all the year round than dried as they are to such an extent that they cannot recover in the growing season what they lose in the so-called resting period.

My own opinion is that any drying-off which causes shrivelling is wrong, and that *Cattleyas*, *Laelias*, and similar plants, if properly potted, do best kept moist, even when not growing actively, but care must be taken to see that they are not in bad peat. As a rule, it would be much better for the plants we often see in small collections if they had one half the quantity of potting material about them and twice the quantity of water they get given them. Syringing a house of Orchids should never be done, and the syringe should be only used for moistening the staging and back walls, or doing any other work on which it can be certainly employed without harm. When used on the plants the operator cannot tell what he is doing, and in the hands of a thoughtless person the syringe is the most mischievous instrument ever introduced. There can be no rule for its use among Orchids as a means for distributing water, and certainly no benefit that can be set against the loss of young growths and decayed flower-

spikes which must follow an indiscriminate use of it.

ON POTTING ORCHIDS.

And now it will be well to notice a few matters connected with the potting and materials used. For growing the epiphytal Orchids in the early days of Orchid culture blocks or logs of wood were largely used, with, in many cases, wire baskets for the more spreading kinds. These baskets were first made of iron wire, but this being found to be objectionable on account of its rusting, copper wire was substituted. Soon it got found out that Orchid roots and young growths did not like metallic substances, and slate was employed to make baskets of different shapes, which were fitted with wire suspenders. Later on the designs were very varied and fanciful, baskets being made of scollop-shells, Cocoa-nut husks, rods of Hazel, Oak, and Maple, all of which were found objectionable for some reason or other.

During all this time the ordinary flower-pot was making way, disguised to meet the case by having holes and slits to accommodate the air roots. This fashion of flower-pot at length became extensively used, but as it was alleged against it that it harboured insects, it had to give way to the plain, common garden pot, which is now doing such great service. But I am sure that we have allowed the common flower-pot to encroach too far, and that while we beat our predecessors with *Odontoglossums*, *Masdevallias*, and many other things which do perfectly well in pots, we have certainly lost ground with *Saccolabiums*, *Aerides*, and plants of that character; so much so, that they are but poorly represented in many otherwise good collections. My own opinion is that the loss is solely through potting instead of basketing them, and that in pots the chances are against them on many points. Their large fleshy roots do not get the air in pots that they do in baskets, and when potted they are generally placed on the stage too far from the glass, and retain the water given them longer than such plants like.

Against these arguments it is said, with much truth, that it is impossible to suspend everything, and that when baskets are used they are dangerous to the plant when decaying. To this it may be answered that if it is for the benefit of the plant, some means of raising it to a fair distance from the glass should be found, and that if the *Saccolabiums* and *Aerides* have done well in baskets which would have done badly in pots, the trouble of removing the old basket and replacing it with a new one ought not to be considered. The Orchid specimens at one time at Ealing Park, one with twenty spikes at Mr. Blandy's, and all others in those days, were in baskets, and I do not think their equals will ever be found in pots.

The Orchid baskets, too, are so much improved in the present day, that all objection to them has been removed, and I venture to predict a great future for them. Those made by Mr. J. E. Bonny, of Downs Park-road, Hackney, are well finished, and the superior teak of which they are made will cause them to last for years. Those of Mr. Wm. Gordon, of Twickenham, too, are excellent, being made of teak and well put together; and I should like those who are not satisfied with their *Saccolabiums*, *Aerides*, and smaller *Vandas* to try them in baskets, using plenty of crocks and charcoal where obtainable, and only a little Sphagnum Moss.

In growing this class of plants, if the growers would but take a hint from the *Dendrobes*, which grow with them as in their native habitats, and make the growing time of *Saccolabiums* to correspond with theirs, they would give their plants less heat and water in winter and more in spring and summer, and a better condition would be the result. The excessive heat which is often given to *Saccolabiums* and *Aerides*, and given, too, in winter, and while they are so far away from what little light there is, stunts them, prevents their flowering, and makes it hard work for them even to live.

MATERIALS FOR POTTING.

Now as to materials for potting. Good living Sphagnum for *Saccolabiums*, *Aerides*, *Vandas*, *Phalenopsis*, *Angraecums*, and others of like growth, and fibre of peat composed of Fern root alone for *Cattleyas* and *Laelias* has always been considered the best. Unfortunately, much of the peat of late years has been of Grass and Heath root, which is liable to rapid decay, and consequently to cause injury to the plants. Various materials, such as Cocoa-nut fibre, have been advanced to supersede peat, but none have proved acceptable. I therefore recommend all who wish their plants well to keep to the Sphagnum Moss and the best peat they can get, using the less of the latter when it is not good, and to leave experiments to others. There are always plenty ready to try new things, and, curiously enough, it is never the learner who carries the experiments to a serious conclusion, but the well-tried old hand, who, having done all that is good and reasonable, goes in for a new idea on a large scale.

I can call to mind several unaccountable instances of this kind in one of which I remember a clever grower in the north, who had for years grown his plants to perfection, suddenly became possessed with the idea that chopped Sphagnum, and what appeared to me to be road-grit, was the proper thing for all Orchids, and forthwith he proceeded to pot them in it. In another case I found that a previously well-grown collection had been potted in Sphagnum Moss and what I was told was prepared Cocoa-nut fibre. How effectual the preparation was in getting the plants ready to depart this life I need not say.

Above all things, a steady perseverance in what others have found to be a correct method of treatment answers best, and it is better to leave doubtful experiments to their originators until they are proven. The worst of it is that wonder-workers are never tired of getting others to injure their plants by trying their schemes, and hence much mischief occurs. For my part, I have generally found that the extreme practices which we hear of from time to time in the end only go to prove the extraordinary tenacity of life in Orchids, and their adaptability to the different kinds of treatment they must necessarily receive at different hands.

SHADING AND HEATING.

Next come the shading and heating of the Orchid house. With respect to the shading, I am convinced that all Orchids should be shaded against the direct rays of the sun, and that the shading should, where possible, be varied in thickness according to the plants contained in the house. Some of those very thin materials we see exhibited, when strengthened with webbing, do admirably for *Laelias* and other Mexican and Brazilian plants; the medium textures for *Cattleyas*, and the thickest for *Cypripediums*, *Masdevallias*, and all cold-house plants, all East Indian Orchids, and all terrestrial Orchids, such as *Calanthe veratrifolia*, *Phaius Wallichii*, &c. These grow in dense jungles, and bright sunlight dwarfs them and altogether spoils them.

I saw a remarkable instance of this recently in a garden where a *Calanthe veratrifolia* had been kept in a sunny house for years, and had always been a miserable and stunted object. At length it was placed out of the way on the centre bed, and underneath the tall plants, which effectually hid it from view. In a very short time it became a robust, free-flowering plant. I have seen many similar cases where excessive sunlight under glass has had much the same effect as excessive cold would have had. I therefore assert that although most Orchids require a clear light, yet when grown under glass all of them should be sheltered from the unbroken rays of the sun from the time it gets the power to injure until its power wanes. For Orchids in flower a thick shading is absolutely necessary, as the flowers last twice as long shaded, and draw on the strength of the plants much less than they do when exposed to the sun. As regards the heating of Orchid houses, I early found that it was necessary to have some plan, and to adhere to

it, checking it by the thermometer. I therefore compiled the following scale for the whole year:—

TABLE OF TEMPERATURES FOR ORCHID HOUSES.

MONTHS.	WARM HOUSE.		EAST INDIAN.		CATTLEYA, OR INTERMEDIATE HOUSE.		COOL, OR ODONTOGLOSSUM HOUSE.	
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
January	65-70	60	60-65	55	50-55	45	50-55	45
February	65-70	60	60-65	55	50-55	45	50-55	45
March	65-70	60	60-65	55	50-55	45	50-55	45
April	65-70	60	60-65	55	50-55	45	50-55	45
May	70-75	65	65-70	60	60-65	55	60-65	55
June	75-80	70	70-75	65	60-65	55	60-65	55
July	75-85	70	70-80	65	60-70	55	60-70	55
August	75-85	70	70-80	65	60-70	55	60-70	55
September	75-80	70	70-75	65	60-65	55	60-65	55
October	70-75	65	65-70	60	60-65	55	60-65	55
November	65-70	60	60-65	55	55-60	50	55-60	50
December	65-70	60	60-65	55	50-55	45	50-55	45

Degrees Fahrenheit. The higher day temperature to be attained by sun heat when possible.

This scale cannot, of course, be followed to the letter, nor is it at all necessary that it should be; it is intended rather to give a basis on which to operate, to enforce a strict guard over the regulation of the heating and to the preserving of that lower night temperature which is of such vital importance to the plants, and which should in all cases be insured by night ventilation, and by every other means at command. In summer the prescribed temperatures will often be exceeded, but it hardly matters by how much if the extra rise is due to sun-heat, and the houses in which the plants are all properly shaded and kept moist.

ARRANGEMENT OF THE PLANTS.

And now the manner of the arrangement of the plants in the house demands attention, as I am bound to confess that in all ages of Orchid culture, even down to this day, a great mortality has always prevailed among small growing plants; this arises probably, in many cases, from excessive heat and too little air, but in by far the greater number of cases by the lesser plants being made to occupy the front portions of the graduated stages, thus reversing the proper order of things, and placing the strong plants near the glass and the weak and dwarf ones the farthest from it. I am sure that the periodical scarcity of plants like the *Ionopsis*, *Trichocentrum*, *Compactia*, *Barkeria*, and such-like frail things may, in a great measure, be attributed to the distance they are grown from the glass. Indeed, it is of the highest importance that in general practice some attempt should be made to arrange the plants with relation to the distance from the glass of the roof according to their height and general growth. Hence, the very smallest should always be grown on blocks, rafts, or in baskets or shallow pans, and the others arranged according to their heights, as nearly as the necessity for occupying all the staging will permit.

Allowing 1 foot from the glass as the safety line, a good rough rule may be laid down that every small or medium-sized true epiphytal Orchid will do best if brought to within its own height of that line; thus, if a plant is 12 inches high it should be brought to within 2 feet of the glass of the roof; if 1 foot 6 inches to 2 feet 6 inches, and so on until the larger and stronger growing kinds which will do in any position are reached.

The rule should be approached as nearly as possible with small things, but with large ones a distance of 3 feet from the glass is a convenient and good one. Of course this rule, like every other in such an elastic matter as Orchid culture, cannot be adhered to in all cases; but if steadily kept in mind and followed where practicable, it will be found of the greatest service in preserving the delicate subjects. *Cypripedium*, *Masdevallia*, cool house Orchids generally, and terrestrial

Orchids, although requiring some consideration in the same way, are not included in those which it is absolutely necessary to arrange after some modification of the before-mentioned plan. I may also add that fumigation, which is so injurious to many Orchids, claims many victims from the small growers, and it is better for each grower to find some safe liquid insecticide than to resort to fumigating at all.

I have thus endeavoured to gain converts by striving to show that Orchid culture is a pleasant occupation to those who possess some skill and much diligence, and who are willing to observe Nature, and follow her dictates in the culture of their plants, demanding of them only twelve months' work in a year, exercising their judgment in all cases to the best of their ability, and maintaining the most scrupulous cleanliness in houses, plants, and everything around their plants.

THE ORCHID EXHIBITION.

MAY 12 AND 13.

THE long-anticipated and much-talked-of Orchid Conference, now an event of the past, will live long in the memories of the thousands who saw the wonderful gathering in the Royal Horticultural Society's conservatory at South Kensington on Tuesday and Wednesday last. Without question it was the greatest assemblage of Orchids that has been brought together in this or any other country. It was not so large but that it might have been much larger, and some even anticipated a more extensive gathering. As it was, the capacious conservatory was crowded with Orchids far more than could be leisurely examined in a couple of days, particularly having regard to the throngs of people who crowded the show during each day. Mr. Barron had managed the arrangement of the exhibits admirably, and if a little more attention had been paid to the grouping of the various collections, the show as a whole would have had a fine effect. Down the centre of the building sloping stages were constructed, and these were filled with the principal collections, whilst minor exhibits were displayed on side stages, so that plenty of space was available.

The general effect of the show was charming, but, as we have said, the detailed arrangement of the collections left much to be desired. There was a sort of higgledy-piggledy mixture, which greatly marred the effect. No attempt was made in the collections to group like colours or like forms together, but the conventional rule of the tall behind and the short in front, some plant in the middle and one each side to match it, was, in most cases, studiously carried out. An agreeable contrast to the mixtures were the charming groups of species and varieties of distinct genera, such as *Odontoglossum*, *Cattleya*, and *Masdevallia*. These groups fascinated everyone by their simplicity and harmonious blending of colours, not to speak of the advantage of such arrangements in comparing the relative forms, tints, and sizes of the various blooms. The absence of some sort of barrier as a protection against the crowds of people who congregated around the stages was a cause of annoyance to the exhibitors, who justly complained that their precious plants were liable to be injured.

The exhibition itself was fairly representative of the Orchid-growing community, though we should have liked to have seen more exhibitors from the neighbourhood of Manchester, Liverpool, and Birmingham, all great centres of Orchid growing. There were few of the great collections in and about London which were not represented in some shape or other, the chief being the marvellous gatherings from Sir Trevor Lawrence, Mr. Lee, Baron Schroeder, and the Duke of Devonshire, and from Messrs. Sander, Mr. B. S. Williams, and Mr. Cypher, of Cheltenham. A general desire among orchidists to make the show a success was evident by the fact that growers who were, on account of distance, precluded from sending many plants sent the pick of their collections, and it was noteworthy that the bulk of the cut Orchid flowers

came from Scotland, Dr. Paterson, Messrs. Thomson, of Clovenfords, and Messrs. Ireland and Thomson being the chief exhibitors, and all showed admirably.

Among old Orchid growers the remark was general that there was a conspicuous absence of what are called specimen plants, such as used to be seen in the "old Chiswick days." This was no doubt true, but the infinite variety, especially of the new and the rare, among Orchids abundantly compensated for any deficiency in this respect. As it was, there were a few matchless specimens in the show, some of which would have even astonished the growers of the old school.

As it would serve no useful purpose to give here a mere list of the thousands of plants shown by the various exhibitors (which by the way was admirably carried out by the executive committee in their official catalogue), we will confine our comments to what we considered were the most important plants in the several collections, commencing with a few remarks upon the

New or rare species and varieties.

MAXILLARIA SANDERIANA was, we considered, the most important novelty in the exhibition, being shown for the first time by Baron Schroeder. It is a new discovery, and one that is totally distinct from all others in cultivation, yet it resembles *M. grandiflora* somewhat in form. Its flowers are as large as those of *Lycaste Skinneri* and are triangular in outline. The thick sepals are ivory white with their lower halves heavily stained with port-wine colour; the two lateral petals are also stained with the same colour, but more lightly. It is very beautiful, and will no doubt prove as easy to grow as its congeners. The introducers of it, Messrs. Sander, are justly proud of this, their latest success. It received a first-class certificate.

CYPRIPEDIUM GODEFROYÆ was shown for the first time in this country on this occasion, fine specimens being contributed from Mr. Lee's and Baron Schroeder's collections, the plant shown by Mr. Lee being the identical specimen from which the plate we publish this week was drawn in January last. There is no need to describe it here or comment on its value. Our plate, a faithful representation of the plant, speaks for itself. It is unquestionably a most valuable addition to easily cultivated Orchids, and one whose merits have not and cannot well be over-estimated. This little Lady's Slipper attracted a deal of attention from orchidists, and the floral committee gave it a first-class certificate.

ODONTOGLOSSUM CRISPUM BALLANTINEI, perhaps beyond all others, excited the most interest and admiration, as it is considered to be among the finest of fine varieties of this extremely variable species. The flowers are not only remarkable for their large size, but also on account of the richness of their markings. They measure over 4½ inches across and are white, heavily blotched and spotted with chocolate. Fine as this is, it has dangerous rivals in two other varieties of *O. crispum* named *Veitchianum* and *Sanderianum*, and probably some would prefer either of these to *Ballantinei*. *Veitch*'s variety is the grand one certificated last year at the Regent's Park show as *magnificum*, a very expressive name, for it is really a magnificent variety; and though inferior in size to *Ballantinei*'s variety, has more distinct markings, the colour being arranged in heavy bars. *Sander*'s variety differs from either of the others in having the sepals almost entirely of a chestnut-brown colour, leaving only a distinct white margin. Both *O. crispum Veitchianum* and *Sanderianum* were awarded first-class certificates on this occasion, while *Ballantinei* received the same award here some time ago. All three were included in Baron Schroeder's magnificent collection, and they comprised the cream of spotted flowered or guttatum group of *O. crispum* in the whole exhibition, excepting the wonderful

O. CRISPUM COOKSONI, a fine plant of which was brought all the way from Newcastle-on-Tyne by Mr. Norman Cookson, the fortunate possessor

of it. It is doubtful if ever this variety will be surpassed, and it must always head the list of that section of crispums, having a pure white ground marked with sharply defined blotches and spots. In this the markings are of a bright cinnamon-red. A similar variety, perhaps scarcely so fine, was shown by Mr. Ingram, of Elstead House, Godalming. Without actual comparison side by side it was difficult to say if this was exactly identical with Mr. Cookson's plant. This unique variety will always be sought after by orchidists and will always command a high price.

CATTLEYA SPECIOSISSIMA SCHROEDERIANA.—A new variety just named in compliment to Baron Schroeder was looked upon by orchidists as among the loveliest and rarest novelties exhibited, and in fact is quite unique. It differs in no way from the original form except in colour, the sepals and petals being snow white, while the lip is of a splendid carmine-crimson of the deepest shade. It was shown by Messrs. Sander & Co., who look upon it as one of the choicest things that has ever been shown by them.

ODONTOGLOSSUM PESCATOREI THOMSONIANUM.—The unique Veitchianum variety of *O. Pescatorei* has a dangerous rival in this novelty, a spike of which was sent by Messrs. Thomson, of Clovenfords. It need not be compared with either Veitchianum or Schroederianum, as it is distinct from both of them. The flowers are above the ordinary size, and on the white overlapping sepals there are numerous big blotches and small dots of rich plum-purple. It is, in short, most beautiful, and probably as rare as either of the other two named.

CYPRIPEDIUM STONEI PLATYTENIUM.—This wonderful Lady's Slipper was, of course, a great attraction, but the plant which Mr. Lee showed was not quite in character—in fact, its proper flowering season is not till June, so probably that accounted for the comparative pooriness of the flowers. The flowers lacked that richness of colour that is so striking in a proper-conditioned plant. It was, however, very fortunate that Mr. Lee was able to show a flowering plant of what will, perhaps, for ever be one of the rarest Orchids in cultivation, and consequently among the most expensive.

LUDDMANNIA PESCATOREI was probably the most remarkable plant of its kind in the exhibition, and it certainly attracted most attention on account of its singular growth. It is like an *Acineta* in growth, and the flower-spikes proceed from the base of the plant in a similar way. The two spikes on the plant which Sir Trevor Lawrence showed were from 15 inches to 18 inches long, and two-thirds of their length were densely crowded with smallish flowers of a pale yellow, having brilliant orange lips. These golden cylindrical spikes as they hung perpendicularly from the bottom of the basket had a striking effect. This species is as rare as it is beautiful.

ODONTOGLOSSUM NÆVIUM MAJUS.—It is a well-known fact that there are two distinct varieties of *Odontoglossum* under this name. On this occasion one was to be found in Messrs. Shuttleworth, Carder & Co.'s fine collection of *Odontoglossums*, and to connoisseurs the plant had a great attraction, though it was not large. It is totally distinct from the crowds of species and hybrids in a similar way. For comparison's sake it may be likened to a large-flowered gloriosum, as the sepals are long and attenuated. Their ground colour is white, heavily blotched with a rich plum-purple, not the usual chocolate-brown tint. By the fewness and heaviness of the blotches it could be singled out from all the rest of the numerous hybrids shown by this firm.

CATTLEYA MOSSIE CALLISTOGLOSSA.—In our opinion this variety, shown by Mr. De B. Crawshaw, was unsurpassed in the whole exhibition; indeed, we have never seen a variety to equal it. The flowers are of unusually large size for Mossiae, being some 8 inches across, with massive sepals nearly 3 inches in breadth, of a deep lilac-purple. The lip is the most splendid part, being large, of circular outline, and exquisitely frilled at the

edges. Its colour is an intense amethyst, veined and mottled with a paler hue. Mr. Crawshaw showed other very fine varieties of *C. Mossiae*, named *Arnoldiana*, *pulcherrima*, *Rothschildiana*, &c., but all paled before the *callistoglossa*, a name, by the way, somewhat inappropriate, inasmuch as it may possibly be confused with the hybrid *Laelia callistoglossa*.

CATTLEYA WAGNERIANA.—One of the finest of all white Cattleyas, having large well-formed flowers, and no colour to mar their purity except a dash of yellow in the throat. It was shown by Messrs. Sander, and received a first-class certificate.

PESCATOREA LEHMANNI, one of the handsomest species of a beautiful genus, was shown in Mr. Southgate's collection, and on account of its rarity attracted a deal of attention. It has flowers some 4 inches across with plum-purple sepals, handsomely marked with parallel veins of white, while the lip is most singularly covered with white hair-like papillae.

CATTLEYA BLUNTI.—This may be regarded as a white variety of *C. Mossiae*. The flowers on the plant shown by Messrs. Sander are 8 inches across, of the same form as those of *Mossiae*, but quite white; therefore a chastely beautiful plant. It is as rare as it is beautiful, and the committee agreed in voting it a first-class certificate.

ODONTOGLOSSUM RUCKERIANUM PUNCTATISSIMUM.—This remarkable variety was selected for a first-class certificate out of a large collection of hybrid *Odontoglossums* from the St. Alban's Nurseries. It is like Rucker's variety in essential characters, but differs in the flowers being covered with minute spots, rendering it most distinct.

LAELIA BELLA, a splendid hybrid raised by Messrs. Veitch, was shown in the Egham collection, and attracted a great deal of attention. The great lips of the flowers remind one of those of the gorgeous *C. labiata*, being of an intense crimson-lake. The sepals are narrow and paler in tint and that character renders it different from all others.

MASDEVALLIA HARRYANA LATERITIA.—Of the crowds of Harryana varieties to be seen throughout the show, this new variety stood out conspicuously from them all on account of the large size of its flowers and their intensely brilliant colour—a sort of crimson-magenta, flushed with orange. It was in Mr. B. S. Williams's collection, and the floral committee awarded it a first-class certificate.

LAELIA WOLSTENHOLMIE, one of the rarest of *Laelias*, was to be seen beautifully represented in Messrs. Sander's collection of Cattleyas and *Laelias*. It is a distinct-looking plant, reminding one of *L. elegans*, with which it may be compared. It has similarly sized flowers; the lip is of more rounded outline and of an intense carmine-magenta, while the sepals are plum-coloured, mottled with a paler colour. Its beauty quite accounts for the high opinion of it among orchidists.

MASDEVALLIA RACEMOSA (Crossi).—This little novelty attracted a great deal of attention from orchidists, especially those from the provinces who had not previously seen it in bloom. A tiny plant was shown by Mr. Cypher. It bore a spike of one expanded flower and the buds of others, just sufficient to show the characteristic racemose style of flowering. The brilliant orange-scarlet colour of the flowers renders it a most attractive plant apart from its botanical interest.

ACANTHOPIPHIUM BICOLOR, one of the strangest as well as one of the handsomest of Orchids, was to be seen in the Burford Lodge collection. A finer specimen of it we had never before seen. The flowers are very curious in shape, the spur being abnormally developed, resembling white bags about 2 inches deep. The sepals are a purplish red and the lips bright yellow, so altogether it is an attractive plant. The flowers are produced numerous on short spikes just above the rim of the pot. The leaves are large and Phaius-like.

LAELIA ELEGANS ELEGANTISSIMA.—There was no variety of *L. elegans* in the show which was so much admired as this, of which Mr. Lee exhibited two fine plants. The flowers are exquisitely beautiful and so delicate in tone. They are above the ordinary size; the sepals are snow white and the broad labellum is white, with a delicate tracery of carmine-rose on the lobe. This variety will doubtless have a great future, for it eclipses all others. *L. elegans Schilleriana marginata* is a pretty variety, with the lip distinctly margined. Mr. Lee also showed a plant of it.

CATTLEYA MAXIMA PERUVENSIS.—As shown on this occasion by Messrs. Sander, this is truly a marvellous variety, absolutely distinct from ordinary maxima, in two ways—first, the colour of the blooms, especially that of the lip, is far richer; secondly, it is much more floriferous—indeed, it produces more flowers on a spike than any other Cattleya in the same section. The fine plant shown bore three spikes, one of which bore no fewer than fourteen flowers, another nine, the other five. The effect which such a number of blooms so richly coloured produced was fine.

CATTLEYA SKINNERI ALBA.—This chastely beautiful variety was shown by several exhibitors, but none finer than a superb specimen from Baron Schroeder's garden. This bore five fine spikes of flowers, the snowy whiteness of which was in delightful contrast to a grand specimen of the original form, which was fully a yard across and fairly smothered with blooms too numerous to count. This white Cattleya, whether it ever becomes as common as the type or not, must always remain one of the loveliest of all Orchids. Sir Trevor Lawrence and Mr. Lee also had good plants of it.

MASDEVALLIA GAIRIANA.—This is a new hybrid of exceptional interest, on account of its being a cross between the canary-yellow *M. Davis* and *M. Veitchi*. The progeny exhibits precisely intermediate characters between its parents in its flowers. There is the bright golden colour of *Davis*, but the form of the sepals partakes of that of *Veitchi*, and they are adorned by that wonderful purplish gloss of *Veitchi* which no artist can reproduce. A plant of it was shown by Messrs. Veitch together with their other hybrid *M. Chelsoni*, a cross between *M. Veitchi* and *amabilis*, and which is now becoming tolerably well known.

PHALENOPSIS PARISHI.—This delightful little Burmese species, quite the gem of the genus, was shown admirably in a most interesting collection from the Royal Gardens, Kew. To those who know it not it may be described as an "alpine," not more than an inch or so high, having small leaves and tiny flowers with snow-white sepals and claret-stained lips. They are produced in little clusters so numerous, that a good-sized plant of it, such as that shown, was highly attractive. It is grown most successfully at Kew in shallow pans suspended in the East Indian house. It is an Orchid that would probably charm everyone, whether orchidist or not.

ODONTOGLOSSUM EXCELLENS, shown by Baron Schroeder, is one of those remarkable hybrids supposed to be the progeny of *O. Pescatorei* and *tripudians*. Whether the plant shown is identical with that which Sir Trevor Lawrence flowered, and which was faithfully represented in *THE GARDEN*, Vol. XXI., we cannot say, but certain it is that the flowers of the plant shown on this occasion are different, and we consider not nearly so pretty in tint, though larger and of the same form. If the two plants are the same, then it is of less value so far as its beauty is concerned, but no doubt it will ever remain among the rarest of the rare. The committee awarded it a first-class certificate.

CALANTHE SANDERIANA.—Mr. B. S. Williams showed a plant of this remarkable new species which was exhibited in flower on two occasions in March last—a proof of its continuous flowering tendency. It is the deepest coloured of all the new varieties lately introduced, the lips of the flowers being of a rich crimson-lake and very

gracefully borne on the spike. *C. veratrifolia* was shown in grand flowering condition by several exhibitors.

CALANTHE IGNEO-OCULATA GIGANTEA, shown by Mr. Lee and Messrs. Sander, is probably the largest of all the varieties of *C. vestita*, the flowers being fully a third larger than is usual. They are pure white with a distinct coppery red eye.

CYPRIPEDIUM DRURYI, in Mr. Southgate's collection, was one of the most noteworthy Lady's Slippers shown, on account of its comparative rarity. It is a singular looking flower, reminding one of *C. villosum*, but is not so large. It is of a yellowish green colour with a distinct stripe through each lateral sepal. *C. virens* in the same collection was also interesting.

Collections of Orchids.—A detailed account of the many fine collections shown would occupy more of our space than we could give, so we will allude to a few of the most remarkable. The chief from amateurs were the grand collections from Sir Trevor Lawrence, Mr. Lee, the Duke of Devonshire, and Baron Schroeder. The three first named were all very large, containing hundreds of plants, many very fine specimens, and most all out of the ordinary run. The collection from Baron Schroeder was small, but was so admirably cultivated and so rich in the rarest of the rare, that it was the general opinion that it eclipsed all in interest. The grand specimens of *Cattleya Skinneri* in Mr. Lee's collection were the admiration of everyone, and one huge plant in particular, which carried about fifteen large trusses, was remarkable in having only been imported about a year, and the flowering growths had been developed since its arrival. The Burford Lodge collection was rich in grand specimens, particularly of *Masdevallias*; and that from Chatsworth was no less remarkable in that respect, though the kinds were not so rare. A huge plant of *Renanthera coccinea*, fully 10 feet high, showed how finely this beautiful Orchid is managed at Chatsworth.

Smaller amateurs' collections were no less remarkable than the larger ones so far as interest goes. Mr. Peacock's extensive collection at Hammersmith was represented here by a choice group of about fifty kinds, chiefly consisting of *Odontoglossums*, *Masdevallias*, and of which there were some exceptional specimens, one plant of *O. Halli leucoglossum* having no fewer than seven spikes. Mr. Pollett, of Fernside, Bickley, contributed a fine group of *Odontoglossums*, amongst which were such choice things as *O. Pollettianum*, *O. polyanthum*, and an uncommonly fine specimen of *O. Edwardi* carrying a large branching panicle.

Mr. Southgate sent one of the largest amateur collections, numbering, we should say, over a hundred plants, and comprising many choice kinds. Dr. Duke, of Lewisham, sent a collection of good plants, among them being the new *Cattleya nobilior*; other exhibits came from Mr. Little, Mr. Cortaut, Mr. Wyatt, Mr. Ingram, all of which added in no small degree to the interest and attractiveness of the exhibition. Mr. Smee, of Wallington, sent specimens of Orchids that had been subjected during the last and previous summers to out-of-door treatment, and very fine many of the plants were. A small collection was also contributed from Gunnersbury Park.

The collections from nurserymen were not numerous, the most extensive by far being those from Messrs. Sander and Co., St. Albans. They had a magnificent bank of *Cattleyas*, chiefly *C. Mossiae*, *Mendeli*, and *gigas*; also a group of hybrid *Odontoglossums*, arranged very tastefully with Ferns, and a group of choice new or rare varieties, including those described above. This group was remarkable in containing five white *Cattleyas* which probably have never been seen together before. They were *albinos* of *C. Skinneri*, *Mendeli*, *Mossiae*, *speciosissima*, and *Trianae*. Messrs. Shuttleworth, Carder, and Co. contributed a choice group of about fifty plants of their speciality, the *Odontoglossum*. These con-

tained numerous unnamed hybrids of exceptional merit, besides representations of grand types of *O. crispum*, *triumphans*, *Andersonianum*, *Pescatorei*, and some very handsome forms of *O. mulus*, *Wilckeanum*, *gloriosum*, *superbum*, and *Rossi majus*. Messrs. Low sent a small group of choice kinds, including *Cypripediums* and *Cattleyas*, and a fine plant of the rare *Dendrobium Lowi* in full flower. Messrs. Cypher, as we before remarked, showed one of the finest trade collections, and which comprised a host of finely-grown plants; and no less remarkable was the extensive collection from Mr. B. S. Williams, which contained upwards of sixty distinct species and varieties. A rich collection of hybrid Orchids came from Messrs. Veitch, some, chiefly *Cypripediums*, being in flower. These were a great attraction, as the paper read by Mr. Veitch excited interest in these hybrids. Messrs. Vervaeet & Co., of Ghent, sent a collection of various species, some in flower, and others to show excellent culture, particularly of cool-house kinds, such as *Odontoglossums*; the plumbulbs of *O. Pescatorei* were especially remarkable. The new Plant and Bulb Co., Colchester, sent a few Orchids, the most noteworthy being some very fine forms of *Odontoglossum vexillarium* all deep in colour.

Of exceptional interest to many was a collection of what are called "botanical Orchids" from the Royal Gardens, Kew. The majority of these were unattractive—their flowers very small and dull in colour, but they possessed great interest to those orchidists who did not look for bright colours and large flowers.

Cut flowers.—The Orchid growers who could not sent plants contributed to the exhibition by sending collections of cut flowers. The chief among these were those from Dr. Paterson, Bridge of Allan, who sent a fine gathering; Mr. Thompson, of Stone, sent a choice collection of good kinds; while nurserymen were represented by Messrs. Ireland and Thomson, of Edinburgh, and Messrs. Thomson, of Clovenfords, both firms showing uncommonly fine collections, that from Clovenfords being remarkable for the number and variety of *Vandas*, which included all the leading forms of *V. suavis* and *tricolor*.

Miscellaneous exhibits.—The classes set apart for cultural materials were well represented. Mr. J. E. Bonny, 88, Downs Park Road, Hackney Downs, who showed samples in all sizes of his teak baskets, rafts, boats, &c., suitable for Orchid culture, with specimens of Orchids growing upon rafts to show their suitability for the purpose; also samples of shading material for Orchid houses. Mr. A. Borwick, Higham Hill, Walthamstow, showed Jensen & Co.'s cod and potash manure for Orchids. Mr. Epps, Ringwood, showed samples of peat, Sphagnum, &c. Mr. Gordon Twickenham, showed Orchid baskets, rafts, boats, Phalænopsis baskets and boats, *Cattleya* rafts, novel legged baskets, Excelsior scrim and other Orchid shadings. The Liverpool Horticultural Company showed examples of Cowan's patent Orchid pottery. Mr. J. Kennard & Co., Swan Place, Old Kent Road, showed "Tupho" for Orchid culture, a kind of compressed Moss, Orchid peat, Moss, pottery, baskets, rafts, labels, sticks, &c. Mr. W. Martin, Hurstpierpoint, exhibited pots and baskets. Mr. John Matthews, Weston-super-Mare, showed suitable pots, baskets, &c., for Orchid culture. Mr. H. G. Smythe, 21, Goldsmiths Street, Drury Lane, showed samples of Orchid peat, Sphagnum Moss, teak Orchid baskets, Orchid flower sticks, pots, tying and shading materials, box for conveyance of Orchid blooms by parcels post. Messrs. E. Vervaeet & Co., Mont St. Amand, Ghent, exhibited soil out of the leaves of Willows, good for *Cattleyas* and some *Dendrobiums*; the substitute for peat used in Belgium for Orchid culture, called "old Fern ground," in French "terre fibreux"; Belgian Sphagnum; baskets, rafts, &c. Mr. S. Williams, 21, Farringdon Road, showed octagonal teak Orchid baskets.

Pictures and drawings of Orchids added to the display. Among these was a series of twelve plates of hybrid Orchids and Pitcher Plants which were raised by Mr. Dominy from 1853 to

1880 while with Messrs. Veitch. M. Godefroy-Lebeuf, Argenteuil, sent several Orchid plates, as did also Miss Woolward and Dr. Paterson.

Veitch Memorial prizes.—At the close of the conference Sir Trevor Lawrence announced that the trustees of the Veitch Memorial Prize Fund had placed three medals in the hands of the Orchid Conference Committee to award in the manner it thought fit. It was accordingly decided to award one to Professor Reichenbach, the eminent orchidist, for his labours in connection with Orchids, one to the Rev. C. P. Parish, late of Moulmein, as a recognition of his work in the discovery and collection of new Orchids in the East Indies, and the third to Mr. Seden, well known as a successful hybridist attached to Messrs. Veitch's establishment.

The conference was commenced on Wednesday, Sir Trevor Lawrence, the president of the society, being in the chair. After a few introductory remarks he read the communication from Prof. Reichenbach, which we shall reproduce next week; then followed Mr. Veitch's excellent paper on hybrid Orchids; after which Mr. O'Brien read his paper. A discussion followed the reading of Mr. Veitch's paper, and among those who took part in it were Sir Trevor Lawrence, Mr. Bateman, Dr. Masters. The discussion arising from Mr. O'Brien's paper did not bring any new facts to light, and the most important subject in the programme, viz., the nomenclature question, was not discussed.

Floral Committee.

The following plants, in addition to the Orchids, were submitted to the floral committee, and were awarded certificates:—

AZALEAS PRINCE BAUDOUIN AND PRINCESS VICTORIA.—The former single, a finely formed flower, of intense crimson hue, and wonderfully striking; and the latter double, of good form; colour white, much flushed with carmine. Both these admirable acquisitions were shown with others by M. Louis Van Houtte, Ghent.

ROSES ETOILE DE LYON AND ALPHONSE SOUPERT.—The former a Tea, producing fine, densely-formed, globular flowers of a rich, sulphury-white colour, though not like the blooms of *Maréchal Niel*; and the latter an H.P. of great size, good form, and fair density, and of a bright rosy red colour. These were shown by Messrs. W. Paul and Sons, Waltham Cross.

PELARGONIUM VOLONTE NATIONAL ALBA.—A pure white form of the well-known market decorative kind of that name, and a striking variety. Shown by Mr. F. Perkins, nurseryman, Northampton.

ANEMONE PONCEAU.—A semi-double form, having three circles of narrow-pointed petals of a bright scarlet colour, and not unlike many developments of the *fulgens* strain. Its merits were hardly deserving so high an honour. Shown by Mr. W. Bealby, Rochampton.

AURICULA MISS MOLLIE.—An alpine of great merit, the pips being large, flat, and of good form, the centre of a rich, golden hue, and the ground reddish chocolate. Well worthy of a better appellation. Shown by Mr. James Douglas, Great Gearies, Essex.

One of the finest features of the meeting, apart from the Orchids, and vieing with them in beauty and attractiveness, was a grand bank of pot Roses of some seventy to eighty plants of various sizes, staged by Messrs. W. Paul and Sons, which, fronted by some dozen boxes of cut Roses, made up a display that merits the highest praise. The cultivation seen throughout in the plants could hardly be excelled. Of striking dark-coloured kinds were Duke of Edinburgh, Dr. Andry, General Jacqueminot, and Charles Lefebvre, standing out with good effect in a ground of light flowers, amongst which were La France, Captain Christy, Marie Van Houtte, William Warden, M^{me}. Joseph Schwartz, Magna Charta, and Madame Montet. The flowers were all very fresh and rich in colour.

Besides the Azaleas referred to above, M. Van Houtte had several small standards and half a

dozen with heads some 30 inches over, and perfect masses of bloom. These included Joseph Lefebvre, carmine striped; Oswald de Kerchove, rich red; Louis Lubbers, crimson; and Madame Louis Van Houtte, pink.

Messrs. Veitch & Sons had baskets of the pretty free blooming dwarf Broom (*Spartium præcox*), a pretty cut-leaved Acer, and a lovely little button-hole Rose, of the Fairy type, of a bright pink hue, blooming very freely.

Mr. T. S. Ware, of Tottenham, showed a pleasing group of Moutan Peonies, carrying fine double flowers, the most striking of which were Loudonia, mauve; Elisabeth, bright pink; and Jewel de Chusan, white; also a good collection of rock plants, such as creeping Phloxes, *Gentiana verna*, a glorious blue; Saxifrages, *Primula Munroi* and Sieboldi; scarlet Tulips, and the lovely white *Ranunculus alexicaulis*.

Messrs. Paul & Sons, Cheshunt, sent a large variety of rock plants also—Saxifrages, Sedums, *Sempervivum*, creeping Phloxes, Gentians, Iberis in sorts, the pretty *Omphalodes Lucilia*, *Anemone thalictroides plena*, a charming double white variety; the little red-flowered *Rubus arcticus*, and many other interesting plants.

Messrs. Barr & Sons, Covent Garden, showed one more collection of Daffodils, thus emphasizing the enduring powers of this remarkable family of hardy flowers. The poetic forms were the most prominent; still, many other kinds were shown set off with bunches of scarlet Tulips, Peonies, Grape Hyacinths, Anemones, &c.

Messrs. Rumsey & Sons, Waltham Cross, exhibited several boxes of cut Roses, bunches of beautiful and highly perfumed Teas being included; Niphotos, Madame Lambard, Marie Van Houtte, and Madame Falcot showing charming buds.

Messrs. Kelway & Sons, of Langport, put up a number of blooms of seedling Amaryllids, rather small and narrow of petal, but some showed very rich colour.

Mr. J. House, Eastgate Nursery, Peterborough, showed an interesting hybrid Rose, the product of a cross between Hybrid Perpetual John Hopper and the old Cabbage Rose. The plant had the John Hopper habit with Cabbage Rose leafage; the blooms were globular, full, of a rich rosy hue, and, curiously enough, very richly perfumed. We hope to see this again during the summer when grown outdoors. Mr. J. Jenkins showed blooms of two large Pansies, General Gordon and Baguley's Best, the former nearly black and the latter sulphur with deep dark blotch.

The only exhibits before the fruit committee that could be found were a few dishes of fairly good Apples shown by Mr. Sutton, gardener to Mr. W. J. Cookson, Workop Manor, Notts, and a dish of excellent treble curled Parsley sent by Mr. R. Dean, Ealing.

GARDEN DESTROYERS.

Sulphide of potassium v. mildew.

Despite the efforts of vegetable physiologists, we are still most imperfectly acquainted with the conditions favourable to the development of mildew. In the case of Roses under glass too many of us are unfortunately familiar with its destructive powers at this season of the year. There may be some relationship between varying together with abruptly alternating temperatures and the chemical rays of light, which also are not stable. Again, the condition of the walls in the leaf cells as well as the chlorophyll may, and probably has, something to do with its incidence. Mildew does not trouble us outside at this time of the year, at least in East Yorkshire. Along the north-east coast mildew is certain to attack Turnips in September if they are sown before a particular date, or they have grown too fast. Mr. Tonks has my best thanks for suggesting sulphide of potassium as an antidote. So far as I know, there can be no question about its efficacy in clearing off mildew. I cannot agree with him that it is equally serviceable for red spider.

Whilst personally pleased that mildew has ceased to be a cause of anxiety in my greenhouse, I wish to caution those who have to carefully regard the comeliness of the paint in their glass structures. When the solution as advised is applied by means of a syringe, some of it of course falls upon the painted wood. A pale brown stain speedily appears; this is the insoluble sulphide of lead. I may, by the way, here mention that when a person suffering from lead poisoning takes a sulphurous bath, his skin becomes covered with innumerable black points. Sulphides attack and discolour most metals. The solution is made here in an ordinary watering-can, and I am unable to say whether or not a double decomposition does not take place between the sulphide of potassium, the metal of the can, and the paint. Anyhow, it would be preferable to use a wooden bucket and rain-water. The sulphide of potassium which I use is pure.—R. C. APPLETON, *The Bar House, Bererley*.

OBITUARY.

CHARLES TURNER.

THE death of Mr. CHARLES TURNER, of the Royal Nursery, Slough, on the morning of Saturday, the 9th inst., is an event for which most of us were unprepared. For half a century he had been a central figure in English floriculture, and had earned greater fame than any of his contemporaries. He was born at Wilton, near Salisbury, on May 3, 1818, and had therefore nearly reached the allotted age of three-score years and ten. He was present for a short time at the meeting of the National Auricula Society, held at South Kensington, on the 21st ult., and that, we believe, was his last appearance in London. In early life he showed a great love for flowers; he commenced the culture of the Pink when quite a stripling, and at the age of 14 he won his first prize. This decided his future course. In 1834, by which time he had secured other first prizes for Pinks and the same award for Dahlias, he was apprenticed to a nurseryman at Salisbury. Here the leading kinds of florists' flowers were placed under his care, and they succeeded in his hands. In 1835 he showed Dahlias at Bath, and returned with such substantial trophies as a £12 prize and £8 cup. From Salisbury he went to Messrs. Cormack's Nursery at New Cross, and after a time to those of Messrs. Brown, of Slough. Here he added to his reputation as a successful cultivator, and, taking advantage of the rising tide in favour of a more extended culture of florists' flowers, he went into business on his own account at Chalvey, a small village near to Slough. Then about 1844 or 1845, on the retirement of Mr. W. Cutter from the proprietorship of the Royal Nursery—he having succeeded the Messrs. Brown—he removed there, and has occupied this nursery for forty years. While at Chalvey he won, in 1840, a £20 cup at Cambridge and a £25 cup at Norwich; and in 1841 three £20 cups in one week, namely, at Tamworth, Warwick, and Halstead, for Dahlias, which were then the favourite flowers for exhibition.

On his removal to the Royal Nursery his scope as an exhibitor became widely extended and his business rapidly increased. The subjects grown by him with such signal success were Auriculas, Cinerarias, Dahlias, Carnations, Picotees and Pinks, Azaleas, Pelargoniums, Roses, Pansies, Tulips, &c. Thirty years ago the Tulip garden at the Royal Nursery was one of the floral features of the day, and it was the custom of Mr. Turner to have a show day on which the general public were admitted. At that time Mr. Turner had the largest and most valuable collection of Tulips in the south of England. We remember him sending out feathered byblomms at twenty-five guineas a bulb. From that time onwards his career has been a series of triumphs, every succeeding year witnessing the rich ingathering of the highest honours. Of literary work, Mr. Turner attempted but little; he was one of those men who, as Mr. D. T. Fish once said, put their thoughts into their

plants and flowers instead of on paper. During the time he was at Chalvey he published a small treatise on the culture of the Dahlia, and also one on the culture of the Pansy. For a few years he was proprietor of the *Florist and Garden Miscellany*, which he purchased from its founder, the late Mr. Beck, and he carried it on until 1862, the proprietorship a few years previous to this date being shared with the late Mr. John Spencer. All the institutions connected with horticulture found in him an ardent supporter. He was intimately connected with the National Floricultural Society, the Gardeners' Royal Benevolent Institution, the National Rose, Auricula, Dahlia, Carnation and Picotee, and Chrysanthemum Societies, the International Potato Show, and others. For many years he had a seat on the floral committee of the Royal Horticultural Society, and was an active and valuable member of the executive committee of the International Horticultural Exhibition of 1866. The Azaleas which he exhibited on that occasion were one of the leading features of that great show.

As a judge at flower shows, his services were in great demand. He was great also as a raiser of seedlings, and there is scarcely a flower among the many which he cultivated so well that he did not enrich by varieties of his own raising.

In his own locality he took his share of local works, and was for some time a member of the Slough Local Board. His extensive business will be carried on by his sons, who have long been associated with him in conducting it. A portrait of him forms the frontispiece to Vol. XXV. of THE GARDEN, and in connexion therewith will be found an account of his horticultural work written by Canon Hole.

LATE NOTES.

Tomatoes (J.S.).—The rotten spots on your Tomatoes look like the effects of drip.

Polyanthuses (Mrs. M. W.).—A charming gathering from an old-fashioned garden, rich and varied in hue and strong in growth.

Peaches (W.C.).—Dryness at the root is doubtless the cause in your case of the fruit dropping. The leaves and young wood seem healthy.

Maxillaria (S. Nisbet).—The flowers you send are not those of *M. grandiflora*, but of the so-called white variety of *M. Harrisoniae*.

Books (J. C. L.).—Miller's dictionary deals only with the botanical and popular names of plants, and if this is the sort of book you require, you will find it the best of its kind; but if you want cultural information it will be of no service to you.

Strawberry La Grosse Sucree.—Mr. Gilbert has sent to us from Burghley a few fruits of this Strawberry, which he thinks very highly of as a forcing variety, being a good setter. The fruits are large, highly coloured, and rich in flavour, and sufficiently acid to give them an agreeable taste. Finer Strawberries in the first week of May could not be desired, and we think Mr. Gilbert's good opinion of the variety is well merited.

Naming plants.—Four kinds of plants or flowers only can be named at one time, and this only when good specimens are sent.

Names of plants and trees.—G. B.—Apparently *Pharothamnus Newellii*; Grass is *Panicum plicatum*, *Asplenium bulbiferum*, *Adiantum fenerum*.—Cynro.—1, *Prunus Padus*; 2, *Amelanchier canadensis*.—J. C. A.—Nearest to Countess of Haddington, but the specimen does not exactly agree with that variety.—D. J. F.—White Beam tree (*Pyrus Aria*).—G. F. G.—1, *Epimedium alpinum*; 2 and 3, forms of *Fritillaria pyrenaica*; 4, *Vincetoxicum ilicium*.—F.—1, *Genista piceox*; 2, *Narcissus biflorus*; 3, apparently *Kalosanthes coccinea*.—J. Bell.—*Amelanchier canadensis*.—J. McNair.—*Odontoglossum triumphans*; small yellow is *Uncidium concolor*.—G. L.—1, *Melittis Melissophyllum*; 2, double *Kerria japonica*; 3, *Polygala Chamaebuxus*; 4, *Uvularia grandiflora*; 5, *Pulmonaria saccharata*; 6, *Coronilla emoroides*; 7, double *Saxifraga granulata*. (Please remember our rule is only naming four plants each time).—B. Shreeves.—*Spiraea prunifolia* fl. pl. —W. P. P.—*Piptanthus nepalensis*.—R. L. D.—*Scilla campanulata alba*.—A. T. B.—All double forms of *Narcissus incomparabilis*; 1, Butter and Eggs; 2, Sulphur Phoenix or Sulphur Crown; 3, Orange Phoenix;—*Anature*.—Green is *Celogyne Parishii*; other *Epidendrum erectum*.—C. D.—1, *Amelanchier Botryapium*; 2, *Prunus Padus*.—W. L.—*Poinciana pulcherrima* (requires stove treatment).

WOODS & FORESTS.

WINDSOR FOREST.

THE history of Windsor Forest is one which belongs as much to archaeology as it does to silviculture, while in it the beautiful deer are almost as numerous as the trees themselves. Windsor Park is indeed one of the most magnificent fields for the study of forest botany that even the wildest imagination could conjure up. Here may be seen, growing singly or collectively in clumps, specimens of all the finest trees, native or exotic, which exist in Great Britain, and, since care has been taken to keep an exact record of the age and origin of each plantation, the forester would be enabled to follow out in detail studies of the highest interest and importance regarding the growth of the principal forest trees. It would be more difficult to do the same with regard to their longevity; for one is led to think, in looking at some of them, that, in this hallowed ground, trees never die of old age. One sees in these relics of the past that religious respect for things so characteristic of Englishmen, when even the most violent revolutions could pass over the country, and yet leave these monuments and these trees intact.

Some one has remarked that in writing a history of Windsor Forest it would be necessary to repeat the history of England itself. This may be true in a certain sense, but so far as authentic records are concerned, it is stated that none exist of an earlier date than the reign of Charles I., as the whole of the documents were burned by the Parliamentary soldiers, who held the castle throughout the struggle.

Notwithstanding this, there is sufficient data to prove that this forest was once of enormous extent, reaching to a circumference of one hundred and twenty miles. It comprised a part of the county of Buckingham, a considerable portion of Surrey, and the south-east side of Berkshire as far as Hungerford. On the Surrey side it included Chertsey and Cobham, extending along the Wey as far as Guildford. By the reign of James I., however, it had dwindled considerably, as its circumference was then estimated at only seventy-seven miles and a half, without taking into account the liberties extending into Bucks. At this time there were fifteen walks within it, each under the charge of a head keeper, and the whole contained upwards of three thousand head of deer.

In 1661 the principal of these walks were Cranbourne, New Lodge, and Bagshot. At this period considerable attention was paid to the timber; fences were formed round cultivated fields, hedgerow Elms were planted, plantations filled up, and Grass seeds sown. Between the years 1670 and 1680 Evelyn was a frequent guest at Windsor Castle, and the king was constantly engaged in planting rows of Elms on the French plan. Before the time of Evelyn the country must have been but poorly ornamented with timber.

In the year 1813 an Act of Parliament was passed for its enclosure. The part known as Windsor Great Park, which had been enclosed previously, was of but small extent compared with the size of the entire forest. The area of this did not amount to 4000 acres, half of which was under cultivation, whilst the unenclosed lands comprised some 24,000 acres. Scarcely a trace of the forest is now left, except the part apportioned to the Crown, adjoining the Great Park. Until this period Windsor Forest was an open common, on which the Crown and several subjects enjoyed mutual rights. The date of fencing off the Park from the common ground has not been ascertained. Norden's map of 1607 shows the boundaries, and Sir William Cecil was petitioned in 1568 to allow two French glass-makers the privilege of cutting wood and burning charcoal in Windsor Great Park. About the same date Parliament took measures for increasing the supply of shipbuilding timber, and enacted that at the periodic cutting of the Windsor copses, twelve "standils or stores" per acre should be left to form a future wood.

Great havoc had been made in the ancient native forests; hedgerow trees were mangled and trimmed up for firewood, the Elm being amongst the greatest sufferers.

The planting of the Long Walk was commenced in 1680, on the purchase of the fields lying between the Castle and the Great Park. The distance from the Castle to the statue of George III., on Snow Hill, is two and three-quarter miles, and the length of the avenue rather less.

The distance between the two inner rows is 150 feet. The trees are 10 yards apart in the rows, and each tree composing the aisles at the sides is 30 feet from its neighbour. There were originally 1652 trees.

Those on the low ground and good loamy soil are nearly double the size of those on the cold stiff clay on the ascent towards the statue. In 1702 the Duchess of Marlborough was appointed to the rangership, and held the office until her death in 1744. About 1746 William, Duke of Cumberland, was made ranger, and was succeeded in 1766 by Henry Frederick, Duke of Cumberland. On his death the king (George III.) took the rangership into his own hands, and appointed Major-General William Harcourt his deputy. In 1830 the king (William IV.) became ranger, his deputies being Sir W. H. Freemantle and Major-General Seymour respectively.

In 1850 the Board of Woods and Forests, which had been combined with that of Works and Public Buildings, was constituted a separate Board, and Forest and Park came under their control.

The surveyor of Windsor Park, who is by turn a forest officer, an organiser of shooting parties, a director of the royal workshops, and conservator of a museum of antiquities, can, in consequence, have but little time to devote himself to silviculture, unless it be to prepare the iron armour intended to preserve the veterans of the forest in their struggle against the elements, or to prop up with crutches some invalid deprived of a limb by a recent gale.

NOTES ON PINES AT PENRHYN CASTLE.

AMONGST a fair collection of Pines grown on this estate the following half-dozen kinds may be considered as the principal, or, in other words, those that, from having been found most suitable, are grown in the largest quantities. At one time, some forty years ago, most of the Pines at that time introduced were planted out as an experiment in the park and surrounding grounds. Many of these have died out altogether, others progressed but very slowly, and additions have been made of the kinds that seemed to suit the situation, foremost amongst these, and arranged in point of merit, being *Pinus Laricio*, *P. austriaca*, *P. Strobus*, *P. Pinaster*, *P. excelsa*, and *P. Cembra*.

THE CORSICAN PINE (*P. Laricio*), a noble tree from the mountains of Corsica, Greece, Turkey, and Spain, deserves extensive cultivation, as, apart from its free growth and majestic appearance, the timber is quite equal to the red deal of commerce. This tree succeeds well at Penrhyn, the average height being from 50 feet to 60 feet, and with stems girthing from 5 feet to 7 feet at 3 feet up. The largest specimen, which stands between the castle and the flower garden, measures as follows: Height, 72 feet; girth of stem at 1 foot up, 9 feet 5 inches; girth of stem at 5 feet up, 9 feet 4 inches; diameter and spread of branches, 45 feet. This fine tree was, by neglect in early growth, allowed to retain a plurality of leading shoots, two of which branch off at 7 feet and two at 11 feet from the ground, the largest of each girthing, at 3 feet from point of junction, 5 feet 11 inches and 5 feet 3 inches respectively.

The timber of the Corsican Pine grown on this estate seems of excellent quality, but as regards its lasting properties it would yet be premature to speak with any degree of certainty, few trees having attained an age or size at which the timber could be considered fully matured. The wood, however, is closely grained and easily wrought, which is much in its favour. Several experiments with the timber have been made, but sufficient time has not yet elapsed for a decisive opinion to be expressed; this, however, we hope to

do at some future time. One point greatly in favour of this Pine as a forest tree is the small spread of branches in proportion to the tree's height. The soil on which the finest specimens of this tree are growing is sandy loam, but in this respect it is not particular, as many of equally rapid growth may be found on various other classes of soil. This Pine has one drawback, or rather supposed drawback—being difficult to transplant with safety, but this may to a great extent be rectified by frequent transplanting of the young trees while in the nursery grounds, which will tend to the formation of roots and consequently lessen the risk of removal.

THE AUSTRIAN PINE (*P. austriaca*).—Perhaps few of the Pine tribe possess the many good qualities which can be attributed to this species, as for effect, shelter, adaptation to different soils and situations, or seaside planting it is invaluable. The timber is also of fair quality, tough and resinous, and well fitted for withstanding the evil effects attending the change from moisture to dryness. With this end in view it has been used in some quantity for river embanking here, so that ere long we will be able to speak with a great amount of certainty regarding its capabilities for this purpose. As an ornamental tree the Austrian is of great value, the dark, glossy green foliage presenting a striking effect when viewed from a distance. For shelter and planting in maritime situations it is exceedingly valuable, as it not only withstands the rough sea breeze with impunity, but by its thick and strong foliage renders a great amount of shelter to other less hardy kinds. The most sterile soil seems to suit it best.

THE WEYMOUTH PINE (*P. Strobus*), a native of Canada and other northerly districts of North America, is a fast growing and very ornamental tree. The timber grown in its native country, where it is known as the White Pine, is very clean, soft, and white, but easily destroyed. In thinning a plantation, formed about thirty years ago, in which this Pine had been freely used, we were surprised to find that hardly a tree of *Pinus Strobus* was sound, all having become the prey of heart rot; indeed, to such an extent did this prevail, that I found a difficulty in procuring sufficient to plank up as specimens of the wood grown on this estate. This I attributed to the soil, which in some places was of an unkindly nature and rather damp. In other places it is perfectly sound, and the timber free from defects of any kind. For ornamental effect along the outskirts of woods that can be seen from drives and roads this Pine deserves a place, more especially when the situation is somewhat sheltered. Our largest specimen, which stands near the Port-Penrhyn entrance, is about 60 feet in height and with a circumference of stem at 3 feet from the ground of 5 feet 8 inches.

THE BHOTAN PINE (*P. excelsa*).—This species nearly approaches the latter in general appearance, from which, however, it may be readily distinguished, the leaves being about double the length, the tree of a more robust habit of growth, and the bark much rougher than that of *P. Strobus*. This fine Himalayan tree bears our climate fairly well. It requires to be planted in a rather sheltered position, as on exposed ground the foliage generally becomes somewhat scanty and the tree stunted in appearance. The light, silvery foliage of this Pine renders it very desirable for contrast, especially when mixed with others of a more sombre appearance. Our largest specimen, which grows in a clump of mixed trees near the castle, is about 45 feet in height, and with a girth of stem at 3 feet and 5 feet of 4 feet 2 inches and 3 feet 6 inches respectively.

THE SWISS STONE PINE (*P. Cembra*) is a tree of considerable size inhabiting the sides of mountains in Siberia, Switzerland, and Italy. It is very ornamental and hardy, though of a rather slow growth, and produces a fragrant, fine-grained, soft wood well suited for carvers and turners. This Pine also luxuriates in maritime situations, our two best specimens standing within a few yards of the sea, though partially sheltered by a narrow strip of wood. It, however, attains greatest perfection in a rich, deep, loamy soil, although many ex-

amples of luxuriant growth may be seen here on thin, poor soils and very exposed situations. The largest and best furnished specimens of the Stone Pine I know of in this district are at Gwydyr Castle, near Llanrwst, or rather at Gwydyr-ucha, a neat residence on the precipitous rocks above the castle. The Weymouth Pine does fairly well at the same place, as also *P. sylvestris*; indeed, several specimens of the latter are the largest I have ever seen or heard of in Wales. The largest here measures 37 feet in height, is at 3 feet and 5 feet 3 feet 2 inches and 2 feet 8 inches in girth, and has a spread of branches of 12 feet.

THE CLUSTER PINE (*P. Pinaster*).—This noble species naturally inhabits the most sterile sandy plains of France and Southern Europe, especially along the coast. Its timber is light, soft, coarse, and only used for very ordinary purposes. It prefers an open and airy situation, and in the vicinity of the sea, where the temperature is to some extent equalised, attains large dimensions. Like the Corsican Pine, this tree is difficult to transplant with safety, the roots being few and large, but this may, to a great extent at least, be obviated by careful attention to the young plants while in the nursery, so that they may be frequently transplanted, neglect of which generally proves fatal to the tree when planted out permanently. Our largest specimen occupies a prominent position in the flower garden, and is of the following dimensions: Height, 62 feet; girth of stem 1 foot up 12 feet, and at 5 feet 12 feet; with a diameter of spread of branches of 42 feet. Of the

SCOTCH PINE (*P. sylvestris*) it is perhaps superfluous to speak, the history and uses of this most valuable Pine having been so often written about. Anyone who has examined the specimens of Scotch Fir and soils which produce them, sent from the Ballochbuie forest to the Edinburgh Forestry Exhibition, must at once be struck by the superior quality and graining of the wood to that produced in most other parts, and also naturally wonder why timber of similar size and quality cannot be produced in quantity, if at all, further south. Various are the theories offered in explanation of this curious fact, but for all, we still remain in the twilight of uncertainty. I have been informed by one who is well acquainted with these forests and their timber that in the Ballochbuie forests, Scotch Firs of very dissimilar appearances were, when cut up, found to contain wood alike, or very nearly so, in quality. Now, if this be true, we may at once throw the question of degeneracy overboard, and look for results of inferior timber either in the soil or locality, perhaps both, where the trees have been grown. Perhaps Mr. Michie would throw some light on this important subject by contributing a paper on the true Highland Pine.

A. D. WEBSTER.

PRUNING V. THINNING FOR TIMBER.

I QUITE agree with what "Yorkshireman" says (p. 434) on this subject. Pruning timber trees whenever possible should be avoided, as it is both expensive and harmful. A question recently asked in the *Field* on thinning young Larch trees has elicited the following reply. As the gentleman is personally known to me as owning large estates on which Larch is successfully grown, I give the reply in full. He says: "I cannot imagine anything more injurious to young Larches than pruning. The removal of the branches alone lessens the vigour of growth, to say nothing of the loss of sap by bleeding. Pruning in nearly all trees is the cause of knots, not the preventive. Larch will lose its lower branches fast enough naturally unless planted singly as specimen trees away from the shade of others. We are cutting hundreds of Larch now that have never been pruned, but judiciously thinned; they are about forty-three years old, and measure from 1 foot 6 inches to 2 feet 6 inches in diameter at the butt, giving an average diameter of 2 feet and a circumference of nearly 6 feet. They have a height of over 60 feet of timber, are straight and clean, without a knot or a living branch on them within 30 feet of the ground, and as sound as bells."

This is important testimony, and it also holds good as to ordinary field timber. Take Elm as an instance. In the county from which I write a large proportion of the land is pasture, and consequently farmers are not so anxious to get every branch lopped off. In the adjoining county there is a large area of arable land, and, consequently, almost every branch is destroyed except at the extreme top of the tree. The effect on the landscape is pitiful, but from a practical point of view it is much worse, as this excessive mutilation not only checks the growth of the tree, but fills the wood full of small knots, and so renders it totally unfit for the best uses. This is so far true, that although an important industry in which much Elm is used lies in the immediate neighbourhood of where these "trimmed" trees grow, the manufacturers are obliged to pass through their own neighbourhood to our county, and pay heavy rail charges on wood grown here, as their own timber is so spoilt by these prunings, that they cannot use it.

D. J. Y.

FORESTRY OR SYLVICULTURE.

IN the article in *THE GARDEN* under the heading of "The Past and Present of Forestry," your correspondent remarks, "The forestry of the present is linked to that of the past, and bears in every essential feature a strong resemblance to it, but neither the forestry of the past nor that of the present can be ranked as sylviculture." Then he proceeds to draw a picture of the unhappy state of things as they now exist. There may be something said in favour of this view, but where the argument fails is in confounding two things that are essentially different. As I understand the terms forestry and sylviculture, although they may have some points in common, they are distinct pursuits, undertaken with different objects. Forestry, although it has to do with the planting and management of trees, only deals with the subject as a means to an end—viz., to provide cover. Sylviculture, likewise, has to do with trees, but for the sake of the trees themselves. Here, therefore, lies the difference that seems to perplex your correspondent. He says, "We have a forestry trained to giving to the sportsman his sport, to the game bird its shelter, and the rabbit a place to borrow in and barks to gnaw at." All this is very true, as it is the legitimate aim of forestry to produce these results, and which within their proper limits are much to be desired. When, however, we come to sylviculture, we are on a different ground, as the culture or trees is the prime object of the science.

I am aware that the two terms are commonly used indiscriminately, and in most cases the one is as applicable as the other; but when looked at in the way in which your correspondent views matters, it is important that the true meaning of the terms should be properly understood.

D.

MEASURING HOME-GROWN TIMBER.

AS this is a somewhat vexed question, we approach it with diffidence. In the hope, however, of helping those of our readers who are not practically acquainted with it, we will endeavour to elucidate the subject in as simple a way as possible. We commence by detailing the general practice of finding contents by what is known as Hoppus's system. In the first place, it may be necessary to say a word as to the timber measurer's equipment. This consists of a book ruled with horizontal lines, and divided into four vertical columns; a timber scribe, or a pot of white paint; a tape—66 feet is a convenient length, as it may then occasionally come in useful for land measuring; a 2-foot rule, and a string. If the operator has no assistant, a 5-foot rod will answer well in place of the tape, it being more easily manipulated. These matters satisfactorily arranged, arrived at the work, first mark a number on the butt of the tree, and enter a like number in the first column of the book. This will serve to identify the tree wherever it may be ultimately drawn. When this is done, ascertain whether the trunk, or bole, is of tolerably uniform growth,

from the butt to the place where it is topped, i.e., whether it gradually tapers over the whole length. If this is found to be the case, set down the entire length in the second column of your book, opposite the number already entered. Then pass your girth line (which must have a knot tied near one end) underneath the tree, at the point equidistant from each end, taking care that it is free of small branches, Ivy, &c., and that it fits closely to the bark. Bring the line together, and hold with your thumb-nail the place where it touches the knot. Then release the knot end, and draw the string from underneath the tree. Fold it twice, so as to get a quarter of the circumference, and measure the result off the rule in inches. This will be the quarter girth, which set down in the third column, on the same horizontal line as the number and length. Your work in the field, so far as this tree is concerned, is now finished. It, however, often happens, especially with large timber, that the size is by no means uniform. Take, for example, a tree 30 feet in length. This may run clean and of regular size for perhaps 10 feet; at this height it would throw out a large branch, and reduce the size of the remaining part very considerably for, say, another 10 feet, where it again branches, and leaves the last 10 feet of a relatively small size. In taking a tree of this kind at one length, it would be almost impossible to obtain the correct measurement. The difficulty is obviated thus: set down the length and girth of the first 10 feet of it, as directed in taking a tree at one length. Then take the second and third parts, giving the respective lengths and girths in the same vertical columns as in the first dimensions, and directly underneath them. The aggregate of the three items will give the contents. The mode of working into cubic feet we will leave for another paper.

Collecting and drying Larch cones.—

As the Larch produces and ripens its cones in one season, and as the mode of collecting the seed of the Larch is important, a word with the seed collector may be seasonable. He should use careful discrimination in the selection of his trees, only choosing such as are in perfect health, free from disease, and the cones fully developed and of full size, as these contain plump full seeds, which is a matter of great importance in the way of securing a strong healthy progeny. The cones, however, should be allowed to remain on the trees until they are thoroughly ripened, and after being subjected to a dry keen frost; they may then be collected with safety at the first favourable opportunity, choosing fine dry weather for the purpose. The seeds are rather difficult to extract, and different methods are practised for that purpose, but perhaps no better plan can be adopted than that of spreading the cones in a layer about 6 inches thick upon a wooden kiln, and by raising the temperature to about 100° Fahr., and turning them occasionally. They will be ready for removal in about ten or twelve hours, when they should be placed on a stone causeway and beat with a flail to extract the seeds. The vitality of the seed would not be destroyed at a much higher temperature, but it is always the safest and best plan to allow the cones plenty of time to dry upon the kiln, and not raise the temperature too high.—J. B. WEBSTER.

Unoccupied land.—An American contemporary says there is a great portion of the world which is not yet finished and fenced in. America has, it says, 710,688,000 acres of available land not yet surveyed, but open to settlement, and 734,961,000 acres surveyed, but not taken up. This is exclusive of Alaska, which is a domain of great extent. England has more virgin land than this. In the Australian colonies there are 2,000,000,000 acres of land never yet touched; in the Cape Colony 52,000,000 acres ready for settlement; in Natal, Ceylon, and the West Indies 14,500,000 acres, and in Canada probably something like 1,500,000,000 acres of unoccupied fertile land—truly a vast inheritance belonging to the English-speaking people of the world. Enough to give a farm of 150 acres to 156,625,000 persons

FOREST MACHINERY.

MANUFACTURE OF SAWS.

A SPECIAL quality of cracible steel is made for the manufacture of saws. The chief characteristic of the steel is its exceeding toughness. It is furnished to the saw manufacturer in plates gauged to the required thickness. By far the largest amount of work is the manufacture of circular saws. The first process in making these circular saws is the drilling of the hole for the shafting in the centre of the saw. The teeth are then cut by means of dies under heavy pressure. It is next tempered by being placed in an oven and raised to the proper degree of heat, sometimes to a white heat. It is then put into a bath (oil being the principal liquid), where it is boiled and hardened, and from whence it comes as hard as glass. It is then put into an oven and drawn down to any degree of temper, the operator judging of the hardness by the colour of the metal.

The next process is straightening, as the plates are frequently somewhat warped or bent. The most approved way of straightening is by means of an anvil and hammer when the plates are cold. This method is generally adopted for first-class saws. Some manufacturers straighten saws by subjecting them when hot to hydraulic pressure. This also draws the temper, and the tempering process before described is not required. The results of tempering by hydraulic pressure are not so sure and satisfactory as by the other method. The cheaper grades of circular saws and the jobbing saws generally are tempered in this manner. The saws are next ground to a uniform thickness.

The new plates always vary in this particular, but after grinding the largest of them will not show a variation of more than a sixtieth part of an inch in any portion of the plate. The saws are then hung on a spindle and are ground from the centre to the edge and back by passing between two grindstones whose edges run together. The saws are not always ground parallel in thickness, as they are sometimes made thinner on the edge, whilst at others they are ground concave or thinner in the centre. These latter are for cabinet work, and can be used without setting. The grindstones are generally very mild or soft and have a fine grit. The next process is polishing. The saw is passed at an angle over a bed of lead impregnated with emery, and in this way the polishing is accomplished. When a fine polish is required cork is used in place of the lead. The teeth are polished separately by blocks covered with emery specially prepared for the purpose. The saw is again hung on the spindle and tried to see if it runs true. With saws used for cutting with the grain of the wood the next process is that of spreading the teeth, which is done by a machine specially prepared for the purpose. These teeth are splitting teeth, and when spread cut like a chisel, which is what is required. This teeth-spreading is considered preferable to the old way of setting or bending the teeth to right and left alternately, as it is supposed to leave the timber in a better shape. A saw which is intended to cut across the grain of the wood has a needle-pointed or V-shaped tooth. After the teeth are thus spread or set the saw is ready for use. The method of manufacturing cross-cut and hand-saws of every description is materially the same, varying only according to the different form of the saw. Circular saws for general bench work range from about 12 inches or 14 inches up to 60 inches to 66 inches, and vary in thickness according to the size and the work they are intended to perform. B. C. B.

THE WOOD OF BRITISH TREES.

THE ASH.

NEXT to the Oak, the most important of all hardwooded trees, on account of its timber, is the Ash. Ash is a common wood in Britain, and for many purposes there is none more valuable. Like the Oak, the situation of its place of growth has a

great effect on its strength and durability. Clayey soils have been found to answer well for its propagation, especially when they have a northern exposure. The proper time to cut is in the winter, when the sap is lodged in the root. In a sound Ash tree the quality is nearly uniform throughout its thickness. It is a wood that possesses great elasticity, and will bear a considerable cross strain. It is, however, very easily split in a longitudinal direction. This for some purposes may be considered a defect, but for others it is a valuable property. Unlike most other trees, the quicker it grows and the sooner it is cut down after it attains a useful size, the better is its timber. Its quality is not nearly so good when it grows on poor unsuitable soils, as it then loses much of its elasticity and becomes short and brittle. The Ash has been appropriately termed the husbandman's tree, as there is no timber so well adapted for agricultural implements of every description. In coach-making it is used for shafts, and it is also very suitable for all long handles, oars, &c. In the form of suckers and young shoots it makes excellent hoops. Good Ash will always find a ready sale.

THE ELM.

The Elm is another strong species of wood, and also very tough in its texture. It is a tree of very common occurrence, and is mostly found in hedge-rows and round the skirts of plantations. It is often used as a substitute for Ash in making agricultural implements, and is well adapted for purposes where strength and toughness are of paramount importance. It makes very strong furniture, and may sometimes be found of such a fine grain, that when varnished it looks wonderfully well. It is not much used for building, but is extensively employed in machinery and coach-making. It also lasts well under water and resists friction. It was formerly for this reason keenly sought after for the keels of ships. It makes the best naves for wheels, and is generally in demand for that purpose. This fact is a proof of the remarkable cohesion of its grain, as it admits without splitting of the spokes of the wheel being hard driven into it—a very trying operation when it is considered that the naves are generally only about a foot in diameter, and have also to be bored in the centre. It is not nearly so liable to split from exposure to the sun as is the case with Ash. The tree generally grows to the greatest perfection on a rich loamy soil.

THE BEECH.

Beech is a wood which, from its hardness, closeness, and strength of grain, holds a prominent place amongst the trees of the forest. It is a wood, however, that when exposed to alternate dryness and moisture soon decays, but when kept entirely under water, or used for purposes where it is continually dry, it lasts well. It is not adapted for heavy cross strains, but is suitable for piles under water and all similar purposes. It is also a good wood for the turner, and is used in machinery and extensively for chair-making. When in full foliage it is remarkable for its close shade and cooling qualities. The branches, and such parts of the tree as cannot be more usefully employed, will make capital firewood.

THE SWEET (SPANISH) CHESTNUT.

This tree should have been placed next in order to the Oak, which it strongly resembles in its properties, and would, in fact, come next to it in importance, but for the fact that it is very sparingly cultivated in this country. Of its durability, the most undoubted proofs exist, as many of the oldest mansions in England have been built of it. Possessing all the strength, durability, and toughness of the Oak, the Chestnut has the advantage over it that it has a finer colour. As to some there may be a difficulty in distinguishing the two species in old buildings, it may be well to remark that when a nail or bolt has been driven into Oak before it was dry, a black stain will be found round its head. This is not found to be the case with the Chestnut.

THE SYCAMORE.

The wood of the Sycamore is, like the Beech, close grained, but much more beautiful. The backs of violins are generally made of this wood, and when well finished they furnish a good example of the purposes to which it is suited. It contains but few knots or anything to injure the edge of tools. It is, therefore, easily worked, and is much used for cutting boards. It warps or shrinks very little, and is on that account well fitted for making saddle-trees, founders' patterns, &c. Not being liable to crack, it is much superior to Beech for turning into wooden vessels, and cabinet-makers also use it for furniture.

THE LIME.

The Lime, though not a strong timber, is remarkably close in the grain. Its colour is white without any variation of shade. It does not decay so quickly as the Beech and Sycamore, and is not liable to be attacked by insects. It cuts clean and easily with the graving tool; hence it is extensively employed for ornamental carving. It is used by pianoforte makers for sounding boards and by cabinet-makers for a variety of purposes. It is carved into toys and turned into domestic utensils of various kinds. The wood is said to make excellent charcoal for gunpowder. The leaves of the Lime tree were used by the Romans for feeding cattle, and are still used in some parts of the Continent. This tree has been recommended as preferable to the Elm for sheltering gardens and orchards, as the roots do not, like the Elm, spread out and impoverish all around them. It is a tree that never grows to a large size on a dry soil.

THE BIRCH.

This is a very common and well-known wood, of a white colour, shaded with red. The quality is nearly the same across the tree and is very tough, but not very durable when grown in temperate climates. When, however, it is grown in the extreme north, it will last a long time. The grain is of medium texture and is easily worked when green, but it chips under the tool when dry. Worms are very hurtful to it, but it is a wood often used under water. It attains its maturity in about fifty years, and seldom remains in health to a hundred.

THE POPLAR AND WILLOW.

The wood of the Poplar is soft, light, and generally white or a pale yellow, and is a tree that thrives well on wet ground. There is a difference of opinion as to which variety is the most durable, but the weight of evidence appears to be in favour of the Abels or white Poplar. It is a wood well adapted for making packing-cases, and for many other purposes where lightness and cheapness are of more importance than durability. The Willow, of which the Poplar is a species, though soft, is very tough in proportion to its gravity. It lasts a long time under water, and charcoal made of it is considered to be superior to every other kind for the manufacture of gunpowder. There is almost an infinite variety of species, but some are of much greater value than others.

THE HORSE CHESTNUT, LABURNUM, AND HOLLY.

These three woods are the last to which we shall now refer. The Horse Chestnut is well known, and is very handsome as a growing tree, but it is of very little use when felled. Its wood is soft and spongy, and only fit for the commonest uses, such as packing-case making, where the question of durability is not taken into account. The Laburnum furnishes timber of various application and of more value. It is extremely hard, and by soaking in lime water it is said it may be made like the darkest mahogany, or even as black as ebony. It is used in chair and other furniture-making, and to some extent in machinery and block-making. It is also a good wood for turning and the handles of tools. The Holly, a tree but little cultivated, furnishes a very hard and compact timber. It requires to be well dried before it is used, otherwise it is liable to warp. Its

natural colour is white, but it may be stained to any required hue, as it readily takes and retains almost any stain. It may thus be made to imitate ebony, or any of the harder ornamental imported woods. It is used by cabinet-makers, turners, and engravers. D. J. Y.

A PROFITABLE TIMBER TREE.

THE wild Black Cherry (*Prunus serotina*) is a healthy tree, a rapid grower, and timber made from it brings as high a price in many markets as Black Walnut. It is a much more profitable tree to plant than the Black Walnut, as it can be grown closer, that is to say, many more trees can be grown to the acre. It is not so detrimental to other vegetation as the Black Walnut, which will always be found to have ample room if of large size, having made everything else "stand from under," while the Cherry may be found close to other trees without apparently harming them. Another great advantage the Cherry has over the Black Walnut is that it is ripe for the cabinet-maker in less than half the time required for the Walnut and to this may be added the advantage that it is easier grown, or, rather, more cheaply grown, for either of them are as easily grown as Peas or Beans. One bushel of Cherry seeds will grow as many seedlings as twenty-five bushels of Walnuts, and the Cherry is more easily dug up and transplanted.

In all this I would not be understood as saying one word against the Black Walnut as a timber tree. It is a very valuable tree, as it is well known to everybody, but everybody does not use common sense enough to know (as they might if they only stopped to think) that Black Walnut trees will not all make saw logs when planted 2 feet or 3 feet apart. The common-sense way would be to plant them at least 20 feet apart, and fill in with cheap, rapid-growing trees that could be cut out in time leaving the whole space to the Walnuts, for it should be borne in mind that the Black Walnut sapling is about as little use for any purpose as any common sapling. The Cherry and Walnut stand about equal as being healthy trees, and both affected about alike by the tent caterpillar, which does not appear to injure either of them when the trees are grown in quantity.

The Black Cherry is found from the Canadian lower provinces to Florida, and from the seaboard to Kansas and Nebraska. The Black Walnut has about the same range, both apparently "running out" in Northern Wisconsin and Minnesota. It will make a rapid growth on much poorer land than will the Black Walnut. It grows well on a light, sandy, gravelly lawn, and grows best on dry land. When the land is naturally moist the Black Walnut will flourish and should be preferred.—R. DOUGLAS, in *The Press*.

NAILING FENCE RAILS TO TREES.

I HAVE not seen the barbarous practice of driving nails into growing trees commented upon and condemned in your paper. I therefore would record my protest against this thoughtless way of spoiling good timber. I know there are many gentlemen who will not tolerate it for a moment, but others seem to treat the matter with indifference. This should not be, as I have often seen pounds lost in waste of wood and damage to saws, and loss of time in extracting the nails before sawing could again be proceeded with. A day or two since my attention was directed to a case of this kind where a considerable portion of an otherwise sound and good tree was rendered useless by a quantity of large nails that had evidently been driven into it many years ago. In the course of my business on estates I have often remonstrated with men when mending gaps in fences in this way. Their reply often is that it will not fall to their lot to use the timber. This is very likely true; but if the workmen are unconcerned, it is necessary that someone should see to it. What has been already done unfortunately cannot be undone; but if my directing

attention to the subject should have the effect of arousing those who are possessed of timbered lands to the necessity of being watchful over men who are employed in mending fences, my object will be gained. It only takes a few moments longer to drive in a stake; whereas if the nail is driven into the tree, it may cause the loss of several feet of good timber, besides damage to tools. J.

THE EVILS OF TRANSPLANTING.

I AM glad to see your correspondent "S." (p. 431) strike out against transplanting forest trees. Were not all natural forests raised from seeds sown on the spot where the trees grew to maturity? It must be a bold advocate of transplanting who can deny that these grand old trees are infinitely superior to those manipulated by the hand of man. Common sense, indeed, must be against this system of transplanting. When trees are removed from the seed bed, whatever care may be taken, the tap roots, as well as many of the side roots and fibres, must be injured and partially destroyed, and subsequent removals only tend to aggravate the evil. Some, too, are not content with these unavoidable injuries to the roots, but still further damage them by unnecessary cuttings.

A tree that has been served in this manner, a gentleman once remarked, is reduced to something of the nature of a cutting, which, it is well known, seldom grows to the size of a tree that is raised from seed. The preservation entire of the tap root projected from the seed by Nature, with all its lateral fibres, is the surest means of sustaining an undiminished flow of the juices of the plant. The preservation and development of these juices is all essential to the real progress of the tree. If the flow of this vital fluid is unnaturally checked by periodical removals, the result must be a diminution of health and vigour. I say, therefore, whenever possible plant the seeds when the trees are intended to grow.

The Banks, Lyncham, Wilts.

D. J. YEO.

Continental forests.—There are about 34,000,000 acres of forest in Germany, Prussia contributing 20,000,000 acres. The estimated value is £500,000,000, and they bring in an annual revenue of £10,000,000. The State forests are taken great care of in all parts of Germany; in Prussia alone £100,000 a year is spent in replanting, yet the imports exceed the exports by 2,000,000 tons. The Oak and the Beech are the kinds of trees which do best in Denmark, but the timber trade in that country is very small.—D.

Live telegraph poles.—This idea (p. 434) is not a new one so far as regards fixing the insulators to living trees, but I have never before seen the suggestion brought forward of planting trees for the especial purpose of wire supports. The time occupied in getting the trees to maturity renders its adoption for present purposes impossible, but it has often occurred to me that existing trees may sometimes be used for carrying the insulators where only one or two wires are used. I believe that living trees have been made to do duty abroad, but I have never seen wires attached to them in England. A special swinging insulator is used to counteract the movement caused to the trees by the action of the wind.—D. J. Y.

New pruning saw.—Mr. P. F. Keir describes (p. 433) a new kind of pruning saw, the chief feature in which is that the teeth are so set that in working with it you pull towards yourself in making the cut instead of pushing away—the usual method. In claiming this as a novelty he must have forgotten the old and often quoted proverb, that "There is nothing new under the sun." In 1876 I was watching the Japanese erecting their buildings in the grounds of the Centennial Exhibition at Philadelphia and noticed that when sawing they pulled the saw towards themselves, and that the teeth of the saws were set in the manner described by Mr. Keir. A few weeks ago at the Japanese village, now burnt

down, I noticed a similar saw being used. The Japanese are a conservative nation, and it would be interesting to know whether their form of saw is older than ours.—G. S. S.

Selection of timber for felling.—With due deference to "Wood Agent's" experience (p. 432), I still fail to see where my remarks are misleading. I certainly should not have made the statement I did had I not been able to quote from facts that have come under my personal observation; and although "facts are stubborn things," they cannot be misleading. Whether it is the "estate carpenter" or any other workman, so long as he has no knowledge of the work he has allotted to him to perform, the result is the same. I take it that the object of your paper is to bring about a more satisfactory state of things with regard to our timber supply, so if abuses exist we must not shrink from bringing them to the light, although in doing so we run the risk of treading on some people's corns.—D. J. Y.

Burning charcoal in Moravia.—In the eastern parts of Moravia are extensive Pine woods which are fast disappearing, as the trees are felled and their roots grubbed for burning, and the soil converted into arable land. Splitting is paid at the rate of 50 to 75 kreutzers for stumps, 75 kreutzers for trunks, and 20 kreutzers for lopping per metre; the sorting of wood is paid for by the taglohn. The splintwood is chiefly used in burning bricks; the logs are burnt in charcoal "meilers." These "meilers" are constructed below ground of masonry, with channels leading to pits for the reception of the fluid products of combustion. About 14 to 16 metres of Pine logs and 2 metres of splintwood, besides the smaller branches and cones which are laid in the air passages to assist in kindling, are consumed at each burning.

Loading timber.—Referring to the remarks of "Yorkshireman" (p. 434), I may add that the tripod arrangement for loading is not used here. The only method employed for loading on the top of the carriage is the one described by the contributor of your article on the subject. The "skids," as the saplings used for the purpose are termed, are some 10 feet or 12 feet long. A notch is cut in the end that is placed on the wheel, the other end resting on the ground, the carriage being parallel to the tree and at a sufficient distance from it to allow the end of the skid to drop on the ground, when one of the saplings are placed on the front and hind wheel respectively; a chain is lashed round the felloe of the wheel and also round the end of the skid resting on it. Each of these chains are then passed underneath the tree close to the lower ends of the skids, then back over the tree, and united at a point between and equi-distant from the pillars of the carriage. To this chain the horses are attached, and the tree drawn up the inclined plane formed by the saplings, as described in the article.—WILTS.

Planting Oaks for profit.—The slow growth of the Oak is by many alleged as a reason why plantations of it will prove less profitable than those of other trees. In answer to this it may be stated, first, that as the Oak is almost in every case planted among nurse trees, which are not cut down till they are of some value as poles or timber, there can hardly be said to be such a thing as a young Oak plantation; and, secondly, that though the Oak, in ordinary circumstances, is of a slow growth while young, yet, after the trunk has attained a diameter of 6 inches or 8 inches, the Oak grows as fast as almost any other hard-wooded tree, and certainly faster than some—such as the Beech and the Hornbeam. The value of the timber of the Oak, even when of small size, the value of the bark, and, as Matthew observes, the slight comparative injury of its shade to coppice-wood, hedge-plants, grass, corn, or other crops, "should give a preference to this tree for planting, wherever the climate and soil are suitable, over every other kind, with the exception of the Larch and Willow, which, in particular soils, will pay better."

No. 705. SATURDAY, May 23, 1885. Vol. XXVII.

"This is an Art
Which does mend Nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

NOTES ON RECENT NUMBERS.

Nymphæas (p. 439).—With the beautiful white Water Lily of our English ponds no one will, I think, find fault. Of most of the others one can only say as a rule they are not sufficiently hardy, or are too scarce. Not so, however, *Nuphar lutea*, which in some places is both hardy and common enough to prove itself as much a nuisance in the water as the yellow Buttercup is on land. In some parts of the country the draining done of late years has brought down into the ponds a large quantity of mud, which seems to have been highly favourable to the development of this Lily. What used to be an open space of about four acres of water in front of our windows is now for several months during summer and autumn nothing but a mass of leaves, so thick that in places a boat cannot be made to move through them. I spent a good many hours last year, when the water was low, trying to clear a space, and, by dint of a good deal of persevering, succeeded to a small extent. A variety of contrivances were requisitioned, such as rakes, prongs, boes, &c., but what proved most effective was the blade of a scythe fastened to the end of a long pole with which the growing points of the root-stock were cut off. The seed vessels or brandy bottles, as they are usually called, were a tremendous job to collect in order to avoid scattering the seed, which is very plentiful and seems to grow very freely. The root-stocks were sometimes as much as 12 feet or 14 feet long, branching on each side, and of a good thickness. A neighbour who asked for some roots to transplant was promised a waggon-load if he would only take them up and carry them away, but when he saw what they could be in a pond he wisely forebore to disturb them! I hope this may serve as a warning to some others as well.

The Orchid Exhibition (p. 455).—One could not help feeling some regret in looking over the various masses of bloom at the way in which the new-fashioned Cattleyas are ousting the more old-fashioned Dendrobiums. If I remember rightly, such sorts as *D. Paxtoni moschatum*, *pulchellum*, *crystallinum*, *philippinense*, and others were not represented at all; and, though late in the season for many sorts, they are accommodating as to time of flowering, so that in May there are usually a few stragglers left; moreover, one could not help remarking of some of the collections that everything seemed to have been brought which happened to be in bloom, and neither "stragglers" nor poor specimens were left behind. That the Dendrobiums flower during the dull months of the year is, of course, an additional reason for their not being discarded. Few Cattleyas would put up with one-half the unkind treatment that is often dealt out to *D. nobile*, and their culture to the inexperienced hand is attended with more risks and difficulty. What struck me as one of the greatest bits of beauty in the show was a piece of *Falconeri* fastened to a square block and well flowered—not that I mean to recommend it to the tender mercies of a beginner, but it had such a delicate and refined appearance, so entirely wanting in the usual stiff and sticky look of the usual run of the more showy Cattleyas. The same story of the neglect of the old sorts for the new would be told by a visit to many gardens, and a whole houseful of *Trianae*, *Mendeli*, or *Mossiae* in bloom at the same time is a sight of which people will soon get tired when the novelty of it has worn off.

Driving nails into growing trees is rightly called a barbarous practice, only to be surpassed by the still worse habit of twisting wire round the stems and branches to keep them

back into shape or when newly planted to hold them steady to stumps in the ground. If anything must be used, tar cord surely is better, but even that sometimes will cut into the bark of a rapidly swelling tree. It is not only in forming fancy plantations round a newly-built house that the young trees, &c., are established by means of wire and left to throttle themselves, but it is often freely used to tie back boughs or bushes overhanging walks, or which have straggled away from a wall. No one thinks of loosening the wire afterwards; probably no one knows it is there till the mischief is almost past repair. I know a garden in which all the tops of some fine young Italian Cedars died off without any apparent cause; the wire used to steady them when planted had been broken off as high as a man could reach without being untwisted from the stems. Anyone who has witnessed the "pleasure" of two men sawing up a tree when they come upon some nails that have been driven into it will have a horror of the practice for the future.

Sussex.

C. R. S. D.

THE LATE ORCHID CONFERENCE.

The horticultural world heard so much of the Orchid Conference, that the visitor naturally expected a good deal. As regards the plants shown, there is no doubt that variety and novelty were as great as could be expected, and perhaps the collection was the greatest hitherto got together, but the general effect was profoundly disappointing. Many a time at a great show, in Regent's Park especially and at South Kensington, the beauty of Orchids has been shown to much better advantage than on this occasion. The defect was in part, perhaps, attributable to the building, and certainly in a great part owing to the arrangement. There was a deficiency of finely-grown classes, such as one has been accustomed to see at the best shows. There was, too, a great want of taste in arrangement that marred this show. On straight benches, seen at first from the ends, with plants packed closely together and jammed, for the most part, as tight as could be, it was perfectly impossible they could look well. The effect of the same system is seen at every show. That plants so distinguished for grace and beauty as Orchids are should be spoilt by such treatment is, perhaps, a more serious case than when people crowd all their pretty Daffodils into ugly blacking-bottles. It was impossible for anybody to get much idea of the beauty of the plants, because the eye was confused by a multiplicity of colour and form, and only here and there did some tasteful exhibitor show one family or group in such a way that the eye was charmed, and an impression worth remembering was left. It is a curious fact that many people who love plants for their own sakes have no notion of any skill in their arrangement. This is so very general in the case of lovers of plants of all kinds, both indoor and outdoor, that it may perhaps only signify an early and primitive stage of delight in plants in which the value of colour, and form, and grace in any broad way is hidden from us. The very first and simplest law of pictorial art, and all other arts not so important, is that too many objects confuse the view. All great pictures, or all pictures of any merit, must keep near this central fact, and that its non-observance tends to spoil pictures otherwise meritorious may be frequently seen. It is quite as true in the garden as elsewhere, and the results of ignorance of the law may be seen at every flower show, and never was more conspicuous than in the late Orchid show at Kensington. Like a good many other things arranged by the clique that hovers about the Royal Horticultural Society, the conference was not managed in a broad way. Some of the leading growers in the country, amateurs and nurserymen, were not consulted about it at all. Mr. E. S. Williams, who certainly has some claim to be heard on Orchids, was not even asked to belong to the committee till the last moment. Then he declined. The conference cannot certainly be termed a success. After Mr. O'Brien's paper

it collapsed abruptly, without even waiting to thank the author. There is a good deal of affectation about the reading of papers at these conferences. Reading the ordinary and orthodox mixtures of peat, loam, and sand is not a very lively phase of gardening literature, but boring an unhappy audience with the same sort of details is too bad! The elucidation of any one subject of great importance to gardens generally is perhaps worthy of such a meeting, and it should be treated of by some one who has given much attention to the subject. That and a good free discussion relating to it is as much as any meeting will bear without overstrain—especially if there be plants near to attract the audience. V.

NOTES OF THE WEEK.

Tom Thumb Alyssum.—Messrs. Backhouse have in flower an exceedingly dwarf variety of *Alyssum saxatile* called Tom Thumb, which is likely to prove useful to those who lay out their spring gardens in geometrical style, and even for the rock garden or border it will prove a gain provided it is hardy; it is as free growing and as floriferous as the original.

Irish Anemones.—We send you a box of double *Anemones* picked from plants that have been blooming more or less since last October. We have been able to gather flowers during the whole of the winter. The beds at present are one mass of mixed colours.—RODGER, McCLELLAND, & CO., *Nerry.*

* * A beautiful gathering of blooms, large and extremely varied in colour.—ED.

Anemone coronaria splendens.—Under this name Messrs. Collins and Gabriel send us flowers of really a grand double-flowered Crown Anemone. Its flowers are above the ordinary size, and the outer row of broad petals encloses a rosette of narrow petals, the whole being of a most vivid scarlet, or rather vermillion. These flowers were cut from plants growing in the open border.

Muscari compactum.—Among the later flowering Grape Hyacinths this is one of the finest, and one which is exceedingly effective when grown in masses in the mixed border. The flower-spikes are very dense and of a blue-black almost as dark as that of *M. neglectum*. Those who are fond of these hardy bulbs should make a note of compactum. A bunch of flowers of it from the York Nurseries shows well what a fine kind it is.

Primula rosea grandiflora.—There is a good deal of difference in the size of the flowers of this fine variety, blooms of which have reached us from the York Nurseries. They are quite a third larger than ordinary, and to us the colour seems brighter, but without actual comparison we cannot be certain on this point. Mr. Potter, who sends it, says that it is dwarfer than the type. It seems to be identically the same variety as that sent to us a short time since by Herr Max Leichtlin.

Erythronium giganteum.—The true plant which should bear this name is by no means common at present in this country, but the name is often applied wrongly to *E. grandiflorum*, the primrose-yellow species which bears several flowers on a stem. The true giganteum, a native of Washington Territory and Vancouver's Island, is the largest flowered plant in the genus; its blooms measure about 4 inches across; the sepals are reflexed, turban shaped, and pure white, with a distinct ring at the base. Its stems bear but one flower or rarely two, and the foliage is less mottled than that of *grandiflorum*. It is very handsome, and being hardy if grown in a nook sheltered from cold winds, it will prove most valuable. Like the rest of the American Dog's-tooth Violets, it succeeds best in a moist peaty soil. Messrs. Backhouse, with whom it is now in flower, send us flowers of it together with a gathering of those of other bulbous plants.

Hardy Cypripediums.—Dr. Wallace sends from Colchester flowers of *Cypripedium parvi-*

florum and pubescens gathered from a bed of plants imported as *C. parviflorum*. There is really so little structural difference between these so-called species, that they may be but varieties of one species. Both are pretty, but probably most people would prefer *parviflorum* on account of its rich reddish brown sepals, which harmonise so beautifully with the bright yellow slipper.

Laurustinus fruiting.—At the last meeting of the scientific committee at South Kensington the Rev. G. Henslow showed sprays of *Laurustinus* bearing fruits of last year. They were borne by a single shrub growing in a spot overhung by a *Deodara*, and otherwise shaded. Bushes well exposed bore none. The fruit is oval, of a bright metallic blue lustre. He remarked upon the curiously offensive odour given off by the *Laurustinus* when dying, especially when wet.

Ixiolirion Ledebourii.—Some fine flower-spikes of this beautiful bulbous plant have been sent to us by Colonel Stuart-Wortley, who says: "I consider this *Ixiolirion* one of the handsomest hardy bulbs of early summer." It is certainly a valuable plant. Its slender flower-stems, about 2 feet high, are terminated by a cluster of some half dozen deep violet-coloured flowers lined with a deeper hue. With this plant Colonel Wortley sends blooms of the bright crimson *Tulipa fulgens* and of the Poet's and Chalice Daffodils.

Clianthus out-of-doors.—Some flower-laden sprays of *Clianthus puniceus*, from plants growing against an open-air wall, have been sent to us during the week by Mr. Woodall, of St. Nicholas House, Scarborough. They show what a favourable climate this watering-place possesses for plants of a tender character. The sprays are quite as fine as one could cut from a greenhouse about London, and the foliage is unusually healthy. It is a great advantage to be able to bedeck one's walls with such beautiful shrubs as this.

Orchis mascula.—I send you a spike of this *Orchis*, being the third in succession that has been annually cut from the same plant and sent to THE GARDEN office. This surely proves that cutting the flowers of some *Orchids* at least is not injurious, but really beneficial, for you must admit that the present spike is the finest that has yet been sent. It must, however, be borne in mind that there are several ways of cutting *Orchid* flowers so that permanent injury may not result.—A. D. WEBSTER, *Llandegai*.

* * One of the largest and deepest-coloured spikes of this *Orchis* we have seen.—ED.

Cortusa pubens.—This pretty *Primula*-like plant is generally considered to be a peat-lover; in fact, it is thought it will not thrive except in a peaty soil. Messrs. Backhouse, however, have proved that not only is peat not essential to it, but that the plant thrives better in calcareous loam than in any other soil. To confirm their experience they send us a plant, which, for vigorous growth and floriferousness, we have not seen surpassed. When well grown, this *Cortusa* is quite as fine as its congener, *C. Matthioli*, and a most desirable plant it is for either a rock garden or a choice border.

May flowers at Westonbirt.—A friend tells us that he has just had the pleasure of visiting Mr. Holford's beautiful garden at Westonbirt, so well known for the treasures it contains and its high state of keeping. He tells us that a week or so ago the grounds were lit up in various parts by broad masses of *Gentiana acaulis* and *verna* placed in positions where their beauty could be most enjoyed. Other hardy plants are also grown here to perfection. The bothouses, too, never looked better, the collections of stove and greenhouse plants being extremely rich. The great feature recently has been *Amaryllis*, the collection of which is considered to be one of the best in private gardens. The *Rose* and *Pelargonium* houses are likewise remarkable.

Iris susiana.—A fine specimen of this is now in flower in one of the cool frames at Kew; it surpasses all others of the *Iris* family, not even excepting the latest additions to the German and

Kämpfer groups. There are four stems crowned with flowers over 6 inches broad. The markings are almost indescribable, and the lustre of the beard is magnificent. It is planted out in light, rich soil, and is roasted during the summer months, the lights being off, except in very severe weather, after the plants have begun to grow. Water is entirely withheld during the resting season, and only given gradually after they have started. Associated with this are three fine flowers of *Iris* (*Xiphion*) *tingitana*, a kind with handsome large lilac flowers, which contrast strikingly with those of the dark-coloured *susiana*; this has been subjected to the same treatment as *susiana*, and it seems to suit it in every respect.

The double *Oaltha* is one of the showiest plants one can have in bloom in a bog garden, or indeed in any moist border in spring. The best variety is that known as *C. palustris monstrosa* fl. pl. Why it is called *monstrosa* is not clear, for it does not seem more monstrous than any other double flower. It is certainly a valuable plant, a vigorous grower, very floriferous, and dwarf and compact. It yields a constant succession of bloom for some weeks during April and May, and when grown in masses, a showier plant for moist spots could not easily be named. Anyone having in their grounds bare banks of a lake or stream should by all means plant there a few scores of this *Caltha*. The golden glow which it gives at this season and earlier is quite captivating. Its flowers have been among the showiest that have been sent to us by Mr. Ware and Messrs. Backhouse, the blooms from the last-named nursery being very fine.

A new *Brodiaea* named *B. Howelli* was among the most interesting plants shown at the Regent's Park show on Wednesday last. It is quite a novelty in gardens, though known to botanists since 1879, having been discovered by Mr. Joseph Howell in Klickitat County, in Washington territory. It may be best compared with *B. lactea*, also known as *Hesperescordium lacteum*, but it is altogether a larger plant. The stems are about 2 feet high, slender, and carry an umbel of about a dozen flowers. These are nearly an inch long, and have funnel-shaped tubes and spreading sepals. They are white when fully expanded; a bar of bright purple runs through each sepal, and these stripes are broader and deeper in the bud, but fade on the expansion of the flower. It is a delicately pretty plant and one of great interest to bulb lovers. It is presumably as hardy in this country as other plants from the same region.

Large golden Fritillary.—We have small yellow *Fritillaries* besides a large Crown Imperial, but none to compare with Moggridge's handsome variety with which Messrs. Backhouse enriched our gardens a few years ago. A gathering of fine flowers of it from the York Nurseries reminds us of its beauty and of its value as a garden plant. The flowers are so refined in form and so pleasing in colour, that we look upon it as one of the most beautiful of all hardy bulbs. The colour of the large drooping bells is a clear yellow, chequered and speckled with reddish brown. It grows from 6 inches to 9 inches high, so that it is suitable for association with the choicest alpine and bulbs. Those unacquainted with this plant may find a faithful illustration of it in Vol. XVIII. of THE GARDEN. *F. Moggridgei* is a companion plant to *F. Burnati*, with large vinous purple flowers, also an introduction of Messrs. Backhouse. These two plants are botanically regarded as varieties of *F. delphinensis*, though as garden plants they are abundantly distinct.

Ghent Horticultural Society.—At the last meeting of this society the following plants were submitted to the committee and certificated: *Vriestia hieroglyphica*, from the Compagnie Continentale d'Horticulture; *Lælia purpurata* var., from M. Aug. Van Geert, père; *Lælia purpurata alba*, *Alocasia imperialis*, *Gymnogramma schizophylla* var. *gloriosa*, and *Cattleya nobilior*, from the Compagnie Continentale d'Horticulture. Cultural certificates for *Phyllotænum Lindenii*, from M. Dallé, of Paris, and *Schismatoglottis marmo-*

rata, from the Compagnie Continentale d'Horticulture. Honourable mention for novelty to *Phalenopsis speciosa*, from M. Ad. d'Haene; *Lælia purpurata nivea*, from the Compagnie Continentale d'Horticulture; *Azalea indica Arlequin*, from M. Paul Deschryver, and M. J. Vervaeke; *Lælia purpurata* var. *lineata*, from the Compagnie Continentale d'Horticulture; *Dendrobium chrysotoxum*, from M. Aug. Van Geert, père; *Chamaeladon metallica*, from the Compagnie Continentale d'Horticulture; *Vanda teres*, from M. Aug. Van Geert, père; and to *Cattleya Mendeli* var. *crispa*, from the Compagnie Continentale d'Horticulture. Honourable mention for good culture to *Alocasia Reginae*, from the Compagnie Continentale d'Horticulture.

Doronicum Harpur Crewe.—This in our opinion is by far the finest of all the *Doronicums*; indeed, it is one of the most beautiful yellow-flowered hardy composites with which we are acquainted. The flowers are fully a third larger than those of the ordinary border kinds. The florets are long and narrow and reflex gracefully, and, being bright yellow, are highly attractive. It will no doubt supersede the other kinds when better known, for as yet it is uncommon; we received fine flowers of it from Mr. Wolley Dod last year, and now Mr. Joseph Stevens sends us some from his Byfleet garden along with a number of other beautiful hardy border flowers. This *Doronicum* worthily perpetuates the name of one of our best gardeners—one whose loss we yet feel. It was he who first directed attention to it, and although it may be regarded as a true species, the name of Harpur Crewe should still be connected with it. It has been called *D. plantagineum excelsum*, but we think the popular name the most appropriate. An interesting account of it, together with a woodcut illustration, was given in our columns last December by Mr. Wolley Dod. During the week Mr. Wolley Dod has sent to us some fine blooms of *D. Harpur Crewe*, together with specimens of three other species, concerning which he gives an interesting note in another column.

An international congress will meet at Antwerp, from August 1 to 10 next, in the Botanic Gardens, and in conjunction with the universal exhibition. The programme will include matters connected with botany, horticulture, and horticultural commerce and industry. Preliminary reports on all these questions will be drawn up by competent men and sent to all these interested in such matters before the date of opening. Persons desirous of joining in the congress will thus be enabled to study the questions which will come up for discussion, and, no doubt, much practical good will be the result therefrom. The committee intend, if considered advisable, to publish a full report of the meeting at the next congress wherever held. The organising committee considers the moment opportune to call the attention of botanists and horticulturists to the work of exploration now being carried on in Central Africa. The decision of the conference at Berlin opens up a new world to European civilisation and activity, and it is hoped that science will be one of the first to take advantage of it. The flora of the Congo especially should be studied. We have already sent a commissioner there, and we hope to receive a report from him during the month of June, thus enabling us to publish it in time for the congress. Independently of the questions contained in the programme, any person present at the congress can submit other questions for discussion by notifying the same to the committee before June 1. Foreign botanists and horticulturists are earnestly invited to attend.

New public garden.—A new garden has just been laid out near the Houses of Parliament, and will be opened to the public to-day at noon by the Duke of Westminster.

Tree planting in London.—St. Giles's District Board of Works has resolved to spend £200 in planting Plane trees along a portion of the new street from New Oxford Street to Piccadilly.

Rosa Lusladas.—Rose growers will, we feel sure, learn with interest that the so-called new *Rosa Lusladas* has flowered in our establishment, and is nothing else than *Céline Forester*.—SCOTCH ET NOTTING, *Luxembourg, in Journal des Roses*.

A STREAMLET AT ENDSLEIGH.

THOSE who are fortunate enough to possess in their garden or grounds a brook or streamlet generally know how to take the best advantage of it so as to render it a charming feature in the landscape; but not always do we find a stream made so much of as that shown in our illustration, which represents one running through the garden at the Duke of Bedford's delightful summer residence at Endsleigh, in Devon. This tiny rill meanders cheerfully at the bottom of a deep dell, but here and there shows itself in more open parts. Nature has done so much to fringe its banks with Ferns and other native growth, that little is needed in the way of artificial planting, except, perhaps, giving here and there a touch of bright colour by planting showy-flowered water plants. One can imagine the variety of plant life that bedecks the banks of this rivulet in a county like Devon, and particularly in a spot where wealth is bestowed in rendering the garden beautiful in the highest sense of the word. A brookside such as that here illustrated may be made attractive and beautiful from early in spring till late in autumn by a proper selection of suitable hardy plants. First, it might be gay with *Calthas*, *Forget-me-nots*, and than these,

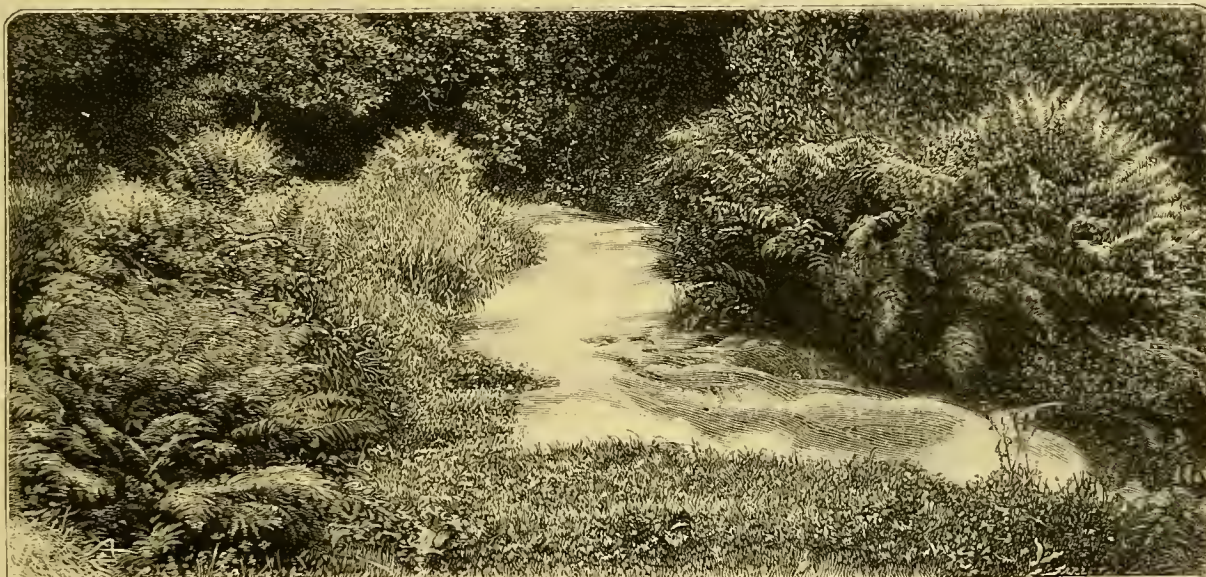
cleum), Giant Dock (*Rumex Hydrolapathum*), and *Feros*, such as the Royal Fern, a capital water plant. A long catalogue of plants might be made to choose from by those who set their minds upon having a beautiful brookside garden, but the foregoing may be at present sufficient.

FLOWER GARDEN.

DORONICUMS AND THEIR NAMES.

IT has long been notorious amongst those who have looked into the subject at all that the names by which *Doronicums* are sent out from nurseries are quite untrustworthy, and I am glad that a good observer like "K." has drawn attention to the fact on page 442. I have grown, at different times, I believe, all the *Doronicums* in cultivation, several of which I have sent to Kew to get their names verified. First, with regard to *Aronicum*—a name now disallowed in the "Genera Plantarum"—formerly referred to the dwarf alpine species of *Doronicum*. I cultivated two of these on rockeries for some years, *D. glaciale* and *D. scorpioides*, having obtained them from Froebel, of Zurich, in whose catalogue they still figure. These plants made no stem leaves, and the flower-stalks were

gineum never approaching to cordate, but distinctly Plantain-shaped. "K." says that *D. plantagineum* is not a common plant. I wish, however, it was a little less common, as it has long prevailed in nurseries and been sent out to gardens under the false name of *D. Clusii*. So prevalent has been this error, that my friend, the late Mr. Harpur Crewe, of Drayton-Beauchamp, had it for long so named in his garden. And this leads us to *D. plantagineum* var. *excelsum*. "K." is in error in saying that the origin of this is unknown; it first appeared as a seedling in the garden of Mr. Harpur Crewe about the year 1876. Three or four years after that I saw it in the nursery of Messrs. Smith, of Worcester, named *D. Clusii*, of which they offered it as an improved variety, the typical *D. plantagineum* being then grown in the same nursery as *D. Clusii*. Having traced the plant to Mr. H. Crewe's garden, I ascertained from him that it came up as a seedling—he supposed from *D. Clusii* (i.e., *D. plantagineum*) which grew near it. The vigour of growth and persistency of flowering of this variety is most remarkable. From one plant obtained in the year 1880 I have, I am sure, given away several wheelbarrow loads. It is always in flower in the open air by the end of February, and produces flowers



Streamlet in the grounds at Endsleigh, Devon (engraved from a photograph).

what more showy plants could be found; for distant effect nothing excels the *Calthas*, particularly the double-flowered sorts? Following these might be *Snowflakes* (*Leucojum*), several water-loving *Irises*, such as *Sibirica*, *Kämpferi*, *Ochroleuca*, *Pseudacorus*, and others, accompanied by *Lysimachias* with long wreaths of yellow flowers, the flowering Rush (*Batium*), Willow Herb (*Epilobium*), Purple Loosestrife (*Lythrum*) in various shades of purple, *Mimuluses*, and *Arrowheads*, double and single, and in autumn the fiery *Lobelia cardinalis*. Where particular care is bestowed upon bog and water plants there are hosts of choice plants that would flourish by the water-side, but which, on account of their smallness, are always in danger of being overrun by stronger plants. We need only mention the many *Primulas* that delight in a waterside soil, hardy *Cypripediums*, *Droseras*, *Helonias*, some of the *Gentians*, *Sarracenias*, *Rhexia*, and *Spigelia*. The plants that flourish submerged are about equally numerous; mention need only be made of *Nymphaeas*, *Nuphars*, *Menyanthes*, *Hottonia*, *Villarsia*, *Callas*, *Alismas* to show the beauty that such plants would give to a quiet stream, though unsuited to a fast-running brook. Among bolder plants for the bank are the *Gunneras*, *maricata* and *scabra*, Giant *Ferns* (*Hera-*

never more than 2 inches or 3 inches high. They were straggling and not very desirable plants, and I did not think them worth renewing when they died out, as I find all *Doronicums* invariably do if left alone. Of *Doronicums* proper besides the reputed natives, *Pardalianches* and *plantagineum*—two very distinct plants of which I will speak presently—I have from time to time had plants named *austriacum* and *caucasicum*, names of the correctness of which I cannot speak with certainty. Their flowers are so invariably spoilt in this climate by late frosts, that though the plants still survive here, I neglect them. Two years ago, wishing to identify them, I sent specimens of what had come to me under both names to the herbarium at Kew, and was told that they were all *D. Columnæ*. I conclude that *D. austriacum*, *D. caucasicum*, and *D. Columnæ* are not widely different, and I am sure that none of them are worth cultivating where spring frosts are habitually destructive. This year the plants have presented a more deplorable mass of burnt-up flowers than usual. *D. Pardalianches* and *D. plantagineum* flower later, and are regardless of frost; the former is taller and coarser in growth than the latter, but has smaller flowers. The chief distinction, however, is that *Pardalianches* always has the lower leaves distinctly cordate, and *planta-*

till November, besides forcing well, so as to supply flowers under glass all through the winter. Though its parentage was referred at Kew to *D. plantagineum*, I suspect it to be a hybrid between the species and *D. Pardalianches*. Both these species were grown in Mr. H. Crewe's garden, and the leaves of the variety are intermediate between the two, many of them being doubtful in character between the cordate and the Plantain-shaped type. Its wonderful vigour also seems to indicate hybrid origin; bits of crown no bigger than a Pea will vegetate, and in a few months become large plants. For garden decoration it is by far the best of the *Doronicums*. C. WOLLEY DOD.

Edge Hall.

NOTES FROM BROCKHURST.

PRIMULA SIEBOLDI is likely to become one of our best garden plants. Even the choicest varieties, such as were sent out some years ago by Dean, thrive amazingly well in sheltered nooks in the wild garden; the flowers are brighter coloured there than when forced, and where they have the shelter of a cold frame they are still more beautiful and of larger size. The varieties raised by Geggie, of Bury, and which have just been sent out, are very much finer than the older sorts, and

have a short-stemmed and sturdy habit, besides carrying perfectly formed flowers. The old white variety was a very poor drooping flower, but the new ones have perfectly flat pips carried well on large trusses, and admirably suited for the open garden. For florists' purposes these will be a great acquisition. Geggie raised a large number of seedlings, and those he rejected were still excellent varieties. We have thirty or forty of these planted out, and they are very lovely additions to our wild garden plants and perfectly hardy. Waterer's *Polyanthus-Primrose* is another grand plant for the woodland garden. We have raised hundreds from seed and they are just now flowering, and bear large trusses of every shade of colour—whites, yellows, reds, and purples. They are well known on the exhibition tables, but to see them in quantity in the wild garden is quite a new floral sensation. We have them dotted amongst the Lilies and Narcissi, and they serve to brighten up the blanks which are caused by their dying foliage, making the dell gayer now than it was with the Daffodils at their best. There are also in bloom the Trilliums, Triteleias, Tulips, Solomon's Seal, Globe flowers, double and single Marsh Marigolds, *Doronicums* (chiefest amongst them Harpur Crewe's grand variety, which does very well in shady situations), and large numbers of plants of *Honesty*, purple and white. The last is a most effective spring flower, and sows itself plentifully. The Italian Orchises also do well in the wild garden, and many of them are quite hardy. Of these *O. undulatifolius* is the best and has survived through two winters.

The dry season has favoured the seed-bearing of the Daffodils; a great many of them are carrying capsules, and many of these seem likely to bear ripe seed. The *Scillas* and *Leucojums* are also plentifully furnished with seed-pods. Indian *Primulas* have also flourished amazingly. *P. cashmeriana*, of which we have had hundreds of plants, now has stems 18 inches high, and *P. rosea* 12 inches. The flower bosses are now dotted over with seed capsules now fast ripening. The Wood *Anemones* have also been unusually fine, and especially the Austrian *A. trifolia*, which should be in every collection. It resembles our Wood *Anemone* (*A. nemorosa*), but has much more substance in the petals and is whiter. It has been growing here now several years, and is spreading fast, having become quite naturalised and at home in our wild garden. The white and the blue *A. apennina* are also quite hardy, and are spreading over broad patches. *Narcissus Bulbocodium* is now in flower for the fifth year, proving again its perfect hardiness under proper treatment and in suitable situations.

Three of our recent visitors have been surprised to see a large mass of *Cortusa Matthioli*, which appears to be rare in cultivation. Our stock was raised from seed, and we experienced no difficulty whatever in its treatment. It is perfectly hardy, and is a gem in the rockery. The *Megasea Saxifrage* we have grown in cold frames, and they have been grand objects for several months, and are now passing away with abundant seed pods on every stem. This is the way to grow these Saxifrages, as our cold winds in spring spoil the foliage and stunt the growth of the flowers when exposed in the open garden.

Brockhurst, Didsbury. WM. BROCKBANK.

IRIS PUMILA AND I. OLBIIENSIS.

I HAVE been watching the pages of THE GARDEN for some weeks in the hope that some of its readers who grow choice hardy plants would furnish a note or two on these beautiful spring flowers. Mr. Wood, of Kirkstall, had something to say respecting the typical *Iris pumila* early in the season, but made no reference to any other variety. My plants have been moved three times in three years, a process which these Irises resent. Last year they did not flower; this year they are recovering quickly, and some are flowering well, but in reverse order, the last being first. The position and treatment which Mr. Wood noted seem to be the best for them. The rhizomes, which dislike moisture, should lie on a dry surface

but their thong-like roots should be able to reach a moist root-run. The edges of a slightly raised border in full sun are just the places for them. The *pumila*, or Crimean section, is the earliest and dwarfest, and seems to be a trifle more delicate than the others. *Pumila minor* is a diminutive kind, about 5 inches or 6 inches high, the flowers perhaps reaching 7 inches. *P. alba* is very beautiful, resembling *Iris florentina*. *P. lutea* is a delicate pale yellow. In addition to these, there are darker and lighter shades of the typical porcelain-blue, and also some with blue and others with more purple flowers than the usual colour. The *olbiensis* or Caucasian *Iris* immediately succeeds the Crimean kinds. My plants of these Irises have stood ill-nature better, and seem sturdier and of more robust constitution than some others. The leaves are longer and the flower-stems taller. These produce quite a quantity of flowers. The yellow-flowered varieties are very bright and showy in the spring, and contrast well with the whites, blues, and purples. *Tristis* is a variety which will please those who can appreciate delicate shades of neutral colour, being an indescribable mixture of soft shades of pale lavender, grey-yellow, and greenish yellow, with purple marks on the falls. These Irises may be best described as miniatures of *Iris germanica*, the tallest not exceeding a foot in height; the flowers, however, are large for the plants, being about half the size of those of the German *Iris*. Seeds from a good collection of these would no doubt produce beautifully coloured variations.

D.

ANNUALS AND THEIR CULTURE.

THERE are a few annuals besides those mentioned by "Cambrian" (p. 390) which deserve to be included in a select collection. The *Leptosiphons* are very hardy and extremely showy if sown early; they should have a place in the front of borders, especially in rich soils. *Bartonia anrea* is a beautiful yellow annual which will not transplant. *Omphalodes linifolia* is a good dwarf hardy white annual. The *Whitlavia*s are beautiful compact-growing bushy plants with bell-shaped blue flowers produced in profusion. The *Crimson Flax* is one of the best in a selection of twelve. *Viscaria*s are also very good and last a long time in flower, and *Kaulfussia amelloides* is a pretty blue Daisy. "Cambrian" must, I think, have mismanaged his Indian and Japanese *Pinks*. I have never found them to give up blooming until frost stopped them, but they require good feeding to induce a successional production of flowering shoots. For hot, dry places and for pots in the greenhouse *Portulacas* are invaluable; their colours are intense and the plants dwarf and neat. *Marvel of Peru* will flower the first year even in the open ground, but it is better raised in heat and planted out. It might do duty for a shrub in an annual border, resembling as it does in growth and bearing a dwarf *Aucuba japonica*. *Hibiscus africanus* is a good neat-looking plant, not showy but distinct in appearance from that of most annuals. The *Coreopsis* are very pretty Daisy-like flowers and useful for cutting, as is also *Centaurea Cyanus*.

J. D.

Narcissus Mary Anderson.—The origin of this pretty *Narcissus* is supposed to have been by the well-known double *aurantius plenus* returning to its single form. Mr. Walker, of Whittington, received bulbs of it some years ago from Holland, and it is possible that these may have been the original single form of it; but if so, it is strange that so fine a form of the *N. incomparabilis* should for so long have escaped notice. There is, however, little doubt about the fact that Mary Anderson and the old *aurantius plenus* are the single and double of the same variety. Several of our bulbs of *Mary Anderson* have produced double flowers this season, so that it may possibly be thus returning to the double form by cultivation. Mr. Geggie, the florist, of Bury, sent me a *Narcissus* flower to be named a fortnight ago. I at once saw it was like *Mary Anderson*, but with a deeper orange crown. On asking how he raised it, he

replied that it came as a sport three years ago in a large clump of double *Daffodils* which had grown in his garden, and always been doubles, for twenty years. He sent me one of these, and it was our old *aurantius plenus*—the Eggs and Bacon *Daffodil* of our old gardens. It continues to be single, and is no doubt the same as *Mary Anderson*.—WM. BROCKBANK.

Primula involucrata.—This, perhaps better known in gardens under the name of *P. Munroi*, is now in flower at Kew. It is a native of high altitudes in Northern India and perfectly hardy. It makes an excellent plant for low or damp situations, and with just a slight covering of leaves or short manure, to keep the birds from scraping up the little buds which it forms during the resting season, it may be kept in the same place for years. It also does well on the rockery, but small stones should be placed round the plant to assist in keeping moisture near the surface. It ripens seeds freely, which may be raised in a cold frame, and the seedlings planted out in autumn will give a grand show of flowers the following spring. There seems to be two forms, a pure white and a blue or violet-tinted one; but as almost every stage may be traced from one to the other in a batch of seedlings, it may be doubted whether it is a fixed character.

—K.

Primula obconica.—We are glad to be able to record the safe wintering in the open air of this charming *Primrose*, which, from its healthy appearance and numerous heads of flowers, promises to be a valuable acquisition. It is planted in a dry wall under a slightly projecting stone, so that it may be free from drip, and although the leaves have several times been frozen hard, it has sustained no injury. A specimen of it in the Cape house at Kew shows its wonderful free flowering habit; it is bearing forty-two flower-spikes, each averaging over a dozen flowers as large as a shilling, white or lilac-tinted, and as a whole very effective. We learn that it has flowered almost incessantly for two or three years.—Q.

Primula mollis.—This *Ebottan Primrose* seems to be fast losing ground, owing, doubtless, to some supposed difficulty as regards its cultivation. It will not stand in the open during severe winters without protection, but in sheltered nooks and out of the reach of drip and damp it may be wintered satisfactorily. It is one of those *Primroses* that does not like cramping; close packing between pieces of limestone has always a deteriorating effect in the case of *P. mollis*. At Kew, planted out in a cold frame, it may be compared to a good specimen *Cineraria* as regards foliage, and it has already sent up over a dozen flower-spikes, the flowers on which are arranged in whorls, as in *japonica*. It promises to keep in flower for a month to come.—K.

Papaver umbrosum.—Lovers of the curious in hardy flowers will find something well worthy their attention in this *Poppy*. I have it now finely in bloom in an open field, and must say that its curious markings are in interest only excelled by its gorgeously rich hue of colour. I observe in one seed list that it is described as vermillion; my impression is that the ground colour of the flowers is a rich, glowing crimson, full of fire and effect in the sunshine. The plants I have now in bloom are from seed sown in the open ground last September, the seed having germinated with wondrous freedom. The plants remained in the seed bed during the winter, but were planted out early in March, and are now blooming profusely. No doubt an earlier sowing—say, in August—would give an earlier bloom, and I think that this gorgeous *Poppy*, grown beneath orchard trees in quantity, would make a grand market flower, and be eagerly sought for by those who need colour in the house at this season of the year. But the curiousness about the flowers is seen in the singular dense black blotch which is in the middle of each petal, rather low down, and which is as marked inside the bloom as on the outside. That is rather an uncommon feature, and adds both to the beauty of the flowers and to

the interest in them. When in bloom the plants are from 15 inches to 18 inches in height. Their habits vary somewhat, as some produce large flowers less profusely, whilst others are full of blooms that are smaller, but all alike in other respects. When the plants are fairly close together, the effect is remarkable; scarcely anything can be more striking or effective. As a rule, the flowers consist of four even-sized petals only, but here and there may be seen one or two having small superfluous petals, and these may indicate the presence of a doubling tendency. Charming as the blooms are now, their beauty could hardly be added to, but a few more petals may render them more enduring.—A. D.

Winter and summer Carnations.—Mr. Douglas (p. 447) apparently rejects information in reference to these. I am not accustomed to bloom border Carnations in frames, as he puts it. What I said was, that they will bloom in April and May if layered early enough and sheltered in what we here call cold pits, in which we store Strawberries and grow Lettuce and Radishes, &c. They are heated, but the heat is only turned on to exclude frost; they are, however, I daresay, slightly warmer than cold wooden frames. In such places I have had border Carnations and florists' Pinks with their first flower-spikes so forward in March and April, that I had to cut them off, wishing to reserve the plants for beds. I did not take note of the sorts. I should like to know what a good Carnation plant layered in July can do but grow and flower under such circumstances. Varieties differ, and anyone who has grown a quantity of seedlings knows that there are early and late kinds. As to Pinks not blooming in April and May without six weeks' steady forcing, I may mention that my employer the year before last brought me a few cuttings early in September, which were put under cloches only, and one of these, as soon as rooted, ran up a flower-spike which produced flowers in May and June the following year in the open ground.—J. S. W.

Outdoor Hyacinths.—With regard to old Hyacinths, we have some clumps (in the open border) which have increased and flowered really well for fifteen years. They are left undisturbed, top-dressed with manure, and most of the blooms are quite equal to those of freshly imported bulbs. Some others shaded by trees pined away.—W. P., Kent.

FRUIT GARDEN.

PRUNING HARDY FRUIT TREES.

NEVER were the prospects of an abundant fruit crop more general than this year. Trees and bushes of all kinds are just now a sight worth remembering; but that the bright promises now held out will be fully realised in autumn, it would be rash to predict. There is, however, no doubt that many useful hints for future guidance may be collected by taking note of how fruit trees behave this season under various kinds of pruning and training, and also under the too common system of no pruning or training at all. As to pruning, there can be no question that it has been greatly overdone—in fact, in some cases nothing short of barbarous mutilation. The natural reaction is, therefore, toward the other extreme. As regards pruning, I think there can be no doubt that the plan of growing rank shoots, to be annually cut off, is one of the greatest mistakes in fruit culture. If miniature fruit trees are desired, they must be dwarfed by means of grafting on a stock that does not supply more support than they require, and that this can be easily done is amply exemplified in any good fruit tree nursery. Dwarfed trees are the ones for small gardens, and for large ones also, the proper place for standards on free stocks being in the orchard. To attempt to dwarf fruit trees by means of the knife is sure to end in failure. I have at the present time a quantity of Pears, Plums, and Apples that only three years ago were miserable objects, owing to having been trained with balloon-shaped heads on single stems—one of the worst of all kinds of training; the strength of the tree rushes up to the centre, and expends itself in the production of

gross watery shoots that are annually cut off, while the shoots that should have borne fruit were literally starved. Many of them were cankered from excessive cutting, and the whole almost fruitless. The plan I adopted was to let the trees grow the whole season without any stopping or pinching at all. During the winter the shoots were thinned out, so as to form a pyramidal head; I only shortened the leading shoots about one-third of their length, and the outside ones about one-half. The same plan was followed the second year, and now in the third they are handsome trees, clothed with fruitful shoots, covered from base to summit with flowers or embryo fruits; even the very worst and most decrepit-looking specimen was so invigorated by having an increased amount of leaf-growth left on it, that it has developed into a fruitful tree.

It must not, however, be inferred that because trees that have been so overpruned are benefited by having greater freedom, wide-spreading orchard trees do not require the knife at all. We frequently find the centres of such trees a complete thicket of useless shoots, that rob the outer fruit-bearers of nourishment. These should be all cut away, so that the main branches may stand quite clear, and that sun and air may have free access to the centre as well as the outside of the tree. I have frequently proved that even standards of the largest size are greatly benefited by having the tips of the shoots cut off in winter; they then make short, stubby annual growths, and the fertility of the tree is thus maintained; but if allowed to go entirely unpruned, the tree gets stunted. It bears a large crop one year, and exhausts itself so much, that it fails to carry any crop the next; therefore some kinds that are very prolific get to be called alternate year croppers. This is really caused by exhaustion consequent on the bearing wood being in excess of what is required. If pruning were the rule, we should have more regular crops, as the same kinds grown on the most approved principles, with the fruit thinned out like Grapes, carry a good crop every year.

As regards training, there is no need to condemn the absurd fashions that used to be in vogue, for they condemn themselves—the more natural the form of tree or bush, the better. Nearly all kinds of fruits have a distinct habit of growth that it is well to take as a guide. It is useless to expect rows of trees to be kept all one height and size unless they are of the same variety; while one kind naturally forms a handsome bush or pyramid, another equally good kind may be of quite a distinct habit. But it is fruit that we want, and all other considerations ought to be subordinate to that. As regards the best form of tree, there is room for every kind. In sheltered valleys I would have large standards, but in exposed, wind-swept districts low-growing bushes are best. I have seen the crop well high stripped from tall trees, while low-growing bushes lost but a few fruits. Do not forget that heavy crops cannot be grown without manure, and if not supplied in winter, apply it now as a top-dressing over the roots.

Gosport, Hants.

JAMES GROOM.

Morello Cherries.—I have just been through an orchard in which run lines of fine young trees of the Morello Cherry wondrously laden with bloom. What the Laburnum is amongst decorative trees in habit and effect the Morello Cherry seems to be amongst fruits. Words fail to convey a clear impression of the wondrous floriferousness of the standard trees, for the weight of the bloom alone, light as it is, yet seems to weigh down the branches in a remarkable degree. It would be exceedingly interesting to learn whether the Morello employed as a stock for Cherries would prove for these fruits what the Quince is for Pears and produce similar results. Certainly the Morello is one of the hardest of its family, but it is also the most prolific, and these are qualities which one may well wish to impress upon sweet kinds also. Owing to the pendent nature of the bloom, it seems to have suffered little from the sharp frost of the morning of the 8th, when

all through the Thames valley, and probably over a much wider area, the ground was coated with dense hoarfrost. This visitation, following so closely upon the hail storms and heavy rains of the preceding day, has left its marks very largely upon the Pear fruit germs, for whilst the bloom had almost entirely fallen, yet the erect fruits seem to have caught the moisture and largely to have suffered. I notice masses of fruit germs with eyes as black as Sloes and all will soon fall. None the less I think an ample crop is left. Probably few other fruits have suffered to the same extent. A large fruit grower comforts himself with the assurance that a thinning of the fruits was not only inevitable, but would be profitable, for the great danger before growers presently was a market glut, that would prove a misfortune. It is worthy of remark that those who through thick and thin advocate the extension of our fruit breadths rarely take thought of the effects of frosts and other dangers to the crops, whilst when we, on the other hand, with our present producing powers get a full crop, we soon find the markets glutted. Thus poor crops and heavy ones seem to be equally troublesome.—A. D.

TOO MUCH FRUIT BLOSSOM.

THE extraordinary amount of blossom to be seen this season on all kinds of fruit trees is by no means an unmitigated blessing. We would, however, certainly prefer too much to too little, as with an abundance there is much better prospect of a good crop resulting than with too little; but according to my experience extra heavy crops are in the end far from being a great gain. If during this season we are favoured with crops at all equal to everybody's expectations, a great glut will be the result, and consumers only will be the gainers. I hold that when it does not pay growers to send produce to our markets it is unfortunate for all parties concerned. Over-production, although at first beneficial to consumers, eventually results in a diminution in the way of supplies. When fruits are plentiful, not over-plentiful, growers realise remunerative prices, and consumers get their supplies at reasonable prices, all parties being thus satisfied. In fruit culture Nature has much to do with regard to the regulation of supplies, and if we exhaust the trees this season, the chances are we shall suffer for it next year. If one-tenth part of the blossoms on such trees as Plums, Cherries, Apples, and Pears are followed by fruit and these are allowed to perfect, we shall have too much fruit, while the trees in many cases will require more than one season to reconquer their strength. For my part I would prefer to have less bloom, not only because then there would be a better prospect of a good, but not injuriously heavy, crop, but, what is also of greater importance, the fruit would as a rule grow to a larger size. When there is such a mass of bloom as is to be seen everywhere this season, it is almost certain to be much weaker than it otherwise would be, and who ever saw weakly blossoms produce fine fruit? Besides, I find that in the case of all old trees especially there is not sufficient vigour to swell so many fruit, but as the trees, supposing the weather favourable, are certain to attempt to swell nearly or quite all that set, the consequence is that the greater portion drops prematurely. Already this is occurring here in the case of choice Plums and Cherries, and I am not at all pleased with the appearance of some of the Pear blossoms, notably those of Jargonelles. Then, again, when clusters of Apples and Pears are swelling off, these if not thinned out early become favourable feeding grounds for destructive maggots, and even if they escape these, the fruits are certain to be small and inferior in quality. If we had not late frosts with which to contend, I should strongly advocate thinning out the blossoms, more especially those of the choicer sorts of Pears, as I am of opinion that we would be a gainer thereby. As it is, the least that can be done is to thin out the fruits freely and early wherever possible. Every miserable fruit allowed to swell contributes to the weakening of the tree, and also militates against the quality of fruits

resulting from stronger and better placed blooms. Young trees that have not yet filled their allotted spaces ought to be specially favoured, as to crop these heavily would be to "kill the goose that lays the golden eggs." Let each vigorous tree perfect a few fruit; but if we allowed our young trees to perfect all the fruit that is now apparently set on them, the strong leading growths would suffer accordingly. Some may think it judicious to crop them heavily in order to prevent the formation of strong growths, and thereby lessen the need of pruning; but we do not prune, and have frequently laid in 4-foot branches their full length with the best of results. It would appear almost impossible to over-crop bushes of Red and Black Currants and Gooseberries or Raspberry plantations. These are naturally surface-rooting and good foragers, and crop them as heavily as one will they are strong enough to repeat the good service the following season. Birds, for the first time in five successive springs, have taken great liberties with our Gooseberry bushes, and a moderate crop will be the consequence; but Currants, in spite of last year's superior crops, are more abundantly flowered than usual. I notice, however, that the few Apple trees that perfected heavy crops last season are sparsely flowered this, and I trust that the remainder will not set very heavy crops.

W. I. M.

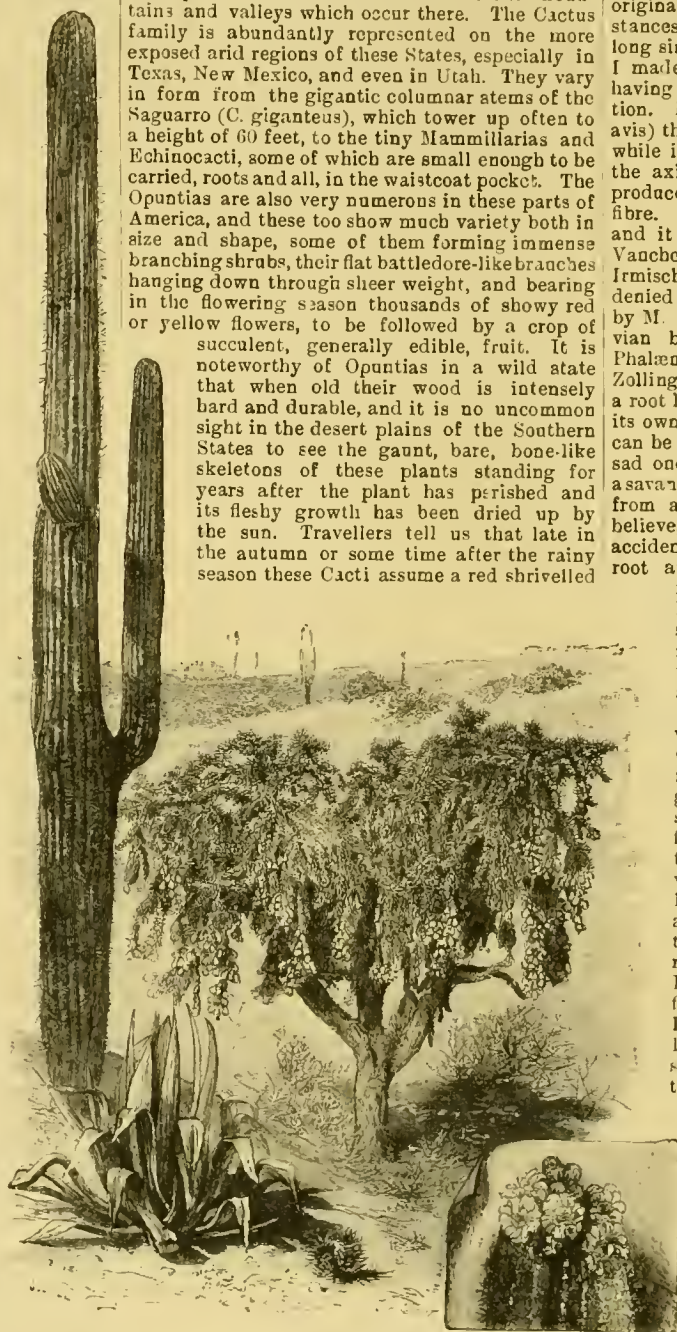
May frosts and the fruit crop.—In this district we have had a week of sharp frosts. They set in on the night of the 7th, and appear likely to last some time yet, as the wind keeps in the cold quarter. Fortunately, the nights have been still and everything dry; the leaves, too, are so well advanced, that they have afforded much shelter, especially to Pears, which are hanging in thick clusters and show no signs of falling at present. Of Apple bloom there has been a great wealth, and the variety of tints which the different sorts afford are a treat to behold. Cherries have been literally laden with flowers, and I do not remember a season when the country has appeared more lovely than it has this; all trees and shrubs that flower seem to vie with each other in profusion of blossom.—J. SHEPARD, Woolerstone Park, Ipswich.

The present season affords a favourable opportunity for comparison as to earliness, size of bloom, and general effect as regards the different kinds of Apples. Looking over a large collection of trees, I find few more densely clothed with bloom than the New Hawthornden, or earlier than Red Astrachan, or producing finer and more richly coloured flowers than the Nelson Codlin. The latter kind has a somewhat drooping or pendent growth, and trees of it when in bloom are, perhaps, for that reason all the more beautiful. But I can find none to excel it in size of bloom and specially in richness of hue. We do not grow Apple trees, as a rule, for they produce effects, but those who may be desirous of securing specially rich colour in the bloom will do well to remember Nelson Codlin.—A. D.

Strawberry tites (p. 310).—Is there not a decided objection to these? I know from experience that if ordinary tites are placed under the plants the fruit is shrivelled if the sun is at all hot.—A. R., Windermere.

NORTH AMERICAN CACTI.

In the most southern States of North America the vegetation is of a very diversified character, owing to great variations in temperature and atmospheric moisture and the numerous mountains and valleys which occur there. The Cactus family is abundantly represented on the more exposed arid regions of these States, especially in Texas, New Mexico, and even in Utah. They vary in form from the gigantic columnar stems of the Saguaro (*C. giganteus*), which tower up often to a height of 60 feet, to the tiny Mammillarias and Echinocacti, some of which are small enough to be carried, roots and all, in the waistcoat pocket. The Opuntias are also very numerous in these parts of America, and these too show much variety both in size and shape, some of them forming immense branching shrubs, their flat battledore-like branches hanging down through sheer weight, and bearing in the flowering season thousands of showy red or yellow flowers, to be followed by a crop of succulent, generally edible, fruit. It is noteworthy of Opuntias in a wild state that when old their wood is intensely hard and durable, and it is no uncommon sight in the desert plains of the Southern States to see the gaunt, bare, bone-like skeletons of these plants standing for years after the plant has perished and its fleshy growth has been dried up by the sun. Travellers tell us that late in the autumn or some time after the rainy season these Cacti assume a red shrivelled



Cacti in Arizona (*Cereus giganteus* and *Opuntia arborescens*).

appearance, which they retain till the return of the rainy season, when they plump out again and soon afterwards produce in profusion beautiful flowers and spiny fruits. In the Colorado valley some of the finest of cultivated Cacti are found wild, such as the handsome *Echinocactus wislizeni*, the juice of which is so watery and refreshing, that it has been often the means of saving the lives of travellers when all other sources of water had become dried up. Some beautiful Opuntias are also natives of this region, along with many Mammillarias and the almost ubiquitous *Cereus giganteus*. Seen in the wild mountain fastnesses of the warmer parts of the American continent they have a weird appearance. Cacti indeed must be seen in their native wilds if one would know them properly.

ORCHIDS.

PROLIFEROUS ROOTS OF ORCHIDS.*

THERE have been various records of buds originated on roots of Orchids lately in the instances quoted by Messrs. Lendy and Salter. I have long since attached great interest to this case, but I made only a few observations, only one plant having often showed me this method of propagation. It is the Bird's-nest Orchid (*Neottia Nidus-avis*) that very often perishes after having flowered while in other cases it produces fresh roots from the axils of certain sheaths. In other cases it produces a fresh plant at the very top of a root-fibre. In 1819 I observed this fact at Tharand, and it had been observed before by M. T. P. E. Vaneber, in 1811. Afterwards it was seen by Imisch, Prilleux, Hofmeister, then it was formally denied by Drude, and re-observed and described by M. Eugène Warming, the excellent Scandinavian botanist. The second case occurred in *Phalenopsis deliciosa*, gathered in 1843 by Zollinger. My specimen shows a young plant on a root having just emitted such a small rootlet of its own, as described by Mr. Salter. This specimen can be seen in my herbarium. The third case is a sad one. A *Cyrtopodium* (if I remember rightly, a savannah plant from Venezuela) gave a fine shoot from a root in Consul Schiller's collection, I believe, in 1867. A young gardener broke it accidentally, and threw the shoot and part of the root away, hoping the loss would never be remarked. The last case is that of *Saccolabium micranthum*. Director Lucien Linden sent me lately a fine Cochinchina plant with a young two-leaved shoot on a root. The whole plant was boiled and carefully dried, and can be seen in my herbarium.

THREE-LIPPED ORCHIDS.—I had seen various cases of monstrous three-lipped Orchids; in all those cases there were no anthers developed at all, and the genuine free style had a terminal upright stigmatic hollow, without the least deflection. The finest thing of this kind that ever came under my notice was a grand flower of *Oncidium papilio* with three lips, three sepals, and a fusiform apostasioid style, without the least indication of anthers or filaments. It was presented to me by Mr. Day. I remember having seen a very fine Cattleoid flower of that kind—*Laelia elegans*, I think—in the hands of Professor Dyer. There came, however, some instances under my notice where the three lips occur enclosing a common column with its deflection and its normal anther. In these cases all the flowers were equally three-lipped, and this was observed once more on the next shoots of the same plant. The first case was that of *Oncidium pretextum* var. *Leezanum*. The Sanderian traveller, Mr. Osmer, was so struck by a panicle loaded with such flowers, that he made an attempt to dry them. They were eight in number. The plant itself went into Mr. Lee's collection, and I hope he will tell us how long it lasts three-lipped. The second case was observed by Major Lendy, both in 1884 and 1885. It is not quite so evident as in the *Oncidium*, inasmuch as the *Phalenopsis Stuartiana* Lendyana has but one normal lip; yet the petals much more approach lips than petals. The blunt triangular blades are unguiculate, and bear a callus over the mid-base of the lamina. The third case is that of *Dendrobium nobile* Cooksonianum, the flowers of which are very distinct. Those of *D. nobile* Tollianum have the petals very thick and hairy over the base, and possess the colours of the lip.

LUDEMANNIA (CYCNOCHES) PESCATOREI—This so-called "genus" has proved a puzzle. It

* A communication from Prof. Reichenbach, read at the late Orchid Conference.

was Schlim who discovered it near Ocana. Linden sent a plant of it to Pescatore, of La Celle de St. Cloud. There it has flowered, and I think one flower is preserved in Lindley's collection. I have four of that typical inflorescence. Lindley took it to be a *Cynoches*, an opinion we have seen lately re-accepted by an author who should have been prevented from doing so, seeing both leaves and bulbs are those of an *Acineta*, while all *Cynoches* have them like those of *Catasetum* and *Mormodes*. As soon as I had obtained sufficient materials I published my genus *Luddemania* in honour of my late friend Luddemann. Linden having got say thirty plants of it, sent them to his customers, who accused him of sending *Acinetas* for *Cynoches*, and asked for the genuine plant. I believe Schlim sent a second cargo, all of which proved to be *Acinetas*.

A third *Luddemania* appeared with a stiff erect inflorescence and quite peculiar flowers. It was discovered in 1878 by Wallis, who stated that it had the bulb of an *Acineta* and leaf of a *Peristeria*. I apprehend, however, that Wallis intended to say it had the bulb of a *Peristeria*. Grand inflorescences of the old *Luddemania Pescatorei* were collected and admirably dried for me by Roetz. Finally, good plants of *Luddemania* were gathered by Messrs. Klaboch and Lehmann. I was led to regard Lehmann's plant a new type from his representation and description and the one dried inflorescence. The other inflorescence and two fresh ones proved to be the typical *L. Pescatorei*. I had the first from Consul Kienast Zölly, Hinslanden, Zurich; the others from an English correspondent.

It is my earnest wish to have once more fresh statements of the pleomorphic state of those flowers which may be forms of *Acineta*, perhaps also of *Peristeria*. I have obtained well developed seeds from the *Acineta erythroxantha* produced from Messrs. Veitch's *Luddemania*.

MANURE FOR ORCHIDS.

I HAVE known much mischief done to Orchids by the careless application of manure, and all growers are naturally cautious in applying stimulants the suitability of which may be doubtful. It is, however, our ignorance of the subject that is at fault; not the manuring. As has been pointed out in THE GARDEN more than once, we are too much in the habit of associating the idea of manure with something different from that which plants feed upon naturally; whereas when we speak of giving manure to any plant we simply talk of feeding it with its own proper food in a ready way, for, do as we may, we cannot make a plant take any kind of stimulant we choose and thrive upon it. In other words, a suitable manure for an Orchid would be just the kind of food it thrives upon best. I have never had any doubt but that orchids thrive upon the same kind of food as other plants, and it will probably be found that the proportions of the different elements which suit them will not vary more than they do in the case of other plants. But in this, as in other matters, we are still groping in the dark, those who have had most opportunities not seemingly concerning themselves much with the science of Orchid culture, but contenting themselves with rule-of-thumb practice. Although fibry peat and Sphagnum Moss are almost universally used for potting Orchids, their use is not founded upon accurate knowledge of the wants of Orchids as regards food. These two substances seem to have recommended themselves to growers because, being of a porous character, they seemed readily permeable by the roots, but they have been used without knowing whether the elements they contained were what Orchids needed or not,

and it is quite probable that better substitutes for both may yet be found. What we do know is that many kinds of plants besides Orchids grow and thrive in decaying Sphagnum and fibry peat, and probably these materials, when made into a compost in an Orchid pot, differ but little from other composts in the plant food which they contain. Experiment and investigation only can throw light on this matter. I have observed that Orchids will root and grow freely in a great variety of substances. The roots lay hold of stones, cinders, brickbats, wood, painted or unpainted, and of any kind, peat, Sphagnum, loam, leaf-mould, bark, and almost anything that comes to hand, whether it be rich or poor, only that when left to themselves they seem to decline to penetrate anything that is sad and sour, preferring to warp their roots round the outside of objects more than the insides, all of which goes to prove that they live upon pretty much the same

who were the first to bring this beautiful new *Oncidium* into notice, have received M. de St. Léger's consignment for distribution.

NOTES.

The Flag Iris.—There is no sight more truly lovely in the world of flowers than that of the shining bands of the Iris opening their petals on a sunny day in May time. The old *I. germanica* is everywhere at home, not only in country fresh air, but even in London gardens—in deed, so little does it suffer from the smoke and dust of towns, that it must be considered one of the most valuable of all city flowers. Beautiful, however, as is the common old purple variety, there are at least twenty varieties of it well worth a place in all good gardens. They succeed perfectly in masses on the Grass on dry and well-drained soils, and

no other flowers are more acceptable for large bowls and vases in the drawing-room or boudoir. One of the best points in favour of the Flag Iris is that, being evergreen, it is decorative all through the year. *I. pallida* is second to no Brazilian *Cattleya* in delicate texture and softness of colour, and the same may be said of *I. florentina* and *I. Victorine*; in a word, these beautiful plants have before them a future as being amongst the most exquisite of all the hardy flowers of summer.

Apple blossom.—Here and there in the little gardens in Surrey the Apple orchards are as fresh as showery May can make them, and the mystery of bud and the wealth of blossom hang gracefully on every bough. Nothing can well be more lovely than these clouds of pink Apple blossoms as seen tossing up against the cool sky, or standing out like the most dainty of embroidery on the velvety blue-green background afforded by the fragrant Pines. Each bit of sunny wood is full of life-bursting bud and uncurling Ferns; and that sweet singer of the night offers her melody to the flowers of May. Even Meadow Daisies open their soft eyes to the sunshine, and King-cups and Lady's Smock give to the wet ditches a royal garniture of purple and gold. Here is a little copse of Pear trees, white with their summer snow; there a breadth of yellow Gorse and of warm brown Fern. A little squirrel springs along the spongy sod beneath the Larch and Pines, while swallows thus early skim the rippling pools, and the love note of the doves is borne on the breeze like a sigh. The balmy air of May time is like nectar, and the warm sunshine turns

the gravelly banks into amber, and the blossoming of Furze and of Broom into waves of burnished gold.

Wisley Wood.—A lover of all things beautiful, and more especially of hardy flowers, may find many things near London to enjoy and admire, but the most unique sight I know of in a garden is this sunny bit of sandy wood, jewelled as it is with the wild flowers of many lands. Carpets of early Phloxes, white, pink, salmon, and lilac, glints of Gentian as blue as the Adriatic, clouds of Tiarella, the rich yellow of Hooped-petticoat Daffodils, and the golden promise of a whole world of summer flowers to come. Lily stems are there in all their vigour by the thousand; here in clumps among sheltering *Rhododendrons*, there in breadths below the shelter of the trees. Daintiest alpine, rare Ferns, shrubs white with summer snow like *Spiraea grandiflora*, or crimson with honeyed bells (*Rhododendron*), are there. The forked spikes of the Cape Pondweed float on the glassy surface of the little lake like lateen boats spreading their white wings on a silver sea, and with their fresh Hawthorn-like fragrance



Cacti in the Utah Desert (*Echinocactus Visnaga* and *Opuntias*).

kind of food as other plants, but only take it up in a way peculiar to themselves. J. S. W.

Oncidium Jonesianum.—Concerning this beautiful new Orchid we are in receipt of letters respecting its habitat, &c., which will be of interest to cultivators. For the discovery of this Orchid we are indebted to M. de St. Léger, of Paraguay, who writes as follows: "I have been fortunate enough to secure plants of *Oncidium Jonesianum*, which is only found in certain parts of Paraguay, in the midst of elevated forests in the less sheltered spots. It is essentially an epiphyte, and not delicate. In these places the thermometer in the winter often falls below zero. I have plants which have borne as many as twenty-nine flowers." In the same letter he describes a new *Zygopetalum* which he has found. "It has a stem about a yard high, and from the base to the top, at short intervals, grow clusters of leaves, and from each cluster issues a blossom two or three times as large as that of *Z. crinitum*; it is a curious and ornamental plant." Messrs. Horsman, of Colchester,

come in fitful and wayward snatches the delicious song of nightingales. It is a lovely warm morning after the showers, when golden Beech leaves tremble in the sun, and the Bluebells may whisper of their secret joy to the coy white Anemone in her mossy bower. Iris buds spear up through a forest of sword-like leaves, and the buds of Pæonies glisten like mahogany knobs among the purple foliage, and the Poet's Narcissus offers its pearly whiteness and magic perfume on every hand. In a word, the wood at Wisley is a garden pleasure rare, reminding one of a picture by Leighton or Tadmora, of a symphony by Sarasate, of a song by a sweet singer, of a thousand lovely things one may now and then dream of, but fail to express in cold hard words.

The Snow Bush is a by no means inappropriate popular name for that most lovely of Spireas, now more generally known as *Exochorda grandiflora*. It was figured years ago in *THE GARDEN* at a time when hardy shrubs were not so precious to us as they are now, and yet it is rare to see a good healthy bush of this old species in bloom. In Mr. G. F. Wilson's garden at Weybridge it is quite a feature, its graceful wand-like sprays a picture of pearly buds and of white blossoms. It seems to like a rich deep, but well-drained soil, and Mr. Wilson tells me that one little secret in its culture is to prune back its branches soon after flowering, so as to obtain a strong crop of growths for the next season's blossoming. We have many lovely species of shrubby Spireas, but this is one of the best, and especially welcome, inasmuch as it blooms thus early in the year.

Pinguicula hirtiflora.—In one of the cooler of the Orchid houses at Weybridge this rare little Italian Butterwort is now in flower, and is much admired. It was introduced by Miss C. M. Owen, of Gorey, Wexford, a year or two ago, and has been figured in the *Botanical Magazine*, as also in *THE GARDEN*. It grows freely in Sphagnum Moss in a cool, sunny porch or greenhouse, and bears pale lilac flowers the size of a Czar Violet on slender stalks 2 inches or so in height. A pure white or albino variety flowered in the Trinity College Gardens, Dublin, where it is grown in a little porch along with *P. grandiflora*, *P. caudata*, and other interesting bog plants. Experiments have been made by crossing this species with *P. caudata*, and *vice versa*, but so far, as is at present known, without any success, except apparently good seed.

Orchids at Chelsea.—Flower-loving visitors now in town will miss a great floral treat if they neglect to visit the great trade collections of these flowers, beautiful as grown by Messrs. Veitch and by Mr. W. Bull. Both collections should be seen, because, without making any comparisons, both exhibitions are most charming, showing their beauty in different phases and under different conditions and arrangements. *Phalenopsis Sanderiana* at Messrs. Veitch's is exquisitely lovely, and their large *Cattleya* house an attractive feature, and as a matter of course their Pitcher plants are unapproached elsewhere. Mr. Bull's show house of Orchids, many and varied and tastefully arranged, is like a beautiful dream, a sight which it would be difficult to praise too highly. In the matter of arrangement both collections are in advance of that adopted at the late conference.

Windflowers.—Every now and then the question is asked, "What is to be the next craze amongst the florists?" and one feels tempted to say, "Oh, well, the Anemones, I suppose." Somehow one shrinks at the thought of the flowers we love deeply ever becoming the phantasy of a passing fashion, and yet so far as we at present know and can see ahead the change of fashion in flowers, as in all other things, seems inevitable; and so in all probability ere long the Anemone will in part, even if not wholly, fill the void in our hearts which we are doomed to feel when Queen Daffodil is deposed. Certainly, when well grown, no other hardy flowers are so showy, nor would it be easy to find another genus of greater variety as regards form, habit, and colour, nor

must we forget that *A. coronaria* as reared from seeds endures in bloom for at least nine months out of the twelve. We must thank our Irish friends for the devotion they have paid to the Windflowers, and "St. Brigid" must be especially complimented in having grown Crown Anemones from seed to greater perfection than anyone else, and a bouquet of her finest flowers was recently accepted by the Princess of Wales during the late tour in the north of Ireland. Cut in the half-open bud stage and placed in water indoors, these seedling Windflowers endure fresh and fair for ten days or a fortnight, and are all the more beautiful, seeing that in a warm room the flowers expand their velvety petals and so appear even more lovely than when seen in the open air. In sheltered sunny gardens near the sea in Ireland seedling Windflowers, great Czar Violets, and the finest of Christmas Roses are the best and most acceptable of all hardy flowers.

VERONICA.

INDOOR GARDEN.

STERILITY IN CHINESE PRIMROSES.

THESE useful winter-blooming plants are not exempt from that too common evil attendant upon high breeding, a tendency to become sterile. To test that matter fully we have but to compare the ease and freedom with which plants producing small inferior flowers produce seed as compared with the seed produce seen on plants of the best quality. Indeed, with the latter it is hard to get seed at all unless helped by means of artificial fertilisation, and this evidence is conclusive that pollen is much the most abundant on those plants which have the poorest bred flowers. To say that such a characteristic is found in all high-bred garden flowers would perhaps be incorrect; still we see many things that show remarkably fine form and quality in flowers, and even fairly robust habit of growth, yet almost infertile as far as the production of seed is concerned. There are few strains, however good, of Chinese Primroses that do not give from seed a moderate percentage of indifferent flowers. If pollen from the flowers of best quality were employed to fertilise these, perhaps we should secure a strain that would give a greater seed produce, but still it is inevitable that in the development of size and form in the flowers fertility becomes lessened. The Chiswick Red strain, from which has come all those fine madder-reds known now under various designations, show this tendency to hark back in a marked degree; perhaps it has not been sufficiently long fixed to render its better qualities permanent. Every year, however, should improve its quality, just as it will inevitably take us farther from ordinary fertility. Good *Primula* seed is dear, and must always be so; indeed, any cheap seed must always be viewed with suspicion; when to ensure a crop from a first-class strain it is essential that the plants should bloom early, be kept in a warm temperature and a dry atmosphere, and that every bloom must be manipulated with a small brush, it becomes evident that seed raised under such conditions cannot be otherwise than costly. On the other hand, if the sample obtained be good and is productive of good growth, a half-crown packet, which will yield 100 plants, almost all of which are of first-rate form, is surely cheap, especially when many of the plants may be, if well grown, worth singly the prime cost of the seed, for surely a fine plant in good bloom at Christmas is worth so much. Therefore, the investment of 2s. 6d. for the seed is an excellent one, and no one can complain of the result. Variations in the Chinese Primrose have been few of late, though some forms show blooms of wonderful size. As a rule these big flowers are gained at the cost of floriferousness, and on a truss or head the falling of a big bloom often creates a void that cannot be filled up. Blooms of good quality and very freely produced in handsome heads are after all more desirable than are huge flowers sparsely produced. Our tastes favour good distinctive selfs, such as white, pink, red, and purple, and

probably it is largely owing to these tastes that the pretty flaked flowers have found so little encouragement; these so far all showed whitegrounds with carmine and purple flakings. A more recent novelty in this direction is flowers, bright red in colour much splashed with white, giving a very distinct strain, if constant; that time will show. Owing to the lack of exhibitions during mid-winter we seldom see Chinese Primroses at their best at flower shows, but they still remain one of our best and most easily grown of winter-blooming plants.

A. D.

BULBS AFTER FLOWERING.

IT must be clear to all who have watched the behaviour of bulbous plants of various kinds, both while in growth and resting, that it is quite as important to furnish them with suitable conditions while resting as it is to do so when in active growth. In regard to the resting period, I am inclined to believe that it would be advantageous if we knew more of the influence that direct contact with the air has on the future well-doing of the various bulbs annually lifted and stored away in various ways, because it appears to me that the process of direct exposure to the air for any length of time must be weakening to the vital forces, and, if so, it is desirable to know to what extent they suffer; and, further, the question of temperature for resting bulbs might be profitably considered. So far as my observation goes, I believe that we rest many of them in a higher temperature than is good for them. My own conviction on the subject of resting bulbs is, that whether they require a high temperature or a cool one when in active growth they ought not to be exposed to the air longer than is necessary to get them sufficiently dry to be stored. But the manner of keeping them from the air must vary according to the character of the subjects to be dealt with; all that form bulbs below the surface are better rested in the soil in which they have grown. Amongst such may be mentioned

GESNERAS AND ACHIMENES. If the pots or pans in which these have been growing are stored away in any dry shed from which frost and damp are excluded, they need not occupy much room; these two subjects often sustain most harm between the time when they go out of flower and that when the stems die down. Not unfrequently they are stored away in some corner of the greenhouse with an insufficiency of heat or moisture; the result is a premature ripening of the tubers, or, what is not at all unusual, an inability to form tubers at all. The proper treatment for such plants is to continue the same conditions under which they have been planted until the flower stems die down naturally. This will insure their forming and ripening a full complement of tubers. In regard to corms of

MILLA BIFLORA and BESSERA ELEGANS, I am quite satisfied that they suffer from being out of the earth, although kept from contact with the air. A portion of my stock of the *Milla* I kept all the winter between two layers of dry earth. In the middle of April they turned out quite plump and firm, while those put into a paper bag and kept in the same temperature from November to April were found to be dried up and much lighter than the others—so much so, that I anticipate the corms kept in dry earth will grow much the strongest. Bulbs of *Bessera elegans* came to me in November sound and well ripened; these I kept in a paper bag mixed with dry bran, but at planting time they had shrivelled up more than I liked to see them. Another year I shall keep them in dry earth. *Freezias* will, I feel sure, be found to lose a portion of their vitality if left any time exposed to the air. The proper way is doubtless to let them remain in the soil in which they have been grown. Tuberous-rooted *Begonias* were badly treated in the earlier years of their existence, and many losses occurred because growers did not know how to treat them. Some used to almost bake the tubers during winter with heat and drought; others kept the soil about them constantly wet, and the result in both

cases was serious losses. The only condition needed for their safety in winter is to keep them in boxes of soil, which, if moist when the bulbs are put into it, will not require any more water all winter, *i.e.*, if the boxes are placed on the floor of a greenhouse in which only sufficient fire-heat is maintained to keep out frost. But cultivators of large specimens of choice varieties are advised to let them remain in the same soil and pots in which they flowered. As to

AMARYLLISES, it is very important that they have a season of growth and one of rest. The majority of the varieties flower in the spring and early summer, and as the growing season commences as soon as they go out of flower, there is no difficulty in deciding when they require more heat and moisture. It is rather more difficult to decide, perhaps, when the season for resting should begin. The experienced grower, however, will watch the development of the leaves, and as soon as they show signs of turning yellow at the edges will know that it is time to begin lessening the supply of root moisture, withholding it altogether for at least a period of two months. In a general way, except when dealing with them for any special purpose, it is quite safe to begin reducing the supply of water at the roots at the beginning of November, discontinuing it altogether at the end of that month, and, as a rule, it will be quite safe to begin supplying them again with water in the middle of February. I find there are not many bulbous plants, or, for that matter, any other class of plants, so easy to manage as the Amaryllis; given bulbs of a flowering size and some good loam and leaf-soil and a warm greenhouse, and they can be flowered every year with the greatest regularity.

CALADIUMS are doubtless about as difficult as any bulbous or rather tuberous plants which we have to keep, but I do not think that it has ever been satisfactorily cleared up whether they require a season of rest or not. In my own mind I think they do not, although, forced by circumstances, I have had to give them a season of rest because I only require them in a presentable condition for a few months in summer. Still I firmly adhere to the opinion that the proper way to treat them is to keep them always growing, or rather, I mean, with leaves upon them. I am persuaded that we should experience fewer losses if we did not dry them off, for, as most of us know, when they have to be kept in a dormant state it is difficult to find just the exact conditions which suit them in a mixed collection of plants. Where, however, they must be kept dormant in winter, the supply of water should be reduced, as I have said, early in November and withheld wholly at the close of that month. As soon after this as the leaves part readily from the root stock they should be stored away in the same pots in which they have been grown. I find that if the soil is just moist at that time and they are kept in a temperature ranging from 50° to 60° that they keep better than when they are placed in a higher temperature while dormant.

TROPEOLUM JARRATTI generally goes to rest in April, but water should be given it while the wiry growth remains green, for although the soil may be moist, it will go to rest as soon as the tubers are ripened; it will begin to grow again early in August, so it is important to watch it, for if neglected at that time great risk attends the potting of it after it has started. The thread-like growth is very easily broken away from the bulb when young.

LILIES, as a rule, do not rest in the proper sense of the word, for although there may be no visible growth, the roots are more or less active, and if by any means they are checked, there is a direct loss of vitality. Although the beautiful *L. auratum*, when imported, affords a case of rather long rest, no one can say that it is the better for it. With us it does not rest to any appreciable extent; therefore specimens grown in pots should be repotted early in November. *L. giganteum* I find to be more or less active at the roots all winter, but bulbs of this variety which have attained a flowering size should not be disturbed, or there is a possibility of their

flowering being deferred until another season. The different varieties of *L. lancifolium* should not be neglected after the time just stated, for they begin to form new roots early in the autumn. When fresh potted these suffer a good deal if the soil is kept constantly wet all winter, but established bulbs are better able to endure more root moisture.

NERINE FOTHERGILLI AND THE GUERNSEY LILY both go to rest together when grown under favourable conditions. They lose their leaves about the end of this month, and from then to the beginning of August they may remain in the soil in which they are growing, and they will do better without any root moisture than with it. In due time Nature will assert itself by the largest bulbs beginning to flower. This should be the signal for the cultivator to supply the roots again with water, and it must be continued as before throughout the season of growth.

LACHENALIAS may be kept either in the soil in which they have been grown, or they may be shaken out and stored in a flower-pot. If there is a layer of sand over the bulbs they will keep sound and fresh. The only objection to this plan is that they are liable to be stowed away and forgotten until past the time when they should have been attended to. Whether kept in soil which may be quite dry or lying loose on a shelf, when the time comes for them to start into growth they will begin to form roots, and if after that time they are neglected, the season of growth will be shortened and a certain loss of vitality sustained. To prevent any loss of strength the bulbs should be attended to not later than the end of July, and they should then be put into the receptacles in which they are to flower. There should be no attempt to hurry Lachenalias to rest by withholding water, for although the compost may be constantly moist, they will go to rest at their own time, and be all the stronger for being allowed to do so.

J. C. C.

COCHLIOSTEMA JACOBIANUM.

WHEN this beautiful Spiderwort was first exhibited by M. Linden in 1867 it attracted much attention from both gardeners and botanists, as its large proportions, numerous and very beautiful flowers, and their lasting qualities were quite exceptional in the family of plants to which it belongs, whilst in the structure of its flowers it showed peculiarities of a very remarkable character. It is a plant that is easy to cultivate if placed in a moist stove, shaded from bright sunshine, and afforded a liberal supply of water both at the root and overhead. In its natural state it is said to grow between the boughs on trees where vegetable matter has accumulated, and this information points to the sort of soil most suitable for it, *viz.*, a mixture of peat, leaf-mould, and charcoal, with a good layer of crocks at the bottom of the pan or pot in which it is intended to grow. At Kew there are two specimens of this *Cochliostema*, both of which are now in flower. It is also grown by several London nurserymen, from whom young plants could no doubt be obtained for a few shillings. When fully developed *C. Jacobianum* forms an immense rosette of light green herbaceous leaves, the bases of which are sheathing, and form a water-tight centre in which water is always standing. In length the leaves are over 3 feet by 6 inches in width, channelled on the upper side with an edging of brown along both sides. No distinct stem is formed, the habit of the plant resembling very much some of the larger-growing Bromeliads. From its base in the sheathing axils the semi-erect flower-stalks are developed, as many as half a dozen stalks being produced together by large plants. The inflorescence is branching, and upon the branchlets the flowers are expanded in quick succession. These flowers are over 2 inches across and beautifully fringed with purple hairs, the petals being violet-blue and the sepals a deep rosy pink, whilst scattered along the flower-stalks are numerous large, boat-shaped bracts, 4 inches long and white, tinged with rose. There is only this one species

in the genus, as the plant once known as *C. odoratissimum* is now referred to this. It is a native of Ecuador. B.

Primula obconica.—As a winter and continuous bloomer, too much cannot be said in favour of this pale and delicate-coloured *Primula*. Here it has been in flower for over six months, and how long it intends to go on blooming it is hard to say, for still flowers come. This is its weak point. All the year-round bloomers, although useful, are not the most enjoyable. I know of one instance where it has been tested outside, and although the past winter was mild, it did not survive. Owing to the excessive rainfall all over the lake district, many plants of this description do not stand our winters nearly so well as they do in other localities where the rainfall is less.—W. B., *Windermere*.

Diseased Gardenias.—I enclose a shoot of *Gardenia florida* for inspection. I have lost three plants entirely, and the disease with which they are affected is a mystery to me. I have other *Gardenias* that were in a town house all last season, and that have been wintered in a cool house, which show no signs whatever of disease or of shoots dying off. I do not think that the early morning syringing would cause the evil, as stated by "T. B." in THE GARDEN of April 18. We have cut some very fine blooms off the plants, but the shoots die off at the joints; the bark in the first place appears to peel off, and then the part affected seems to canker. I shall be glad for any information that can be given in reference to it.—J. W.

* * * The shoots sent give sufficient evidence that their dying off is not caused through the effects of a diseased condition of the roots brought about by too much water or other cause, nor is it caused by syringing, as in the latter case the extremities of the shoots would have suffered most. I do not think that their destruction is traceable to what can correctly be termed disease, commencing as it does by the bark dying at the joints at some distance from the extremity of the shoots; it has much the appearance of being the result of injury arising through the application of something for the destruction of insects that has been used too strong, such as paraffin laid on with a brush in places where insects, such as scale or mealy bug, had congregated. Had the plants been dipped in or syringed with any insecticide for this purpose used too strong, the leaves would have suffered more than the bark. I have seen *Gardenias*, *Isoraras*, and other evergreen stove plants of a like character similarly affected by being dressed in the way named with insecticide that was not used sufficiently strong to make the injury apparent immediately after the application, but which has shown itself some time afterwards by the bark, where the liquid had been applied, slowly dying until the whole was destroyed right to the wood. The condition of the shoots points to something of this sort being the most likely cause, but the case is one of those for which it is difficult to assign an exact reason.—T. B.

Greenhouse temperature.—What is the proper heat for a greenhouse in which the plants are mostly soft-wooded?—I mean fire-heat?—H. T.

* * * For a greenhouse containing an ordinary assortment of soft-wooded plants a temperature of 44° or 45° will be found most suitable, as, with the aid of some fire-heat in the daytime during frosty weather, this will keep spring-flowering plants gently moving, and will assist the flowers to open of those that bloom in the winter.—T. B.

Tough soils.—A tough clay which bakes hard on the surface in dry weather is not a proper garden soil, and it is only running oneself into heart-breaking difficulty and failure to attempt to grow plants in soil of that character. Before planting a bed of clay soil it should be got into a light, friable condition. If pure London clay is dug up to the depth of 2 feet, completely pulverised by frost, and then intimately mixed while in a friable state with half its bulk of rotted turf, road scrapings, coal ashes, sand, rotted garden refuse, soot, and burnt earth, any or all of them, it will, with the help of plentiful manuring, make

good garden soil. There must, however, be no half measures; the clay should be sliced up in thin slices and laid so that frost can reach it; all that is frozen should be taken off and mixed when thaws occur. This is easily done, as what the frost has touched mixes like sand. Working a stiff clay does very little good, as it runs together again as soon as it gets wet, and the only useful treatment is to prevent that by placing between each particle of clay a particle of something which will keep them separate. The usual recommendation is to burn half the soil and then mix it with the other half. Primroses do very well in the woods here on pure London clay, but they only root into it so far as the worms have loosened it. They have besides some 4 inches of leaf mould above the clay.—J. D.

AMERICAN NOTES.

Seedling Currants—Currant bushes demand very little cultural care. The only formidable enemy to them is the green worm, and this is easily held in check by the use of hellebore. Currant seedlings vary remarkably as to the age when they first bear fruit, some bearing in three years, others in four, five, six, and even later. Seeds may be gathered when the Currants begin to ripen, and if sown at once in drills of mellow soil a quarter of an inch deep and kept moist, they will soon germinate and make a growth which, with a little protection, will winter in safety. They may be transplanted the next year, or the most thrifty and promising left to fruit, while the weaker plants may be removed to other places or destroyed. The list of Currants is a long one, but unless a collection is wanted for experiment, the following varieties need alone be grown. Among blacks, Lee's Prolific is an improvement upon the old Black Naples. It is earlier; the racemes are longer, and the berries fully as large. The Black Champion is of later introduction than Lee's Prolific, and the berries, as well as the bunches, are said to be larger. There is no fruit which makes better jellies than Black Currants, and there is, for this reason, a growing demand for improved varieties. The Black Naples and Black Champion are particularly valuable for northern climates. Black Currants are never attacked by the Currant worm. Of Red Currants, the Cherry is the largest, though the bunches are short and the quality inferior. Fay's Prolific is of recent introduction, and wherever it has been fruited is accepted as the best Red Currant, all things considered. Versailles so closely resembles the Cherry, that either serves for both. The Red Dutch is the best Red Currant. Among whites, the White Grape is unquestionably the best. The berries are large and in quality excellent. The White Dutch is also good, but the fruit is small or at best medium in size. Among light red sorts, Prince Albert bears a large berry and a long bunch. It is very prolific and ripens late.

Grapes of Central Asia.—When at the great commercial fair of Nishni-Novgorod, on the upper Volga, in the fall of 1882, I saw, says Professor Budd, many tons of Raisins and dried Grapes of quality equal to the best grown and put up in Southern France or Spain. These were put up and grown in Persia and North Bokhara, and I was told by the Persian consul that varieties of equal excellence were grown in Turkestan, Afghanistan, North Bokhara, and on the foot-hills of the North Himalayas. The leaves of these oriental varieties are thick and firm, like those of the Eastern Apples, Pears, Cherries, and Plums. As the belief is general that the Raisin and the best dessert Grapes of the Old World are all of the Vinifera family, it may be urged that the *Phylloxera* will "head off" the culture of these thicker-leaved varieties of the East. On this point I cannot be certain; but it is proper to say that Dr. Koch and Dr. Regel have raised the question of the separate and distinct origin of the Grapes of West Asia. The foliage of all of them comes nearer to that of the primitive forms known as *Vitis amurensis* and *Vitis Davidi* than to any primitive or cultivated forms of the

West. Again, it may be urged that some of the Turkish and Indian Grapes have been tried in West Europe and with us, and found wanting. On this point it should be remembered that we have imported, so far, from the coast climates, while the present thought is to introduce the varieties of the arid interior. It is to be hoped that Colonel Colman will aid in introducing not only the Grapes, but the fruits generally, of the little-known region of Western Asia. With needed instructions, our consul at St. Petersburg can aid in securing the products of Bokhara, while the Persian consul, if encouraged to do so, can secure many valuable products from Persia, Turkestan, and even Afghanistan.

Morus falkiva.—On the fine specimen grounds of M. A. Rosenthal, near Vienna, I was much interested, states Prof. Budd, in a peculiar looking and growing Mulberry under this name. It is a clean, upright grower, with medium-sized, thick, regular shaped leaves. The fruit was said to be large and of excellent quality. I failed to learn its native clime, and I have not been able to find the name in Koch's "Dendrologie," or to hear of it from any other source. It proves on our grounds harder than the Russian Mulberry introduced from the section north of the sea of Azoff by the Mennonites; hence is of interest to the West.

The Little Gem Pear is a chance seedling. The tree is very hardy, rather a tall grower, and when old, spreading; young shoots quite slender. It is a good and regular bearer; fruit often in clusters. The fruit of this Pear is not larger than that of the Seckel. The stalk is over an inch long and slender; colour a golden yellow, a little russeted around the stalk. Season September. Flesh whitish, very juicy, 'sweet, spicy, and good. Dr. Hoskins states that this Pear has the important advantage over the Seckel that each specimen is in good eating condition for four or five days, instead of as many hours. Its approach to ripeness is also indicated by a distinct change of colour from light green to clear yellow. If one buys a dozen Seckels at the street corner he will find most of them immature, while of these fine little Pears every one would be delicious. It seems likely to become a close rival of the Seckel. *Rural New Yorker.*

Phalænopsis Luddemanniana.—I send you six different varieties of this Orchid. We have here about twenty plants in flower at the present time. One is a very dark variety and has unusual substance; the blooms on the average measure 2½ inches in diameter. The habit of this variety is also distinct; the leaves measure 4 inches by 7 inches long and are exceptionally thick. I consider this the darkest of all the Luddemanniana varieties I have seen. The lighter sorts I find very useful for cutting for mixing with other Orchids, such as *Odontoglossum pulchellum*, or with Ferns. They have a pretty effect, especially under artificial light. Some of the plants of the lighter varieties have fourteen leaves; they are all grown in the East Indian house with other *Phalænopsis*, *Aerides*, *Vandas*, &c.—A. EVANS, *Lythe Hill.*

* * One flower (1) sent is by far the deepest and richest form of this *Phalænopsis* we have yet seen, being quite as fine as any form of *P. speciosa*. The paler varieties are also pretty; judging by Mr. Evans's note and the specimens sent, this Orchid is grown to perfection at Lythe Hill.—ED.

Rosher's fumigator.—I notice an advertisement in THE GARDEN calling attention to this fumigator. I am now using one, and find it to be one of the best I have ever tried. It is easy to work, never blazes, and is also cheap. The tobacco paper is placed in the upper dome, and is ignited by a piece of paper placed in the lower dome. This done, the cover is put on, which is perforated with holes, and no further trouble is required.—F. M. DIXON, *Crosslea House, Hentley Road, Ipswich.*

GARDEN FLORA.

PLATE 493.

GARDEN IPOMÆAS.

(WITH A PLATE OF *I. RUBRO-CŒRULEA*.)

THIS large genus is represented in gardens by about half-a-dozen beautiful and well-marked species and about the same number of others equally beautiful, but with characters not quite so fixed and distinct as to render their identification always an easy task. If we had to deal with no more than these there would be little difficulty in tracing the history and descriptions of garden *Ipomæas*. Unfortunately, however, there is much confusion in the nomenclature of cultivated *Ipomæas*, as there is in the case of all large genera of long standing in gardens, and this confusion of names, together with the often versatile characters of the plants, are obstacles to a descriptive account of the genus such as would be satisfactory to gardeners. It would not be worth while now to go too closely into matters of this kind; all that can be done here is to give a general account of the *Ipomæas*, followed by a descriptive list of those species which are of most interest in a garden sense and the value of which is generally admitted. Botanists fix the number of known *Ipomæas* at between 300 and 400 species, including with them the genera *Quamoclit*, *Batatas*, *Pharbitis*, *Calonyction*, and *Exogonium*, as well as many plants usually known as *Convolvulus*, &c. These are distributed over the warmer regions of both hemispheres, rarely occurring in temperate regions, and quite absent from Europe. They are herbs, generally climbing, or shrubs, or rarely arboreous. Only the climbing herbaceous kinds are at present known in gardens here, though the shrubby and tree species are well worth introducing, as they are quite distinct from anything we at present possess. Such, for instance, are *I. arborescens* and *I. macrantha*, both large trees, but flowering freely when small, their large white flowers growing on many-flowered peduncles; or the shrubby *I. floribunda* and *I. pinnosa*, which form compact much branched bushes about 3 feet in height and clothed with white trumpet-shaped flowers. A great deal more might be done with the plants of this genus than has been done hitherto, for the majority of the species are ornamental, and many of them quite distinct from what we have now. They are remarkable for the beauty of their flowers, which, though individually seldom lasting longer than a day, are developed in such abundant and rapid succession, as to keep up a rich display for several weeks or even months. They are all snuggling plants, seldom thriving in shaded positions, and with, perhaps, only one exception, never flowering unless under the influence of direct sunlight. This exception is the Moon Flower (*I. bona-nox*), which opens its flowers at night and closes again about an hour before sunrise; but even this plant requires a sunny position, or the flowers, if produced at all, will be poor. Many of them are annuals, and ripen seed freely under artificial conditions, so that when once obtained they are easily kept from year to year. The perennial species do not appear to ripen seeds under cultivation—at least I do not remember such kinds as *I. Horsfallii* or *I. digitata* (*Batatas*) ever producing seeds. They all like a strong soil and plenty of water when growing, the perennial kinds preferring dryness



IPOMEEA RUBRO-CÆRULEA

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en at rest. Several species are of importance economically, such as *I. Jalapa*, which yields the sap of the shops; *I. Purga*, also useful in medi-



Ipomœa bona-nox.

cine; *I. Batatas*, the sweet Potato, cultivated in tropical countries for its thick starchy tubers, which, when cooked, are used as we use Potatoes.

I. RUBRO-CÆRULEA (see plate).—This is one of the most beautiful of all annual climbers, and one of the easiest to manage. It thrives in a greenhouse or conservatory during the summer, requiring a little extra heat during its flowering season, which is usually from October to December. The seeds may be sown in February, and as the plants grow they should be allowed plenty of root room and a rich loamy soil. If the shoots are made to twine round strings, the removal of the plants into warmer winter quarters will be easy, and the shoots can then be placed in the best positions for the proper display of their flowers. In the Water Lily house at Kew several potfuls of this plant were most attractive when in flower, and some of them are still (Jan. 15) bearing their beautiful blue or white blooms. Seeds are freely ripened on cultivated plants, and to allay any fears which might arise from what has been stated in regard to the effects of seed ripening on the health of the plants, it may be here said that the Kew plants have not been prevented from ripen-

and placed in saucers of water the flowers may be employed for the decoration of the dinner table in the evening, the only drawback to their being thus used being their assuming a magenta colour under gaslight; even then they are exceedingly beautiful. There is a pure white-flowered variety which if grown along with and allowed to mingle its shoots with the blue one, adds a charm when both are in flower. Although to many this beautiful *Ipomœa* will be new, yet it has been known in English gardens for at least fifty years, but, like many other good garden plants, it has been almost totally forgotten or neglected till last year, when it reappeared at Kew and elsewhere. It is said to be a native of Mexico.

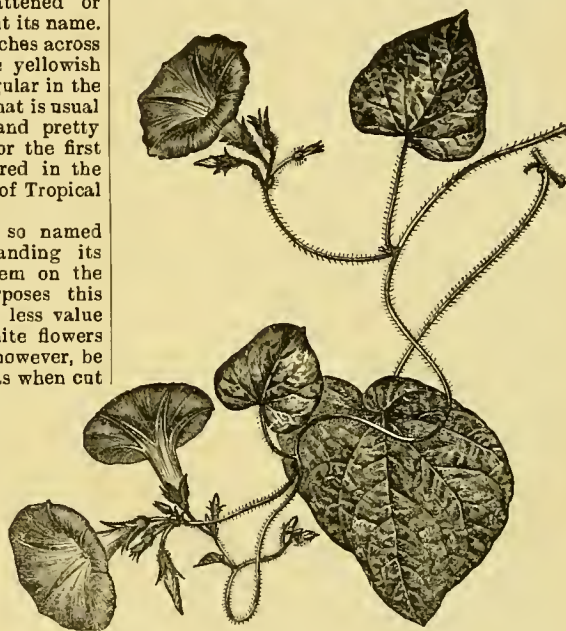
I. ALATIPES.—A strong-growing stove climber belonging to the same section as *I. Horsfalliæ* and *I. Thompsoniana*. It is perfectly smooth and shining in all its parts; the leaves are cordate and pointed, and from their axils spring the peduncles, which bear two to four flowers, and which, owing to their curiously flattened or winged character, have given the plant its name. The flowers are of the usual shape, 3 inches across the top, and salmon-coloured with five yellowish rays. This last character is rather singular in the genus, the colour being quite unlike what is usual in *Ipomœas*. Altogether a distinct and pretty climber for the stove. It flowered for the first time at Kew in 1862, and was figured in the *Botanical Magazine*, t. 5330. A native of Tropical America.

I. BONA-NOX.—The Moon Flower, so named owing to its singular habit of expanding its flowers only at night and closing them on the following morning. For garden purposes this peculiarity renders the plant of much less value than it would be if its large pure white flowers expanded during the day. They can, however, be used for indoor decoration at night, as when cut and placed in water the buds expand beautifully and remain in perfection all night. *I. bona-nox* is a tropical annual, thriving with us only when grown in a moist stove; it flowered very freely in the Water Lily house at Kew last year. The stems grow rapidly to a length of 20 feet, or even 40 feet when under liberal treatment; the leaves are large, usually cordate, though varying somewhat in form; the peduncles are 6 inches long and bear about five flowers each, only one flower opening at a time on each stalk. The flower-tube is about 6 inches long, and the limb about the same in diameter, the whole being pure white with a few tints of pale green. The flowering period is summer. Seeds should be sown in February, and the plants potted into large pots of strong loamy soil. Native of Tropical America; cultivated in most tropical countries.

I. DIGITATA.—A well-known stove climber, represented in gardens by several varieties and in popular botanical works by a considerable number of forms which hitherto have been looked upon as specifically distinct. To gardeners it is familiarly known as *Ipomœa* or *Batatas* paniculata, and it is figured in THE GARDEN under the latter name. For covering pillars or training over the ironwork in large stoves few plants are more serviceable than this. In the Water Lily house at Kew it has been an annual attraction for some years, where trained round the iron rail of the tank in which the Water Lilies are grown and from thence up over the roof it has a most effective appearance. Easily cultivated, a quick vigorous grower, and never failing to flower freely, this *Ipomœa* takes rank among the very best of large growing stove climbers; for small houses it is unsuited. From a thick fleshy perennial root-stock the shoots are pushed early in spring, and when favourably situated as regards heat, light, and moisture these shoots often grow to a length of 40 feet in a few months. The leaves are digitate, shining green, and smooth, the peduncles numerous all along the shoots, and the flowers are large, spreading, and pink-purple. Besides the names above mentioned

this species is also known under about a dozen others. The following figures are now referred here, viz., *Botanical Register*, t. 62, 75, 333; *Botanical Magazine*, t. 1790, 3685. Found in all tropical moist climates.

I. HEDERACEA.—Although a common garden plant in most tropical countries, this species is not often met with here. It resembles the garden *Convolvulus major*, and like it varies somewhat in the colour of its flowers. Like that species, too, it is an annual, and thrives out of doors with us in summer. The leaves are hairy, heart shaped, and generally three-lobed, the peduncles rather short, and bear three or four funnel-shaped flowers, which are either rose coloured, blue, or yellowish. Parkinson, Gerard, and Miller all grew this *Ipomœa*, and speak of it as one of the most beautiful of the plants known to them. Like many of the plants belonging to the *Convolvulus* order, this has a host of synonyms, seventeen of which are quoted in the "Flora of British India,"



The Morning Glory, *Ipomœa purpurea* (*Convolvulus major*).

and there are many more besides. Forms of this plant are represented in the *Botanical Magazine*, t. 188, and the *Botanical Register*, t. 85, 276, 1988. Common in both worlds.

I. HORSFALLIÆ.—A distinct and beautiful plant, now well known in gardens, and owing its popularity to its winter flowering habit as much as to its beauty. It requires distinctly tropical treatment, thriving well in a moist stove either trained along the rafters, over pillars, or upon trellises. Where room can be spared for the latter it is always the best method to adopt for this plant, as when trained above the eye level the flowers are not easily seen, owing to the erectness of the peduncles. There is some difficulty in propagating this species, as it does not strike freely, in fact, very seldom, though sometimes hard, ripened wood will root in a propagating frame. The only method that gives good results is that of grafting ripened portions of the shoots on the plant's own roots, which should be done in spring. The whole plant is perennial, green, smooth and shining; the leaves are divided into five lance-shaped leaflets, with wavy margins, flower-stalks springing from the axils of the leaves and bearing numerous flowers, which when in bud are encased in shining black sheaths or calyx lobes; they open two or three together on each peduncle and are of a deep, rich, rosy red colour. Flowering period, November to December. After flowering, the strongest shoots should be shortened back and the plant rested for awhile. Native country unknown. *Botanical Magazine*, t. 3315. There is a variety at Kew named Lady Slade with pale rose flowers.



Ipomœa hederacea.

ing seeds; and although the crop of these is plentiful, the flowering period does not appear to have been shortened. It would be impossible to overrate the many excellencies of this *Ipomœa*. A glance at the plate will afford an idea of what the flowers are like when seen in hundreds all over the long twining branches of the plants. If cut

I. LEARI.—A very handsome quick-growing climber for the intermediate house. "A fine plant of this, 40 feet in length, produced no fewer than 60,000 flowers, expanding successively from three hundred to eight hundred a day." Lindley says it grew and flowered out of doors, but such a case is quite exceptional, as unless grown in a warm house this plant never does well. It forms fleshy, tuberous roots, which should be kept dry during winter, when the plant is at rest. The stems are annual, sometimes perennial, but always lose their leaves in winter; leaves cordate, more or less lobed, hairy; flowers on long axillary peduncles, about half a dozen on each, and expanding two or three together; they are trumpet-shaped, about 4 inches across, and of a rich violet-blue, with five purple rays. A native of Central America. (Syn., *Pharbitis Leari*.) *Botanical Magazine*, t. 3928.

I. PURPUREA.—To this versatile species belong the numerous varieties grown in gardens out-of-doors during summer, and known by such names as *Convolvulus major*, minor, *purpureus*, *striatus*, *tricolor*, &c. Not only in European gardens, but in almost every tropical and temperate country in the world this plant is commonly cultivated. At Kew last year a set of singular forms procured from Japanese gardens were flowered, and many of them showed characters both of colour and shape which were distinct from European varieties of this plant. In English gardens *Convolvulus major* is one of the most popular of annuals; from a 3d. packet of seeds one obtains a great many varieties in colour, from pure white to deep purple and blue. Sown in the open border or at the foot of a summer-house, the seeds soon germinate and grow into flowering size, continuing to expand their beautiful trumpet-shaped blossoms as long as the summer lasts. As seeds are ripened freely on these cultivated forms they may be collected and saved for future sowings. The type has heart-shaped leaves and flowers as large as our native *Bindweed*, deep purple, with five red bands. Originally from Tropical America. *Botanical Magazine*, t. 113.

I. QUAMOCILIT.—A slender twining annual which thrives in a cool greenhouse, or even out of doors in sheltered sunny positions. It is an old garden favourite, though rarely cultivated now-a-days. Parkinson grew it, but found it unhappy when treated as a hardy annual. He says: "With us it will seldom come to flower, because our cold nights and frosts come so soon before it can have comfort enough of the sun to ripen it." Sown in pots under glass, the plants nursed on till warm weather has come, and then planted on a sheltered sunny border with a few twigs stuck about for them to twine around, this graceful little annual proves quite at home. If grown indoors it should be kept in a cool house, and allowed to twine round strings or other support. It is not a gorgeous *Ipomœa*, but still pretty enough in the Fern-like appearance of its foliage and its star-shaped scarlet or white flowers to please many. The leaves are divided into numerous linear segments, *Gleichenia*-like, and from their axils all along the twining stems spring the flower-stalks, each bearing two or three slender tubed flowers with the limb spreading and cut so as to resemble stars, and 3 inches across. A common tropical weed, though originally a native of America. *Botanical Magazine*, t. 244.

I. THOMPSONIANA.—A recent introduction from the West Indies, and, from its resemblance to *I. Horsfallii*, first named as a white variety of that species. It is, however, distinct in having "thick fleshy leaves, the leaflets of which are stalked, not sessile, rounded, not tapering at the base, and entire, not wavy at the margins. The flowers, moreover, are nearly double the size of *I. Horsfallii* and pure white." It was named as above by Dr. Masters after Mr. Thompson, of the firm of Ireland & Thompson, nurserymen, Edinburgh, by whom it was first introduced in 1883. It flowered in May of the same year. We know comparatively little of this plant yet, but there can be no question of its beauty, and should it prove as amenable to hothouse cultivation as *I. Horsfallii*, it is bound to take a foremost place amongst stove

climbers. It appears to be a quick grower judging by a young plant in the Kew collection.

The following species have been in cultivation, but are either now lost or not generally grown:—*I. coccinea*, with flowers like those of *I. Quamocilit* and entire cordate leaves; *cathartica* (syn., *I. Nil*), flowers large crimson or blue, leaves cordate, three-lobed; *Batatas* (*Batatas edulis*), the Sweet Potato, of no horticultural merit; *Jalapa*, of medicinal interest only; *Tweedii*, a small-flowered species; *ficifolia*, much like *I. digitata*, but smaller; *Purga*, of medicinal interest only; *versicolor*, remarkable in having small flowers in clustered spikes; *tyriaanthina*, a very beautiful species, flowers large, purple, in clusters, rootstock perennial. B.

WORK DONE IN WEEK ENDING MAY 19. MAY 13.

The slight frosts that recur nightly have hitherto done but little or no injury hereabouts, and as the season is so advanced, we may now hope to escape without serious damage to fruit crops, and if we do, they may be well termed crops. We have to-day been over Pears on walls to clear them of dead blossoms and of fruit that did not set, and cut back a few of the longest foreright shoots, and a fortnight hence they will be again gone over to thin out the fruit. Cordons on walls are making profuse growth, and part of this has also been stopped back, and in a few instances a new leader has replaced the old one, our rule being that when an extra promising growth near the top of the tree seems likely to outgrow the leader, this latter is at once cut back, and is replaced by the new shoot. The side shoots we pinch at about the third joint from the main stem. Continued hoeing amongst kitchen garden crops. Planted out a few of the hardier succulents. All other planting of flower-beds will now be deferred till the nights are warmer. At present, Grape thinning monopolises almost the whole of the time of indoor hands. Watering, airing, and getting out plants to harden is about all else that can have attention.

MAY 14.

Very fine day; 2° of frost in the morning. Continued kitchen garden work; hoed and finished thinning out Parsnips and intermediate Carrots. Completed trenching of Kale and sprouting Broccoli ground, and sowed part of it with French Beans, part with Turnips, and the remainder with Peas. Ne Plus Ultra and British Queen are our favourite late kinds. Canadian Wonder is the only dwarf French Bean we sow at this season. Clipped edgings and weeded Rose beds. The maggot has put in an appearance, and the only effectual way to get rid of them is to pick them off, and therefore every plant has been searched with this intent. The waiting for warmer weather before putting out tender bedding plants has given us the opportunity of properly planting the spring flowering plants that have been lifted. Primroses, Daisies, Aubrietias, Thymes, Saxifrages, Sedums, &c., are all being divided and planted in readiness for again doing duty next winter and spring. Work in the houses is still principally Grapes thinning. Late Muscats and Lady Downes are now in full flower, and we endeavour to maintain an equable night temperature of from 70° to 75°. We have tried, but have never yet been able to succeed in getting a satisfactory set of these two varieties with less heat than this. With sun heat we allow the mercury to rise to 85° or 90°, but not without a goodly degree of moisture in the air, though of course with less moisture than is the rule after the Grapes have set. Believing that at this stage of growth a check of any kind, such as cold draughts, a very low temperature, or the close stopping back of growths in some degree, hinders free setting, we by every means endeavour to avoid them, and more particularly in regard to pinching back shoots; in fact, these are allowed to grow at random from the first appearance of flowering till the berries are formed and swelling.

MAY 15.

No frost, but drying, cold, north-easterly winds. Made up manure beds for frames in which to grow Cucumbers, Capsicums, and Chillies, as also for

raising any seeds that may be desired. Lifted Broccoli and heeled them in under a north wall Cauliflowers show signs of heading, so the retarding of Broccoli will only be necessary for short time longer. It ought to be added that the plants in handlights have bolted—consequently I suppose, on the mild winter, and partly perhaps from carelessness in respect of ventilation. Thinned out French Beans to a foot apart; they are on a south border well earthed up, and screened from wind and frost with Hazel spray. Gave a good watering to Coleworts, Cabbage, Cauliflower, and Violets that have been recently planted. The Coleworts have been planted a considerable time, and were therefore sufficiently large to have the drills filled in with soil after the watering, an excellent way of mulching both to save watering and to ensure rapid growth. Got a number of bedding plants out to harden, and shifted out of heat Coleus, Iresine, and the tenderest sub-tropicals and placed them in cold pits. Had a last turn at thinning out the fruit in late Peach house; they are still far too thick, but our early house being thin, we are compelled to make up numbers from this later batch, even though the trees should slightly suffer. The border is an inside one, and it has therefore been given an extra good watering with tepid manure water. Tied up and stopped side shoots of young Vines. It is but a very few weeks since they were planted, and yet some of them are nearing the top of the rafters, a circumstance largely attributable to their being planted in a warm inside border, and to the water given them never having been of a less temperature than 90°. Other work has been the same as yesterday.

MAY 16.

A fine and warmer day, and the thunderstorm of this evening may possibly be the beginning of the end of the unseasonable cold weather that during the last week or two has prevailed. Planting out spring bedding plants, and the beds and borders have been manured and dug in readiness for the summer plants. Carting bedding plants to flower garden, clipping Grass edgings to walks and beds, together with rolling and sweeping, has to-day been our principal out-of-doors work. Besides the usual weekly thorough clean out of houses, there has been more Grape thinning, pinched shoots of Figs, watered the inside border, and also of second Peaches and exposed the fruit to full daylight by tying aside of shoots. Thinned out the fruit on first batch of President Strawberries; they grow larger than *Vicomtesse Héricart de Thury*, and we reduce the number of fruits on each plant accordingly; six, or at most eight, fruits to a plant is all we allow. Tomatoes in pots being now in full fruit, manure water is given them at each alternate watering, in addition to the top-dressing of rich soil that was applied a few days since. By cutting out the smallest and deformed fruit from each cluster at an early stage of growth, the individual fruit grow larger and the clusters are handsomer. The plants for growing in the open air are being hardened preparatory to planting out soon as the weather gets warmer.

MAY 18.

The thunder-storms of yesterday have had a slightly improving effect on the weather of to-day which has been sunny and a little warmer, but still too cold to risk out tender bedding plants, and therefore further planting must still be postponed till there is a prospect of settled warmth; but, meanwhile, the plants are being taken to the flower garden in readiness, and are covered with tiffany at night. Heed over shrubbery clumps; Rhododendrons, Azaleas, and Kalmias are now beginning to flower, and they will look all the better if the ground beneath them is free from weeds and the turf edgings closely cut. The same remarks hold good in respect to our hardy fernery, which is wholly surrounded with Rhododendrons, and this part of the garden has also had a thorough clearing up to-day. Put in the final lot of *Alternanthera* cuttings for this season, the frames for them being taken off one of the first batch of cuttings that were put in, and they are now fine bushy plants fit to go out at any time

soon as the weather gets warmer. Of course, thick coverings are required at night, and nothing is more handy for the purpose than good wide widths of frigi domo stretched over long poles to keep the canvas from resting on the plants. Put in cuttings of *Chrysanthemums* for flowering in small pots for basket and vase decoration. The *Pomponé* varieties are the best for the purpose; *La Purée*, *Model of Perfection*, *Bouquet d'Or*, and *Dick Turpin* are the best varieties we have grown in this fashion. Put in another lot of *Poinsettia* cuttings; pricked off *Humea elegans*, *Celosia pyramidalis*, and potted on the first sowing of the latter, a plant that we find invaluable for house decoration at end of summer and all through the autumn. Grapes are now colouring rapidly, and the ventilation of early vinery will from to-day be considerably increased, the front sashes being now opened regularly as the top ones, and there will be a little left on all night. There is a little spider, and to prevent it spreading we are having the affected leaves lightly sponged over with soft-soap wash, and atmospheric moisture will be continued, though in a modified form. If I may so express it, we shall aim at having it neither wet nor dry, then colouring will be just as easily assured as were the atmosphere ever so dry, and this latter state invariably assists the spread of red spider.

MAY 19.

Fine and milder, which induced us to begin planting the flower-beds in earnest, the hardiest *Pelargoniums* and *Fuchsias* being mainly the kinds that have been put out to-day. Our arrangements partake more of mixtures than masses of colour both in regard to flowering and foliage plants, and the said mixtures are also rendered the less stiff and formal by the introduction of standard plants at regular intervals over the whole. The standard plants for flowering arrangements that we prefer are *Fuchsias*, free-flowering *Abutilons*, and *Heliotropes*, and for foliage beds, *Grevillea robusta*, *Aralia Sieboldi*, *Acacia lophantha*, and for very large beds, *Ricinus*, or *Castor-oil* plant. Washed Peaches and Apricots on south walls with garden hose. We are favoured by being able to apply it with any amount of pressure that is desired, and the trees have, therefore, had a good swill to wash off the accumulation of dirt from fallen blossoms, aphids, spiders' webs and the like. Pears and Plums will be treated to a similar wash at first convenient opportunity; and, meanwhile, more of the rubbish and smallest fruit, consequent on the large clusters of flowers, is being picked off, as the earliest growths are cut back. Cleaned and sponged *Gardenias*; green fly and soft brown scale are the only pests that afflict our plants, but a wash over with soft soap water about once a month keeps them in fairly good condition. Planted Cucumbers in manure pit and made another sowing, and the same of Melons. Cut off a few more small "shows" from late Muscats, and all the surplus bunches from latest Hamburgs, and began to thin out the berries.

HANTS.

FRUITS UNDER GLASS.

PLUMS, started with the earliest Cherries, will now be stoning, and, like all stone fruits under artificial conditions, the trees will require careful treatment. The most important points are liberal ventilation when the temperature exceeds 60°, freedom from insects, and good syringing with soft water or water free from sediment. A dash of clear diluted soot water may be added once or twice a week, as it is a good stimulating insecticide, and it benefits the roots as well as the foliage. If Plums, as is sometimes the case, are brought on with Cherries, they should be separated when the Cherries begin to colour, as the latter ripen up quickly and require drier treatment than would be good for the Plums. Unlike the Peach and Nectarine, which may be pushed on rapidly after the fruit is stoned, the Plum does not submit kindly to sharp forcing; it should, therefore, be started early if wanted early and have an abundance of air, or the fruit will never colour properly.

MELONS.—Where pits, now devoted to early

vegetables and bedding plants, are used for Melons or Cucumbers after their present occupants are disposed of, seeds of free hardy kinds may now be sown in heat and kept near the glass where the plants can have plenty of light and air, to keep them dwarf and sturdy, until the beds are ready for them. If new beds have to be made up, the fermenting material, properly worked, should be ready for putting together when the seeds are sown; but it will not be wise to form the hills or ridges until after the heat has revived and is again on the decline. The seeds may be sown singly in small pots or in batches, and potted off in pairs in 4-inch pots when they begin to show the first rough leaf. Whichever plan is adopted, the nursing pots should be well filled with roots before the plants are "pinched out" of the plants. They will then be sufficiently strong to throw out side breaks in sufficient quantity to cover the space allotted to each hill. The latter, composed of fresh heavy loam resting on sods of turf, grass side downwards, should be made very firm, but not too large at first, as the plants make the best growth when the roots reach the sides, where they revel in the humid atmosphere of the frame and form numerous rootlets ready to seize upon fresh compost, which should not be rich, otherwise the fruit will not set freely.

Pits that were well prepared early in the season and still contain latent heat need not be cleared of the old fermenting material; but the soil in which Potatoes or French Beans have been grown should be taken away, as it may be too light, or contain the larvæ of troublesome insects. The bed can thus be turned and renovated with a little fresh material, when the hills can be formed without delay, and planted as soon as the heat has penetrated to the surface. Green fleshed Melons are best adapted to pits and frames. Scarlet kinds grow and fruit equally well, but the close, humid atmosphere from fermenting material, unaided by fire heat, unless the season is unusually hot and dry, does not favour their ripening up with a brisk flavour, and second-rate scarlet fleshed Melons are not worth eating.

FIGS.—The fruit in early houses will require a liberal supply of air and exposure to as much light as can be conveniently admitted when it begins to change for ripening, otherwise it will be pale, vapid, and deficient in flavour; and it is difficult to imagine anything more disagreeable than a badly ripened Fig. The supply of water to the roots may be slightly reduced, but on no account must the trees be allowed to feel the want of it; neither must syringing be entirely suspended, as the Fig, unlike all other fruit trees, carries a successional crop, which must be kept progressing while the fruit produced by the old wood is ripening. Therefore, in order to meet the requirements of the two crops, it will be necessary to give and take as opportunity offers. The borders or pots may be kept well covered with straw or stable litter to prevent the escape of moisture, and suitable atmospheric conditions can always be secured by syringing the walls, stems, and other parts of the trees without wetting the ripening fruit whenever the weather favours a free circulation of air. Although under good management the ripening of the crop is progressive and should be perpetual, there are times when close picking will admit of a general syringing, with decided advantage to the fruit and foliage, and such opportunities, it is not necessary to remind Fig growers, should never be allowed to pass by. Houses in which established trees have covered every part of the trellis not unfrequently become crowded with young wood and foliage; pinching at the fifth or sixth leaf keeps them in order for a time. Every young growth shows as many Figs as leaves, and the temptation to retain too many often gets the better of one's judgment, but this is bad culture. Figs must have light and air, and the best way to secure this admission is by the judicious and timely thinning of wood and fruit with a very liberal hand.

PINES.—When early started Queens show signs of changing colour, the supply of water as well as atmospheric moisture should be reduced; but as this cannot always be carried out without injuring

the general stock, a small compartment well heated and ventilated will be found a most convenient structure for their reception. Here they can have plenty of heat, light, and air, so essential to colour and flavour, and just sufficient atmospheric moisture to prevent the plants from suffering from the change. If all the later started fruits have not been tied up, two neat sticks should be placed in each pot, with ties attached, to prevent them from drawing out of the perpendicular, as a lop-sided crown, no matter how good the Pine may be, greatly detracts from its appearance. Reduce the suckers on each plant to two, unless the stock is scarce, and remove the gills which form near the base of the fruit. Use diluted liquid, soot, and guano water alternately when the plants become dry and really require feeding, not otherwise, as more Pines are injured by over-watering than many people imagine, particularly where the surface of the bed is regularly syringed and the evaporating pans are charged with stimulants. If the house is bright and requires shading, the material used for this purpose must be very light and open in texture, and the mode of fixing should admit of speedy application or removal, as shading gives a great deal of trouble, which, if possible, should be avoided. As nights, we may hope, will soon become warmer, a little air on the apex of the house from bedtime until early morning will do good service in keeping the atmosphere fresh and sweet, and in preventing the foliage and crowns from becoming elongated, tender, and susceptible to scalding. This night air will, of course, be shut off to give the plants the full benefit of the early morning damping and indirect syringing, but the lights must not be kept closed too long, as scalding or browning can generally be traced to condensed moisture, which the slightest chink on the top lights would allow to escape. Let the temperature range from 68° to 70° at night, and 80° to 85° from sun-heat on bright fine days; admit front air with great caution, as the weather is very treacherous, and Pines well up to the glass always do best without it.

Successions.—The early part of this month is generally a busy time in this department, but owing to the want of sun, early-potted plants have not made the rapid progress they might have done. No time has, however, been lost, as we have all our growing weather to come, but action must now be taken, and such plants as have not filled their pots with roots can be returned to the beds after they have been renovated, as it is worse than useless to pot a plant before the roots have taken full possession of the existing ball. Assuming that pots, crocks, and compost have been some time ready for use, and the latter is dry and warm, the strongest plants should be taken in hand first, and if any that were turned back last time, or others intended for autumn starting are now ready, they should be shifted into 10-inch to 12-inch pots. Suckers that were potted in February will require pots of two sizes; if strong, as they are now grown, the largest will be fit for shifting into 12-inch, the second size into 10-inch pots, that is, provided the plants are really good and the roots are plentiful. All plants should be carefully watered a few days before they are disturbed in the beds, and the usual compost should be rammed firmly into the pots to prevent the retention of water during the time they are forming new roots. When the potting is finished a sharp bottom-heat and a close, humid atmosphere will be necessary, but great care must be observed in the preparation of the plunging beds, as tan and leaves, after they have been disturbed and watered at this season, sometimes run up to a higher temperature than is good for the plants. To obviate this dilemma, and to avoid having to move the plants after they are replunged, it will be well to disturb the tan or leaves as little as possible, but merely to level the surface, that is, provided they have not already fermented themselves dry, when they must be turned and watered. The plants can then be replunged with safety, and the new material necessary to the maintenance of the bulk of the bed can be placed on the surface.

Plunging beds generally should now be looked

over, as they sometimes heat themselves dry, when plants in small pots plunged near the bottom-heat pipes are apt to suffer from want of water. It is not always necessary to take the plants out, as the beds can be made firm and well watered between the pots without disturbing them.

Eastnor Castle, Ledbury. W. COLEMAN.

TREES AND SHRUBS.

THE TURKEY OAKS.

THE genus *Quercus*, by far the largest and most important of the order to which it belongs (the *Cupulifera*), embraces more than 250 species, judging according to the somewhat broad and comprehensive views of specific rank which obtain amongst the leading botanists of Britain. Of course, the number of Oaks which have received different names, or, more correctly, the number of different names which have been given to Oaks



Leaves of the Turkey Oak, showing the variation of outline.

under the impression that they were new, is infinitely larger than the estimate above quoted. Like most self-evident genera containing a large number of species and spread over a large area, the genus *Quercus* presents great difficulties to anyone studying it. The geographical areas of one section overlap those of some of the others, and one form often mimics another so well, that without good material and a thorough and exhaustive examination, no conclusion can be arrived at which is in the least degree satisfactory. The Oaks are nearly all confined to the northern hemisphere, a few cross the equator, and are found on the mountains of Java. The American species are peculiar to the New World, but some of the Old World ones are not confined to one continent, being distributed throughout countries in both Europe and Asia. Some, for instance, extend from North Africa, South Europe, to the Levant, &c., varying considerably in size and habit according to the conditions under which they find themselves, but still forming links connecting the extreme forms to one another. The principal points relied on as furnishing distinctive characters in the determination of species of Oak are the time required for the maturation of the Acorn—one or two years



Fruiting twig of *Q. Cerris cana major*.

(this unfortunately varies in the same species under different conditions, some of the Turkey Oak section ripening Acorns in one year under favourable circumstances), the nature of the Acorn cup and its investing scales, and the character of the foliage, whether deciduous or evergreen, &c.

From an economic point of view, the Turkey Oaks are comparatively unimportant, at least so far as we are concerned in this country, as neither the type nor any of the forms have been planted,

so far as I am aware, for timber production or any other source of profit. But from an ornamental standpoint, I venture to assert that we have few more important hardy trees in this country, though, curiously enough, it has been planted but little comparatively in recent years. It is only in old places that one can see really fine examples of the Turkey, the Lucombe, and the Fulham Oaks. The two latter varieties are unquestionably valuable for this country on account of their evergreen character. They are indispensable to the planter who seeks to obtain fine landscape effects from trees, more especially as the Holm Oak is not a tree for every soil, nor will it succeed so far north as the Turkey Oak.

The Turkey Oak gives its name to the *Cerris* section, which embraces a number of South European and Western Asiatic species. In this paper, however, it is only proposed to treat of the true Turkey Oak, *Quercus Cerris*, and its varieties. The synonymy of the species is somewhat intricate, as is also that of some of the varieties; no garden name is quoted as a synonym without my having carefully examined and compared specimens of the plant bearing that name. As is so frequently the case, many of the numerous names have been applied by various botanists to forms so slightly diverging from each other, that no purpose whatever is gained by keeping them apart, and cultivators and collectors are puzzled by having plants under different names which they cannot distinguish from one another. Nurserymen, too, must bear some blame for the confused state into which tree nomenclature has fallen of late years. Acorns have frequently been sent both to this country and to the continent from different sources, and if the seedlings produced were unlike anything known to their owner, straightway a new name was added to perhaps an already too long string of synonyms of, in some cases, a fairly well-known plant. These names do not unfrequently refuse to die quietly; plants bearing them have been distributed, and so for many years in horticultural periodicals and literature a synonym, more or less absurdly wrong or misleading, is



Acorn and branch of *Quercus Cerris Lucombeana*.

made to do duty, and tree lovers buy, only to find that they have been supplied with an old friend under a new name.

THE TURKEY OAK (*Quercus Cerris*—Linnaeus).* —The Turkey Oak is one of the most desirable of deciduous ornamental trees. Like all other Oaks of wide geographical distribution, it varies considerably in size, foliage, &c. The long linear bud scales and stipules, and the long, somewhat bristly scales of the Acorn cup afford, however, characters by which, in conjunction with the shortly-stalked,

* SYNONYMS.—*Q. cernita*, Lamarck, in "Encyclopédie Méthodique." *Q. haliphæos*, Bosc, in "Mémoires sur les Chênes." *Q. Tournefortii*, Willdenow, in "Species Plantarum," iv., p. 454. *Q. carlsruhensis*, of gardens. *Q. dentata*, of gardens (not of Thunberg). *Q. australis*, of gardens, (not of Link). *Q. apennina*, of gardens (not of Lamarck). *Q. Ragnai*, Loudon, in Arboretum, vol. iii.

unequally and deeply pinnatifid leaves, the species can be readily recognised. In rapidity of growth it far surpasses our native Oaks, and in general habit it is wonderfully unlike them, never



Branch of the Cut-leaved Turkey Oak.

assuming the gnarled and tortuous appearance—so dear to the heart of many artists—which is characteristic of old specimens of our indigenous species. At Kew there are many large and hand-



Branch of *Q. Cerris Lucombeana crispa*.

some specimens of the Turkey Oak, exhibiting well the open, straight, graceful mode of growth which forms so striking a contrast to that of the British Oaks.

I am unaware of the existence of trustworthy data as to the relative value of British-grown timber of this Oak; as it is, however, perfectly hardy and a rapid grower, it would in all probability prove a paying speculation to plant it with a view to profit. In a southern county I have seen the species fairly naturalised, the self-sown seedlings holding their own against the common Oaks, amongst which they were growing. It is certain that the wood is very handsome, and at any rate well suited for indoor ornamental work; this has been found to be the case with the wood grown in England.

A considerable number of seedling forms, many of them hybrids between the Turkey Oak and some of the South European evergreen species, such as the Cork Oak (*Q. suber*), are in gardens, and some of these vary so much from the seed-bearing parent, that, were their history and origin not recorded on good authority, their true position would hardly be suspected.

The Turkey Oak is found in a wild state throughout Southern and South-Eastern Europe to Syria, &c.



Flowering twigs and acorns of *Quercus Cerris fulhamensis* (m male flowers, f female flowers).

and, in common with the Holm Oak (*Q. ilex*), withstand sea breezes very well. Loudon gives a statement by Mr. Pince that he had seen several instances of the Lucombe Oaks growing vigorously in bleak exposed situations where the common Oak and Elm would not succeed. The Lucombe Oak is also known as the Devonshire Oak, the Exeter Oak, and the Evergreen Turkey Oak.

THE FULHAM OAK (*Q. Cerris* var. *fulhamensis*—Loudon).—The Fulham Oak can hardly be distinguished from the Lucombe Oak, except in



THE LUCOMBE OAK (*Q. Lucombeana*—Holwel).^{*}—Unlike the Fulham Oak, which is a branching tree with a round head and a comparatively smooth, though still somewhat corky, bark, the Lucombe Oak grows with a straight erect trunk, regularly furnished with branches, and forms in both its young and old states a conical spire-topped tree with a more rough and corky bark. It was raised about the year 1762 by a Mr. Lucombe, nurseryman, at Exeter, who propagated it very largely on account of its sub-evergreen character and its graceful habit and rapid rate of growth. In the west of England, particularly, large numbers of this Oak have been planted, and in thirty or forty years they attain the height of from 60 feet to 80 feet or upwards. During mild winters the leaves are retained until they are cast off at the time the buds swell, previous to the unfolding of the young growths.

Amongst the seedlings raised from the original Lucombe Oak are some worthy of special mention. For ordinary purposes the five sub-varieties mentioned by Loudon, viz., *Q. Lucombeana*, *crispata*, called the new Lucombe Oak; *Q. L. suberosa*, *Q. L. incisa*, *Q. L. dentata*, and *Q. L. heterophylla* are practically identical. *Q. Newmani* of gardens and *Q. repalensis* of gardens (not of Desfontaines) must also be included. All are remarkable for the thicker, corky bark, the dark green, almost black, glossy foliage which is more hoary beneath than in the parent. They are practically evergreen, as it is only when the young leaves are bursting forth that the old ones, still fresh and green, are cast off. So rapid, however, is the growth of the new leaves, that a few days suffices to re-clothe the tree with new foliage. The five names above-mentioned were given to trees raised by Mr. Lucombe from acorns gathered from the old Lucombe Oak about the year 1792. Specimens in the arboretum at Kew are now (December 18) the most conspicuous objects in the Oak collection, the intense glossy green of the rather leathery leaves being particularly pleasing. These forms of the Lucombe Oak make very fine objects when planted singly on lawns and in parks,

habit; the leaves of both are practically identical in size and form. The age and origin of the large tree in the Fulham Nursery are unknown, and for



Twigs, male flowers and acorn of *Quercus Cerris austriaca*.

a long time it was believed to be a seedling. Indeed, Loudon affirmed that he had examined the tree at its collar and down to its main roots, several feet under the ground, and was convinced that it was not a grafted tree. Such, however, is the case, as a few years ago the stock developed branches which proved it to be the common British Oak (*Q. pedunculata*), and I secured specimens of both stock and tree. In fine seasons an

abundance of Acorns have been produced and large numbers of plants have been raised; these varied, however, so exceedingly, that they could not be sold as the genuine Fulham Oak. Hence it was necessary to propagate that variety by grafting, using the common Oak—on which it takes freely and grows well—as a stock. A seedling from the Fulham Oak, with leaves broader and less dentate than usual was propagated and sent out by the late Messrs. Osborn under the name of *Q. fulhamensis latifolia*. In mild seasons and in sheltered situations the foliage is retained throughout the winter. Its synonyms are *Q. dentata*, Watson, in "Dendrologie Britannica," tab. 93, and *Q. Cerris* var. *subperennis*, of A. de Candolle (in part).

WEeping TURKEY OAK (*Q. Cerris* var. *pendula*—Neill).—This is a form of distinctly weeping habit. Loudon says that the handsomest tree of the kind in Britain, and perhaps in Europe, is probably that at Hackwood Park, from a specimen of which the illustration in his "Arboretum" was prepared. This tree was planted in 1800, and in 1836 it was nearly 40 feet high, with a trunk clear of branches to the height of 8 feet 9 inches, which at the surface of the ground was 2 feet 10 inches in circumference. The branches not only droop to the ground, but after touching it, they creep along the surface to some distance, like those of *Sophora japonica pendula*. The largest branch is about 17 feet in length to where it touches the ground, and it extends about 4 feet or 5 feet more along its surface. This variety seems very distinct and well deserving of culture.

THE AUSTRIAN OAK (*Q. Cerris* var. *austriaca*—Loudon).—In Eastern Europe this is the prevailing form of the Turkey Oak. It differs principally from the Western European form in the outline of the leaf and in the rather hoary colour of the under surface; in some gardens an evergreen or sub-evergreen Oak, which has been referred to the Japanese *Q. glanduligera* of Blume, is often found under the names of *Q. austriaca* or

Q. austriaca sempervirens. *Q. Cerris cana* major differs from the true *austriaca* in its more decidedly hoary under-surface, and *Q. C. cana* minor in the narrower and altogether smaller leaves. The origin of both these latter forms is unknown. It is the *Q. austriaca* of Willdenow.

VARIEGATED TURKEY OAK (*Q. Cerris variegata*, of gardens).—Unlike many other variegated Oaks, the variegation of this appears to be quite

^{*} SYNONYMS.—*Q. exionensis*, Loddiges. *Q. Cerris* var. *subperennis*, A. De Candolle, in "Prodromus," in part.

constant; the foliage is exactly similar in form to that of the common form, but is conspicuously margined with creamy white; hence it is highly ornamental. It is recorded that one of the forms of the variegated Turkey Oak originated as a sport at Woburn Abbey, in Bedfordshire. Its synonyms are *Q. Cerris argentea*, of gardens, *Q. Cerris elegantissima*, of gardens.

CUT-LEAVED TURKEY OAK (*Q. Cerris* var. *laciniata*—Loudon).—The deeply and irregularly cut leaves impart a thoroughly distinct aspect to this variety, and the accompanying figure shows the character well. Its synonyms are *Q. asplenifolia*, of some gardens, *Q. heterophylla*, of gardens.

Royal Gardens, Kew. GEORGE NICHOLSON.

Choisya ternata.—This is certainly one of the best introductions of recent times. I saw a specimen of it a short time ago against a wall in great beauty. The flowers, which are terminal, are produced in profusion, and in form of colour are very much like Orange blossom. The foliage, which is of good consistency, is glossy green, and contrasts well with the inflorescence. Few early flowering wall shrubs can be said to surpass it. It requires a warm aspect and merely ordinary garden soil somewhat rich in manurial properties. It is in every way a shrub well worth attention.—C. D.

Cerasus serrulata.—This double-flowering Cherry is one of the most distinct and particularly desirable where space is limited. It forms a low tree or shrub, reaching a height of 8 feet or 10 feet, with stout, wide-spreading branches and but few laterals, so that it is readily distinguished from all other kinds at any season, as the branches of this are at least twice as thick as those of any others, in addition to its distinct manner of growth. It flowers in great profusion just before the leaves expand. The blossoms are semi-double, and when first expanded pure white, but before dropping they become somewhat tinged. The edges of the leaves are distinctly toothed or serrated, hence its specific name is derived. This Cherry is a native of China, and, though known in this country for many years, is rarely met with.—T.

Double-flowered Peaches.

—We seldom see more than one variety of the Peach used for ornamental planting—that with the pink-coloured blossoms, though a nurseryman's catalogue will show that the choice is not so limited. The best deep-coloured variety is *purpurea plena*, which, however, has flowers of a bright crimson. Of pink-flowered kinds *roseiflora* is one of the best, and to this must be added *alba plena*, one with beautiful pure white blossoms. Whether for forcing or planting outdoors the three above sorts constitute the best selection. For its foliage the red-leaved Peach deserves a place, especially if needed principally for effect during the earlier part of summer, as it is then at its best, being apt to become somewhat rusty in tint towards the end of the season.—ALPHA.

Cytisus præcox.—This may be found in gardens under the names of *Cytisus sulphureus*, *odoratus*, or that of *præcox*. It is an extremely pretty Broom, and possesses the great merit of flowering before any of the others. It is shorter and more branching than the common white Broom (*C. albus*), besides which the flowers are of a pale lemon colour. That it is but a selection from that kind is shown in the case of seed-

lings, most of which revert to the common white form. A large mass of *C. præcox* here is very handsome, as also is a companion cluster of the double-flowered Furze which has been in beauty a long time. The double Furze is dwarfer and denser in habit than the single kind. On our light sandy soil the different Brooms are largely planted for ornamental purposes, but they make rapid progress for a time, then quickly show signs of decay, so that it is necessary to maintain a succession to take the place of exhausted specimens.—ALPHA.

The double Dyers' Greenweed.—Our native Dyers' Greenweed is essentially a thoroughly good garden plant, one certainly worth a place in the front of the mixed shrubbery. It is, moreover, almost indifferent to soil and situation, and—it is almost needless to say—quite hardy.



Leaf of the Exeter or Old Lucombe Oak. Leaf of the Fulham Oak (both natural size).

In gardens, too, where it is allowed room to develop it often assumes a much larger size than when wild, where it has to hold its own and struggle for existence with the surrounding vegetation. There is a double-flowered form, which, for ornamental purposes, is even more desirable than the single-flowered type, as it remains much longer in bloom.

Azalea rhombicum.—*Rhodora canadensis* is especially valuable on account of its purplish blossoms being expanding before those of any other shrub of its kind; indeed, its blooming season is past before the hybrid Azaleas burst their buds. The interval between the *Rhodora* bloom and that of the earlier hybrid Azaleas is filled up by the Japanese Azalea *rhombicum*, a free, but short, much-branched kind with blooms in colour greatly like those of the *Rhodora*, but a good deal larger and of better substance. This Azalea is worthy of more extended cultivation as

a flowering shrub, for with all its merits a search through several nurserymen's catalogues has failed to discover it, though there is a plant or two at Kew which every year show their precocious flowering quality unless the spring frosts are unusually severe. By the way, what a neglected class of plants these hardy Azaleas are, as one may go in dozens of gardens without finding them represented; yet when a quantity are in bloom together they present one of the most gorgeous floral sights imaginable, as may be seen each recurring spring at Kew, and which used to be one of the most attractive features of the once celebrated Fulham Nursery.—H. P.

The weeping white Lime.—This very ornamental tree is particularly well off for names. In different books and gardens it is met with as *Tilia alba pendula*, *T. americana pendula*, *T. argentea pendula*, &c. In a recent number of the *Botanical Magazine* there appeared a characteristic figure of the species under its true name, viz., *Tilia petiolaris*. In general aspect it comes nearest the Eastern White Lime, but differs abundantly from that in habit and in the warted fruits. The silvery under-surface of the leaves is common to both, but in the well-known *T. argentea* the leaf-stalks are hardly half the length of those of *T. petiolaris*. The exact native country of this tree—as is the case with not a few fine ornamental trees—is unknown; probably it is an Eastern species, and may really belong to Southern Russia. The elder De Candolle described it from material obtained from trees in a street of Odessa, and although he was unacquainted with the fruits, the long leaf-stalks appeared to furnish a sufficiently distinctive character. De Candolle's name, however, appears to have been entirely overlooked for a long time, and Koch, in his "Dendrologie," refers the species (as a variety) to the American *Tilia alba*, with which it has nothing whatever to do. *T. petiolaris* is a vigorous grower, and makes a very graceful tree, with arching, pendulous branches, very different from the more formal and rigid habit of growth of the true Eastern European White Lime, *T. argentea*.

Berberis stenophylla.—Among hardy shrubs, few are more graceful or pleasing than this *Berberis*, which, in the shape of large bushes, is remarkably effective, either grown as single specimens upon Grass or occupying the front rank in shrubberies. Its slender narrow-leaved shoots are produced on strong plants from 3 feet to 4 feet in length, closely studded with the brightest o. lemon-coloured flowers, rendering the plant remarkably showy. It is also perfectly hardy, a circumstance which makes it specially valuable. Beautiful as *B. Darwini* is, with its rich profusion of orange-yellow blossoms, it is not reliable, for during the past four seasons, if not killed down to the ground line, it has been greatly disfigured. I find *B. Jamiesoni* a hardy and superior sort, producing an abundance of lemon-coloured flowers. It would add greatly to the effectiveness of our shrubberies were the finer varieties of *Berberis* more freely planted in them than they are at present; they are more the exception than the rule.—G. W.

The Lentiscus-leaved Ash.—*Fraxinus lentiscifolia*, although introduced to this country a century and three-quarters ago, is by no means a common tree in gardens, although it is certainly one of the most elegant of all the Ashes. A f

years ago we were agreeably surprised to find a good-sized specimen in a garden close to a large cotton factory in a northern manufacturing town, and it seemed to suffer less from the proximity of the forest of huge chimneys in its immediate vicinity than a host of commoner trees, native and introduced. It is a native of Syria, and attains a height of 30 feet to 50 feet. A weeping form is also in cultivation; this has slender, pendulous branches, and is one of the most elegant of weeping trees. *F. leutiscifolia* is sometimes met with under the names of *F. xanthophylla*, *F. tamariscifolia*, and *F. oxyphylla*, &c.—N.

Robinia Pseudacacia amorphæfolia is worth the attention of all lovers of hardy deciduous trees for the size and beauty of its large leaves. The flowers do not appear to differ to any appreciable extent from those of the common Locust tree, but the leaves are longer and the leaflets larger. Planted side by side, the two are distinct enough to strike even the most superficial observer. The *Amorpha*-leaved Locust, too, seems to be quite as quick a grower as the type, and in all probability it would attain quite as large a size.

Rosa Brunoniana.—In all probability this is a merely geographical outlying form of the South European *Rosa sempervirens*. It is, however, a much stronger grower than any form of that species at present cultivated in gardens. A native of the Himalayan region, it is hardier than a good many plants from that part of the world, and even its long vigorous growths are now and then cut back by very severe winters, shoots several yards in length are soon developed from the root-stock. To see it in its full beauty, a few plants should be placed in the mixed shrubbery or in the woodland border or wild garden, and allowed to ramble at will over low or thinly-foliaged trees. The enormous heads of pure white scented blossoms are freely produced, and a succession of them borne for a long time. To sum up its merits, *Rosa Brunoniana* is about as well able to take care of itself in a semi-wild condition as any of our native briars or Brambles.

KITCHEN GARDEN.

RHUBARB.

INDOUBTEDLY one of the earlier Rhubarbs grown is the Early Red or Albert; many acres are occupied with this round London. It is grown in heavily manured ground, and in very early spring, just when the leaf buds show signs of activity, a covering of long stable litter is placed over it. What fertilising particles it possesses are washed into the ground by rains, and as the leaves make an upward growth they carry up the covering with them, and in this way the young stalks are protected from spring frosts and biting winds. This variety is at once detected by means of its glaucous, shining, and somewhat smooth leaves. The Victoria is the other leading market garden variety, and while the Early Red supplies the spring crop, the Victoria yields that of the summer. This Rhubarb really makes a very handsome plant; the foliage is deep green and little rugose, and not so glaucous as that of the Early Red. Linnaeus or Johnstone's St. Martin is of the type of the Early Red, but later and larger, producing both a bigger stalk and a rounder and fuller one. Salt's Crimson Perfection is a second early variety. Its stems are very crimson, the flesh red, and the leaves rugose and pubescent. It is a variety liked in gardens because of its rich colour. Scottish Champion appears to be identical with the Victoria. Goliath or Stott's Monarch produces very large and fine broad stalks, and makes an excellent variety for cottagers' exhibitions where length and size of stalk are desiderata. Beck's Early Red is a very old variety that has always borne a good reputation; it is like Salt's Perfection in character, but not so early and also smaller, and the leaves are pubescent. Hawke's Champagne is early and deep red colour, an excellent garden variety, and very good in all respects. Dancer's Early Red is an

early variety, but little grown now, and practically of but small value; it has rugose leaves and furrowed stalk. Baldry's Scarlet Defiance has crimson stalks and large leaves; it is a very good second early kind. Kershaw's Paragon is a very distinct and fine Rhubarb, with red veins along the ribs of the leaf and a somewhat depressed habit of growth; the stalks are well formed and firm.

If I were called upon to name three of the most useful garden varieties for general culture they would be—Early Red, Hawke's Champagne, and Victoria. Market gardeners appear to find the first and last sufficient for their purpose. As a rule a bed of Rhubarb lasts for four or five years for market purposes. Then the plough is put into it, the roots torn up by the share and cut up for other plantations, or put aside to decay. The ground is then well manured and another crop is put upon it. When a new plantation is made the ground is deeply ploughed, and a heavy dressing of manure is given; then old roots are cut up into pieces with an eye to each, and it is not at all necessary that any fibrous roots should be attached to it. They are planted in a rough and ready fashion, but it is seldom that one fails to grow. Nothing is taken from the bed the first year; the plants are allowed to develop the whole of their leaves. The second year a good crop is gathered, and the third year a heavy one. The plantations are dug over during the winter, and the covering of long manure and the decayed leaves are forked in as a surface dressing. Rhubarb is a remunerative crop, especially to those who can get their produce first into the market.

R. D.

EARLY PLANTED POTATOES.

It is too certain that many who have planted Potatoes early in the year have realised the force of the correct version of an oft misquoted proverb, "The early bird does not always catch the early worm." No doubt, in planting so early the intention is excellent, but the result almost invariably shows that good intentions are too often doubtful guides. How many are there now who, having planted Potatoes early and got up a fine breadth, perhaps some 10 inches or 12 inches in height and earthed, have found, in spite of some protection, that the repeated frosts at night have been too much for the tender growth, and the last state of the crop is worse than if not planted so soon by a month. Probably there are not a few cultivators who think the risk worth running for the sake of the useful results which follow if the crop be saved. That is all very well, but those who speculate on the season, or anything else, must learn to bear losses when they do come in a philosophic spirit. Where experiments of this kind are tried it is well to do so in a moderate way, as when a grower plants all his first early sorts so early and loses them through late frosts, he is in an awkward plight if he has no other first earlies succeeding, and so far safe because not through the soil. These latter when all danger is passed will come away apace, and beat the frosted breadths by a long way. No doubt it is wisest to plant all robust tall sorts first, and even these may not be safely planted till April is in; the tops will then be coming through about the middle of May and when danger is pretty well over. Very early kinds, the seed of which have been preserved with ordinary care and have stout well-seasoned shoots an inch in length, if planted at the end of April will also be coming through at a safe time, and will, being unharmed, make such fast growth as to equal those planted a month sooner, but which have been checked or have suffered in some way from frost or low temperature. The Potato plant is exceedingly tender; it is a thorough exotic, and, in planting, its real character should be carefully considered. In many cases this season even coverings of straw mats have failed to exclude the frost. The soil itself is the best protector.

A. D.

Potatoes and May frosts.—Potatoes are generally regarded as the tenderest of plants,

and yet they are standing the frost bravely, for though stiff in the leaf morning after morning they throw it off and look none the worse for the freezing, except here and there where one or two are rather more backward than others and only just leaving the ground. A good deal has been said about acclimatisation, but in this case cold winds have had most to do, I think, in so hardening the tissues of the leaves as to enable them to stand frost, and the dry soil has been all in their favour. Late kinds are not up yet, but early ones are well advanced for the season, and all, wherever I have seen them, are looking remarkably well and promise to yield fine crops. They should all be earthed up as soon as we get rain, but in the meantime let them be hoed and well cleaned while the weather is favourable for killing weeds, and the stirring to do this will help to pulverise the soil and render it ready for moulding the rows, in doing which the earth should not be brought to a sharp ridge, but left somewhat flat on the top to let wet into the roots.—J. SHEPPARD.

Runner Beans.—"A. D." (p. 449) writes: "We have so long had in cultivation the finer selections of Runner Beans, that the old small-podded forms should ere this have been discarded." If it could be proved that the long-podded sorts are so much or at all superior to the old Scarlet Runner, this opinion would be generally endorsed, but as it happens many market growers find that the reverse is the case. In reality the small sorts are the most profitable, and I have seen them sold in the London markets when the coarser and ugly Champion Runners had to be almost given away. The small sorts, especially under field culture, produce large clusters of pods all nearly the same size; they can therefore be gathered expeditiously by handfuls. These long-podded sorts are naturally best for exhibition, but why private growers who are not exhibitors should think so very highly of them I fail to understand. Very few ever attain more than half the size they can be grown to, and in our case large pods would not be admitted. It is quite immaterial whether the flowers are red or white, or the seeds black, speckled, or white; all that is wanted is the most serviceable variety for edible purposes.—I.

ROSE GARDEN.

PRUNING ROSES.

THE great evil attending the pruning of Roses is that, in a great measure, the weak and the strong are all pruned alike. This is not so much the fault of the pruner as that of those who have set themselves the task of teaching the art of growing Roses. Most of the books written on Roses advocate a severe system of pruning, and it would not be difficult to show that it has often caused the loss of many plants, while in others a weakly growth which can never give a satisfactory crop of flowers has been induced. As regards form, rosarians are not happy in their choice when they select the standard. It is undoubtedly the most unsuitable of all forms for Rose trees that are expected to live and flourish for many years. Standards fail to give uninterrupted satisfaction, and then the Rose, and not the form in which it has been grown, suffers. This could soon be set right if the standard form was given up, and cultivators relied upon Rose trees upon their own roots, and at the same time gave up the pernicious system of severe pruning. We have just been examining a line of own-root plants about five years old; these have not been pruned for two years, and last season they all made many shoots from 4 feet to 6 feet long. In spring, instead of cutting back these strong shoots according to the orthodox fashion, we bent and pegged them down to the ground, burying a portion of them a few inches under the surface, but leaving the point out of the ground. On a single branch of Gloire de Dijon we counted seventeen flower-buds, and on such varieties as Maréchal Vaillant and Jules Margottin the number of buds started on the branches bent down varied from seven to fifteen; whereas, if we had cut them down in the ordinary

way, only two or three of the topmost buds would have started into growth. It is pleasing to see the bent branches bristling with new-made growth at every bud, from one end to the other, and it only requires a little calculation to show how great will be the increase of Roses. And not only will the number of flowers be increased, but

out by experience. At least, we find that when a variety constitutionally weak is worked on the Manetti or any other stock, it is not benefited thereby for more than two or three years. Except in very exceptional cases, dwindling away and dying in a few years is the condition of half the Roses on alien stocks; while, if we are patient

tion. Surely we can find in these enough to convince the most fastidious that all which is wanted is a proper balance between roots and branches, but which can never exist while we cut the branches hard back annually and leave the roots untouched. It may be said in justification of pruning that the character of the growth of the climbing



Original tree of the Fulham Oak in the Fulham Nursery. The illustration shows well the rounded outline of the head; in the Lucombe Oak the growth is pyramidal (see p. 477).

more space will be covered, and the original plant will gain force from receiving the assistance of an increased number of roots, which in a few months the bent-down branches will form at the points where they come in contact with the soil. In regard to own-root Roses, one frequently sees it stated that some varieties are so weak that they require to be worked on foster roots of a stronger character than their own—a statement not borne

with own-root plants, even weak growers will annually acquire strength and last long, provided always they are not pruned in a way likely to check growth instead of promoting it. If we want an illustration of the injurious effects of severe pruning, we have only to turn to the climbing varieties of Roses. Most of us can doubtless point to numbers of examples from twenty to thirty years old still in vigorous condi-

varieties is different from that of Hybrid Perpetuals, and that therefore different treatment is needed. To a certain extent that may be true; but the present system of pruning standard and dwarf Roses goes to such extremes as regards cutting back, that hardly a shade of comparison is left. We would seriously recommend those who may be disappointed with the present condition of their Rose trees—especially those grown in the

form of dwarfs—to let them grow in their own way for say two years, cutting off the tops of shoots which have flowered only. Which system gives the best results will then be seen.—J. C. C.

SOCIETIES.

PARIS INTERNATIONAL EXHIBITION. MAY 20 TO 31.

A FRENCH flower show differs so much from an English one, that some of the differences may be worth pointing out. In the first place, I think they are better organised; secondly, the judges are selected in a broader or more catholic spirit; and, thirdly, I do not think anyone will disagree with me when I say that, from an artistic point of view, the French flower show is much better arranged than are ours as a general rule. In saying this much I do not forget the grassy banks at Regent's Park in the old days when specimen plant culture was more popular than now. That we certainly can surpass the French on their own plan when we really like was, I think, fairly proven by the great horticultural exhibition of 1866, but, as a rule, we are a little behindhand, as above shown. The French plan of grouping or massing the exhibits on grassy lawns or mossy banks is very effective, and not only is this evident in the case of plants alone, but especially so in the arrangement of the vegetables, which are planted out or arranged quite naturally on fresh green Moss, instead of being shown on trays, as with ourselves. Well as our Covent Garden or market growers cultivate some plants, there are others in which the Parismen outstrip them—Azaleas, for example, Palms, Aspidistras, Bromeliads of many species, to say nothing of Kalmias, Oleanders, Paris Daisies, and some succulent plants, which appear to be far more popular in Paris than in London. There is no finer plant in existence for rooms or windows than the Aspidistra, and yet one can rarely procure a good, well-furnished plant of it in Covent Garden. In vegetable culture we also feel persuaded that our big market gardeners are often beaten in the race by the small French culturist. Here we find fifty kinds of Lettuces and half as many of Radishes and Turnips; Asparagus finer than most of that grown at home, and salads are here seen in the markets as fresh and as tempting as those possible only to the private grower in England. All this was pointed out in THE GARDEN years ago, and so it remains to-day.

Another important and instructive point is that a French horticultural exhibition is on a broader base, and so is more comprehensive than our own were until very recently. The new conference idea has improved matters with us a little, but much yet remains to be done. For example, the miscellaneous exhibits here are of the most varied and suggestive character—photographs, books, gardening periodicals, dried specimens of herbs and other plants, diagrams to illustrate pruning or training, apart altogether from the "horticultural sundry" idea, in which we, perhaps, do a trifle too much, as, for example, when the question of a particular brand of manure was allowed at our Orchid conference the other day. Seriously speaking, our horticultural awards are a little restricted in their scope and often one-sided. We give a prize or a medal to a man who grows and exhibits his plants, but not to the man who produces and exhibits books or drawings of equal horticultural interest. These are only a few of the suggestive points which strike one very forcibly at a Paris exhibition. We may also draw attention to the fact that gardeners and small cultivators are invited to these great flower shows in Paris on presentation of their cards or addresses. In a word, the management try to make the teaching power of these gatherings as active and widespread as possible; and, after all, this is the greatest of all the ends to be attained by exhibitions of this kind. Lastly, an excellent institution here is the zealous care that the judges may do their work on the first day of the show unhampered and untrammelled by visitors, while the

courtesy and attention extended to Englishmen when they act as jurors on the Continent might well be reciprocated more fully by our own horticultural societies than is now the rule.

THE ORCHIDS.—The finest specimen Orchids in the whole exhibition were two made-up examples sent by M. Bergman, gardener to M. Alphonse de Rothschild, at Ferrières. Both were about 5 feet in diameter and bore perhaps 500 flowers each, the species being *Vanda teres* and *Odontoglossum vexillarium*. Each specimen was exhibited in fresh green Moss in a large wire basket, and as they stood singly on the fresh turf they could be seen to the best advantage. M. A. Chantin, of Paris, also exhibited a pretty little group of smaller plants, amongst which we noted a curious *Gongora*, *Cattleya Mendeli*, *Lady's Slippers* of various kinds, *Anguloa Clowesi*, *Dendrobiums*, and a fine plant of the old *Cattleya Mossiae* on a block. A very fresh *recherché* group also came from M. O. Nilsson, 12, Rue St. Auher, Paris, in which the varieties of *Odontoglossum Alexandræ* were very fine, and there were fine plants of *Lælia purpurata* and *Dendrobium thyrsiflorum*; and also of *Masdevallia rosea* bearing about fifty flowers. *Colax jugosus*, *Cypripedium Lawrenceanum*, and *Phalænopsis grandiflora* were also very beautiful, the whole being set out to the best advantage with choice Maiden-hair and other Ferns. Messrs. Truffaut, of Versailles, sent very fine groups of Orchids and Bromeliads. Among the Orchids was a pretty little plant of *Oncidium longipes*, rare *Cypripedes*, and *Phalænopsids*, a fine dark-lipped form of *Lælia purpurata*, a good *Cattleya Mossiae*, *Odontoglossums*, *Masdevallias*, and *Dendrobiums*.

FINE-FOLIAGED PLANTS.—All around the large building was fringed by noble Palms, Cycads, and great-leaved tropical Aroids of many kinds, some of them representing the most perfect of culture, and great taste was shown in the way in which they were arranged. Crotons were in some cases most lovely in colour, but scarcely more attractive than the Bromeliads, which are evidently extremely popular here. Among the tall-growing plants small epiphytal Orchids were hung here and there, so as to supply the *souçon* of colour necessary among so much of graceful greenery.

No description could do full justice to the Paris Daisies, several of which were bushes of from 5 feet to 6 feet in diameter, and bearing literally thousands of their starry, gold-eyed flowers.

SUCCULENT PLANTS.—Many groups of these were shown, and one variety in particular—a large-blossomed kind named *Phyllocactus Brogniartii*—struck me as very distinct. It had trigonal stems and enormous widely-expanded flowers, 7 inches or 8 inches across, of a blood-scarlet shot with purple. *P. Guedenyi* is an effective white-flowered kind, and there were some fine specimens of *Pilocereus senilis* from various exhibitors. A noble spike of *Yucca Treculeana* was very noticeable, bearing as it did some hundreds of its soft yellow waxy bells.

Messrs. Chantin, 32, Avenue de Chatillon, Paris, sent an effective group of Yuccas, Agaves, and *Dasyliions*, which, if less showy than the *Marguerites*, gained much admiration.

M. Antoine Eberle, of 146, Avenue de St. Ouen, Paris, also exhibited a very choice group of succulent plants of various kinds, principally Aloes, *Gasterias*, and *Pilocereus*. Hardy Ferns were well shown by M. Moser, 1, Rue St. Symphorien, Versailles, who also had Ghent Azaleas and *Rhododendrons* in good condition.

HARDY PLANTS.—Herbaceous plants are not as yet so popular with the Parisians as with ourselves, but some very interesting groups of annuals and common decorative subjects were exhibited, and the culture of special plants, such as *Rhodanthes* and *Calceolarias*, seems to be a little ahead of our own, and although the individual flowers of the herbaceous *Calceolarias* are not so fine in colour, size, or markings, yet the habit of growth seems even more perfect. M. Brot, Delahaye, of Paris, who makes a special culture of Pinks and

Carnations, sent a well-grown and very variable collection of these deliciously fragrant flowers in pots; and a most magnificent group of Paris Daisies of many kinds, arranged near the entrance by M. Gillard, attracted much attention, as also did some large-spiked *Mignonette* arranged with the *Chrysanthemums*. Very fine *Anemones*, both single and double, were staged by M. A. Lenormand, Rue St. Sauveur, Caen. The double forms were especially curious and varied in colour. M. E. Forgeot & Co., 8, Quai de la Mégisserie, Paris, also staged very fine *Anemones* and *Ranunculuses*, Tulips, &c., in grand form; as also did M. M. Hardi Delahaye & Co., who likewise staged about fifty fine flowers of the sombre-looking, but rarely seen, *Iris susiana*, the "Ginnie Hen" *Iris* of Parkinson (1629).

Apart from good culture of individual plants we have, as I have said, in these exhibitions some attempt at arrangement, and visitors can look down upon mossy banks of flowers just as conveniently as if they were in an open-air garden. Pillars are draped and festooned with *Clematis*, and the doorways are bowered in Palms and white Lilacs, Azaleas, *Marguerites*, and other flowers. An open-air garden is devoted to beds of succulent plants, alpine and rock plants, Pansies and other hardy blossoms, the whole being tastefully surrounded by shrubs plunged out in the natural soil and margined with neat turf edgings.

ALPINE AND ROCK PLANTS.—Of these M. Correvon, Geneva, had a choice selection, including *Orchis Simia*, *Iberis jucunda*, which has pale pink heads of flowers, reminding one of a delicate little *Androsace*. Some rare *Gentians* were also represented, as also were *Thriffs*, *Geraniums*, and *Soldanellas*. *Phyteuma comosum* bore three spikes of its curious flowers, and *Campanula alpina* seemed quite overborne by its numerous metallic-looking bells; *Dianthus alpinus*, *D. glacialis*, *Bellis cœrulescens*, *Anemone narcissiflora*, *Matthiola varia*, *Androsace sarmentosa*, *Edelweiss*, and *Ramondia pyrenaica* were only a few of those represented. They were neatly arranged on little Moss-covered rockeries, and so showed off their dainty charms to the best advantage. Cobweb *Saxifrages* and other little succulents, green, silvery, and bronze-coloured, were shown by M. Chaté arranged in boxes in formal designs and masses.

The Paris plan of exhibiting vegetables on low Grass-edged beds of earth might be followed at our own exhibitions with advantage. The best Asparagus was exhibited by M. Louis L'Herault, of Argenteuil, near Paris, a district well known to be suitable for Asparagus culture. The heads were fully 16 inches in length and about 2 inches in diameter, so that fifty of them made a great faggot-like bundle, sufficiently enormous to astonish some of our own growers who were present. The same exhibitor had about 200 varieties of Strawberries all in fruit in pots, having been forced for the occasion. Among them were some extremely large and well flavoured kinds not generally known in the London markets.

It only remains for me to refer to the able manner in which all the arrangements of this important exhibition were carried out by M. M. Bergman and Joly, both of whose labours in this way are well known to Continental horticulturists.

F. W. BURBIDGE.

ROYAL BOTANIC SOCIETY.

MAY 20.

THERE is a freshness about the first summer show in the Regent's Park Gardens that makes it more enjoyable than later shows. The great specimen plants have none of that jaded look about them which they possess after being carried about from show to show from now onwards till the end of June. On the whole, there was, on this occasion, as usual, a good display, but no new features; there were the same exhibitors and exhibits located in about the same spots as in previous years, and equally brilliant. It only needed sunshine, instead of a cloudy sky, to render the show, as a whole, one of the most successful which the Society has ever had.

THE ROSES were undoubtedly the best feature of the exhibition; they were numerous, and so excellent in quality, that even experienced rosarians had rarely seen finer in May. No fewer than four collections of nine plants were staged and four of twenty plants, besides smaller collections from amateurs and an uncommonly fine group from the Waltham Cross Nurseries, not for competition. In the class for nine specimen plants, the only exhibitors were the Messrs. Paul, of Chesham, who lately have had the field to themselves in this direction, and they are not showing nearly such large plants as heretofore. Large, unwieldy plants have no doubt had their day; it is not size that people of taste admire so much as quality. On Wednesday visitors seemed to enjoy the small specimen Roses most—those about a yard through, though, of course, the plants must be regarded as examples of great cultural skill. Messrs. Paul, therefore, easily won the first prize in the class for nine, though another collection from Messrs. Jackman, of Woking, contained excellent plants which did them great credit, having regard to the fact that they have not attempted to compete for Rose prizes here before. Each of the plants shown were about a yard or more across, and were covered with really first rate bloom. Mr. Turner's collection of twenty plants in 9-inch pots was unapproached by any other collection. The plants were not large, but furnished with such luxuriant leafage and such high-class blooms as alone indicated skilful culture. The varieties consisted of popular sorts, such as Marie Baumann, E. Y. Teas, Sir Garnet Wolsley, Charles Lawson, Edouard Morren, and Victor Verdier. Messrs. W. Paul's non-competing collection filled two recesses on either side of the corridor entrance, and besides some dozens of plants there were large numbers of cut blooms first-rate in quality, and consisting of the most popular sorts suitable for forcing. The collection contained the following new varieties, some of which possessed considerable merit, viz. Joseph Metral, Bougère (like Marie Baumann), Mad. York, Mad. Marie Digat, Marie Clouson, and Sationa Onequine. These were all dark Hybrid Perpetuals. Ulrich Branner was shown in this collection to perfection. It is one of the finest new Roses that has been put into commerce of late years. Its blooms are massive, and the colour a glowing carmine-crimson and very striking. The scent, too, is good.

THE ORCHID BANK, though well filled, was not remarkable for high-class exhibits, either in the way of extraordinary varieties or fine specimens; in fact, the best amateur collections were absent, and none of the great nursery collections were represented. Mr. Cobb, of Sydenham, showed good specimens of *Dendrobium thysiflorum*, *Lælia purpurata*, *Cattleya Mossiæ*, and the rare *Vanda Denissoni* with ivory-white flowers. The only competition was among the nurserymen's collections, which were only second rate. Mr. Cypher took the first prize for a collection of twelve plants, his best specimens being a huge mass of *Dendrobium thysiflorum*, a good *Dendrobium nobile*, *Cattleya Mossiæ*, *C. Mendeli*, and *L. purpurata*. Mr. James, of Norwood, had a good second collection. There were classes for single specimen Orchids as distinguished from specimens made up of a number of plants, which is now the rule at exhibitions. This is a commendable innovation, and the classes should have been better represented. As it was, there was no amateurs' collection and but three from nurseries. These came from Mr. Cypher, Mr. James, and Messrs. Jackson, all of whom showed really creditable specimens for nurserymen who generally sell the best plants. Those shown by Mr. Cypher for the first place included *Oncidium sphacelatum*, a fine plant; *O. Marshallianum*, *Dendrobium nobile*, *Cattleya Mossiæ*, *C. Mendeli*, *Cypripedium Lawrenceanum*, and *C. biflorum*. Mr. James had in his group a fine specimen of *Anguloa Clowesi*, about a yard through, *Odontoglossum Pescatorei*, with a tall branching spike, *O. vexillarium*, *Oncidium Marshallianum*, and some fine *Cattleyas*. Messrs. Jackson's plants were likewise good, the *Vandas* and *Aerides* being especially noteworthy.

THE CLEMATISES from Messrs. Jackman, of

Woking, were the centre of attraction, being finer this year than they have been before, and arranged as they were on a sloping bank they had a charming effect. All of them were huge plants, fully 4 feet through and quite smothered with flowers, some of them being as much as a foot across. The sorts shown were, Grand Duchess, pale pink; Mdme. Van Houtte, white; Blue Gem, deep lavender; Jeanne d'Arc, white; Impératrice Eugénie, very large white; Fairy Queen, pink barred with rose-purple; Lady Caroline Nevill, pale mauve barred with violet; W. Kennett, deep violet-purple, crimped petals; *Purpurea elegans*, very deep purple; Belle of Woking (double), mauve; Duchess of Edinburgh (double), white.

STOVE AND GREENHOUSE PLANTS were much the same as usual—huge specimens, marvellous examples of what British gardeners can do in plant cultivation. The same massive plants of *Heaths*, *Hedera*, *Ixoras*, *Tremandras*, *Azaleas*, and *Anthuriums* were shown as heretofore, Mr. Cypher being the champion amongst nurserymen, and Mr. Chapman, Mr. Spode's gardener at Hawkesyard Park, occupying a like position amongst amateurs. It is curious to observe how little visitors seem to appreciate these wonderful specimens; they appear to care less for them than simple hardy plants. Perhaps if they knew what a vast amount of care, attention, and trouble it requires to grow such plants, and what expense it entails to prepare for and to bring them to these shows, they would pay them more attention. The fine foliage plants we thought much below the average this year, though Mr. Raun brought from Handcross Park some grand plants of *Crotons* which represented a deal of skilled culture. The Ferns were miserably represented; there was not a good half-dozen in the show. *Azaleas*, as usual, were valuable in giving the necessary colour to the show, Mr. Thornton's noted plants from The Hoo, Sydenham, being unsurpassable for size and floriferousness, while Mr. Turner showed the best among nurserymen. *Heaths* were uncommonly good, particularly those from Mr. Cypher, who well showed that the art of growing *Heaths* has not quite died away. The fancy *Pelargoniums*, always a bright feature at these shows, were excellent, Mr. Turner best representing the nurserymen, and Mr. Little the amateurs.

HARDY FLOWERS were better represented than usual, particularly alpine. Messrs. Carter, who won the first prize, had fine panfuls of *Phlox setacea*, *Aubrietias*, *Alyssums*, *Iberises*, and other showy plants, and of unusual interest was a large collection of alpine plants from Messrs. Paul, of Chesham, which included such rarities as *Daphne rupestris*, the true *Papaver alpinum* minimum, *Anemone sulphurea*, *Cheiranthus mutabilis*, *Megasea purpurascens* (true), *Orobus varians*, *Viola pedata bicolor*, *Thalictrum anemonoides* (double), *Geum procumbens*, a large yellow-flowered species very dwarf. Besides these were *Gentiana alpina* and other bright and attractive plants. Mr. Rees, of the Exotic Nursery, Tooting, sent a group of interesting alpine and herbaceous plants, which included the pretty *Saxifraga Macnabiana*, which was certificated. Messrs. Barr exhibited an extensive collection of cut flowers, chiefly bulbous plants, including numbers of late *Daffodils* and *Scillas* and crowds of interesting bulbs not often seen.

THE MISCELLANEOUS CLASS included the four large groups which occupied the centre of the tent. These came from Mr. B. S. Williams, Messrs. Laing, Messrs. Henderson, and Messrs. Cutbush. Mr. Williams' group was uncommonly rich in Orchids, and among these were numerous choice varieties, such as *Lælia Measuresiana*, a new form intermediate between *L. purpurata* and *L. elegans*; *L. purpurata* Williamsi, the finest of all the varieties of this species; *Odontoglossum prionopetalum* and many others. *Amaryllises* also helped to brighten up this fine group, which was greatly admired and well merited the large silver medal. Messrs. Laing's group included some grand new *Begonias*, for which the firm is celebrated. Besides those certificated we singled out the following as being extraordinary—viz.,

W. Spioks, fully 6 inches across the flowers; *Lac Lonsdale*, Marchioness of Stafford, Sir W. Anderson, J. S. Law, Lady Falmouth, and Lady Hulse, the last one of the finest double whites yet raised. These were intermixed with *Caladiums* and other fine foliage plants in a charming way. Messrs. Henderson's group consisted chiefly of fine-foliage plants, and though it bore a sombre look its quiet tints were much admired. Messrs. Cutbush exhibited a brilliant group of *Azaleas* and New Holland plants, for which their nurseries have so long been noted. These were all awarded silver medals. Smaller miscellaneous groups came from Messrs. Veitch, who had a good many certificated plants in their collection, and from Messrs. Low, the latter consisting chiefly of Orchids, *Cattleya Mendeli* and *Mossiæ* being particularly well represented.

NEW PLANTS were, as usual, plentifully shown but there were none very remarkable, and the majority of them had been exhibited before.

BOTANICAL CERTIFICATES were awarded to Messrs. Veitch for *Philadelphus microphyllus*, *Davallia retusa*, *Rhododendron Veitchi*, *Nephrolepis Bausei*, *Piper ornatum*, *Allium karataviense* and *Amasonia punicea*; to Mr. B. S. Williams for *Lælia purpurata Williamsi*, *Odontoglossum prionopetalum*, and *Hymenocallis macrostrophana*; to Messrs. Low & Co. for *Cattleya Schofieldiana*, *Lælia Schroederi*, and *Cattleya Mendeli striata*; to Mr. Little for *Cattleya Mendeli carinata*; to Mr. Van der Rees for *Saxifraga Macnabiana*; to Mr. H. B. May for *Pteris cretica albo-lineata* alci corae and *P. serrulata crispa compacta*.

FLORICULTURAL CERTIFICATES were awarded to Messrs. Veitch for *Gloxinia Argus* and *Flambeau*; to Messrs. Laing for *Begonia formosa*, *Lady Hulse*, and Sir Peter Lumsden, and *Caladium Anna de Condeixa*; to Mr. Turner for *Carnatio Goliath*, Col. Cox, and T. W. Girdlestone; to Mr. Perkins (Leamington) for *Pelargonium Whi Volonte Nationale*. Messrs. Carter's strains of *Mimulus Ruby* and *Queen's Prize* were commended.

A full list of awards will be found in our advertising columns.

OBITUARY.

EDWIN COOLING, the well-known nurseryman and seedsman, of Derby, and proprietor of the Mile Ash Nurseries, died on the morning of Tuesday, May 12, aged 77 years. Mr. Cooling commenced business in Derby as a florist and nurseryman about the year 1838, and soon made a reputation as a successful cultivator and exhibitor, especially of florists' flowers. He was an ardent lover of Ferns, and grew at his nurseries one of the best collections to be found in the trade.

Change of address.—Mr. W. B. Warhurst, horticultural engineer, has removed to 313, Beaufort Street, Chelsea, the lease of his old premises, 33, Hightgate Road, having expired.

Naming plants.—Four kinds of plants or flowers only can be named at one time, and this only when good specimens are sent.

Names of plants and shrubs.—M. Anfrey.—A variety of *Orchis mascula*.—W. Connelly.—1, *Oncidium luridum*; 2, *Epidendrum ciliare*.—C. Hasselt.—1, *Saxifraga granulata* fl. pl.; 2, *Doronicum austriacum*.—J. Dundas.—*Prunus Padus* (Bird Cherry).—Collins and Gabriel.—We are unable to tell you what variety it is, but it is certainly not the true ornatus of English gardens. —G. F. G.—1, *Geranium sanguineum lancastricense*; 2, *Centaurea montana*; 3, *Fragaria vesca*; 4, *Geranium pium*. —W. Forrester.—1, *Rhododendron jasminiflorum*; 2, *Enonymus japonicus aureo-variegatus*; 3, *Enonymus japonicus aureo-maculatus*; 4, *Ixia crateroides*.—Capt. Poe.—*Narcissus poeticus*.—Colmanell.—1, *Nitella cordifolia*; 2, *Viola biflora*; 3, *Euphorbia Cyparissias*.—T. G.—1, *Othoona cheirifolia*; 2, *Orobus vernus*; 3, *La Squamaria*.—R. G. G.—*Begonia nitida*.—M. pest.—*Doronicum Columnae*, also called *D. austr.* —Capt. Fairfax.—*Cataseum tridentatum*.—W. Etuats.—Not a *Dodecatheon*, but a common *Polyantus*. —L.—Appears to be *Scilla Litio-hyacinthus*, needed. —He certain without seeing a leaf.—W. H. H.—but barbatum.—W. H.—1, *Abies cephaloniadard* and *amabilis*; 4 and 5, *Cedrus atlantica*.—as regards *begia thysoides*; 2, *Diplazis glutina* comparison *comosum variegatum*; 4, *Maranta*.—and those who nings.—*Claytonia alstonoides*.—R.—and those who resent condition ose grown in the

WOODS & FORESTS.

THINNING PLANTATIONS.

do not need to theorise much on this subject; we have but to look at the trees in any plantation and mark to learn the needful lesson. Trees that have room and light on all sides make short thick trunks and a large head of branches, which, taken together in the bulk, will amount to a greater quantity of timber than that of a tree grown up in circumscribed space among other trees, but it does not follow that the first will make the most useful timber. On the estate here, where the wood has been subjected to different degrees of thinning at different times, it is most instructive to contrast the shapes and sizes of the different species. All species are governed by the same laws, to say, those that have the least room naturally, within certain limits, invariably produce the tallest and straightest trunks, and *vice versa*. It seems to be just a question with the planter of the dimensions wanted, but I notice that Beeches, Oaks, Elms, Larches, and Chestnuts grow fast and produce thick trunks as straight as arrows when growing not many yards apart—rings from 3 yards to 6 yards. But much less space than this suffices to produce a good trunk, and the top, even if small, has light and air. I found the centre of a patch of wood which I cleared out lately, a Beech was left with a trunk which measured 3 feet in diameter 6 feet from the ground, tapering gently to a diameter of 70 feet or more. Within a distance of 6 feet of this Beech grows a Plane of the same age, with a trunk about 20 inches in diameter, and of the same height, and—mark—between these two, in the same line, and 6 feet from each, had grown up a Larch about 18 feet high and 18 inches in diameter at the top. For nearly twenty years, to the writer's knowledge, that Larch never had more than a few feet of living top clear above the tops of the Beech and Plane as it grew up through them, and it had all its life struggled on in the same way, having been planted at the same time as the others. Yet in this limited space it had attained the size of a goodly tree, and the presumption that had its neighbours been of its own kind, the good Larches could have been taken off the estate area, or a tree to about each square yard, as bearing out the description given of the natural forests in the backwoods, which are said to stand as thick as seedlings in a hothed. In another part of the same wood is a Larch with a diameter of 2½ feet 2 feet from the ground about the same height as the other, and enveloped in the branches of three Beeches just in the same manner, the lower branches having perished where shaded by those of the Beeches, only the top, consisting of a few branches, being alive. It would appear, therefore, that a rather small proportion of green top is sufficient to produce a trunk of useful dimensions. In connection with this I may mention that I was once struck by the antity of trees to the ground in a portion of the forest of Fontainebleau, consisting of Oaks chiefly, fine and straight, the majority appearing to be in threes close together, or growing from the same soil. I never remember to have seen Oaks of the same age so dense on the ground, nor so uniform size, whether as regards height or girth. Y.

THE LARCH IN SCOTLAND.

SALMONICEPS" (p. 407) states "that the largest Larch in Scotland stands in the grounds of Galway House." I think he should have given the dimensions of the tree, as well as the particulars of its soil, subsoil, and elevation, as any gardener regarding the culture of this valuable tree is interested, more especially as the Larch is a species which never contracts disease. The spread of Larch seems to be of a light, kindly nature, and crops of different kinds of timber here is the result of open subsoil, it is highly do their work on the action and development of hurried and untrammelled.

excellent Larch timber. The climate of the south-west of Scotland is rather moist, but when trees are sheltered from the immediate effects of the sea breeze, they thrive admirably.

The largest Larch in Scotland which I have seen reported upon is a tree at Kippenross, Perthshire, whose height is said to be 108 feet and cubical contents 515 feet. It is growing upon a north-east exposure on sandy loam resting upon a loose, open, gravelly subsoil. Taller trees than the above have been recorded, but I do not remember an account of any of them being equal to the above in cubic feet. Some fine specimens of this tree are recorded at Dunkeld, the largest of which, in 1867, is said to girth 16 feet 10 inches at 4 feet from the ground, and another fine tree girths 14 feet 10 inches at the same height. One fine tree growing on the margin of the river Tay is reported to be 115 feet high, and girths at 4 feet from the ground 14 feet, and contains 230 cubic feet of timber.

Another fine specimen in the district is said to contain 470 cubic feet of timber. These fine trees are growing on gravelly loam, resting upon an open subsoil of gravel and stones mixed, and at an elevation above sea-level of about 500 feet. The finest trees which I have seen in this country are growing at Monymusk, Aberdeenshire, the largest of which is upwards of 100 feet in height, and contains upwards of 276 cubic feet of timber. This property has long been celebrated for the excellent quality of its timber generally, but the largest and best Larches are to be found at Paradise, near the river Don. The soil consists of a rich alluvial deposit resting upon a gravelly subsoil, perfectly dry, and about 340 feet above sea-level, and about 15 miles inland from the sea.

In the same district of the county I have seen excellent Larches felled and cut up for various purposes—notably at Whitehaugh, in the Vale of Alford, where the soil in many cases has a strong resemblance to that at Monymusk, and the timber produced of equal value, and always commanded a ready sale and the highest price in the locality. It will be seen from the above examples that the largest and best Larches are always to be found upon soil of a loose, open texture resting upon a dry, open subsoil, so that in cases where Larch is intended to be planted upon soil resting upon hard till, hard gravel, or stiff clay, such should be broken up and prepared mechanically in order to pulverise and bring it into better condition for the tender roots of the trees, as it is generally upon this class of subsoils, as well as dry, pure sand where trees are found affected with ground-rot and pumping.

Another point of importance in the successful culture of the Larch is to see that the ground is naturally dry, or rendered so by efficient drainage. Stagnant subsoil water at the roots of the trees is sure to engender disease before they attain a large size; such trees may grow and have a promising appearance for a time, but when the roots dip into the cold, wet subsoil they are then doomed. I have stubbed up trees by the roots in such a position that were beginning to fail, and found the deepest set of roots beginning to rot and as blue in colour as if they had got a coat of blue paint. J. B. WEBSTER.

When to cut timber.—A correspondent of an American paper says: "For strength, beauty, and durability, I have found August, September, and October the best, and February, March, and April the worst months to cut wood. A Red Maple cut in September will keep in a round log perfectly white and sound until the next August; while one cut in March will begin to blacken and decay by the middle or last of June. This is not copied from any scientific work, but is what I have found to be a fact by many practical tests. Grey Birch cut in September will keep in a good condition until the next September if left in the woods cut in 4-foot lengths; while if cut in March and left in the same way, it will be nearly worthless by the 1st of August; at least such is the result on my land. White Pine, like Red Maple,

keeps white much longer if cut in September than if cut in March, and is not injured by the worms so much. I have found that wood dried slowly in a low, cool place is better than if dried quickly in the hot sun, even though cut in summer. May this not in a measure account for wood being better cut in autumn, it having the cold winter to dry in?"

NOTES ON BARK STRIPPING.

OWING to the unsettled state of the weather for some time past from alternate wet and dry, together with occasional frosts at night, the saving of Oak bark in good condition has been rather a tedious undertaking, more especially in cases where the falls consist for the most part of young coppice and where the trees are small. In the case of large trees, the stems near the ground are generally coated with a rough exterior bark, which is of no value for tanning purposes. This should, therefore, be removed with the scraper, an implement something like a draw-hoe in shape, by which means the bark is not only rendered clean and market-like, but it also dries quicker, and is thus rendered more valuable. The tools used for barking operations vary considerably in form and make in different parts of the country; but a cross-cut saw for felling the timber, a heavy and light axe, a handbill for cutting the bark, a duckbill-shaped chisel for removing it from the trees, and a wooden mallet are the principal tools used. When the bark is taken from the trees it should be tied, arranged in bundles of different sizes, and in placing it upon the range to dry, the smallest sizes should be spread out first and the larger sizes placed on the top, outside uppermost, to keep the former as dry as possible. After a deluge of rain, it will be necessary to examine the ranges to see that water is not lodging among the bark, and if so, no time should be lost in having it turned and sorted in the best way possible to keep it from damage, and protect it from the inclemency of the weather. In re-arranging it, place it in such a way as will admit a fresh current of air, so as to facilitate the drying process.

In wet seasons a temporary shed might be erected in an open airy place with advantage, by planting two lines of posts opposite each other, about 8 feet apart and 10 feet high, roofing it with boarding or tarpaulin, beneath which four tiers of shelves can be erected to spread the bark upon. This, of course, will entail extra labour and expense, but it is only in cases of emergency and under exceptional circumstances that it is necessary. As soon as the bark is thoroughly dry, no time should be lost in having it stacked and covered over with a tarpaulin or waterproof cloth to keep it safe and dry. Birch bark might also be saved with advantage, as it is sought for and preferred to any other by fishermen for the preservation of cordage and sailcloth. J. B. W.

HOW TO RECOGNISE GOOD WOOD.

THERE are certain appearances characteristic of good wood to whatever class it belongs. In the same species of wood, that will in general be the strongest and most durable which has grown the slowest, is shown by the narrowness of the annual rings. The cellular tissue as seen in the medullary rays (when visible) should be hard and compact. The vascular or fibrous tissue should adhere firmly together, and should show no wooliness at a freshly cut surface; nor should it clog the teeth of the saw with loose fibres. If the wood is coloured, darkness of colour is in general a sign of strength and durability. The freshly-cut surface should be firm and shining, and should have somewhat of a translucent appearance. In a wood of a given species the heavy specimens are generally the stronger and the more lasting. Among resinous woods, those having the least resin in their pores, and amongst non-resinous woods those having the least sap or gum in them, are generally the best. Timber should be free from such blemishes as "clefts" or cracks radiating from the centre; "cup-shakes," or cracks, which partially separate one layer from another; "upsets" where the fibres

have been crippled by compression; "wind-galls," or wounds, in a layer of wood which have been covered and concealed by the growth of subsequent layers over them; hollow, spongy places in the centre, indicating the commencement of decay. J.

WOOD OF THE WALNUT.

(JUGLANS REGIA.)

NOTWITHSTANDING the recent rage amongst cabinet makers and others for the wood of the Black Walnut (*Juglans nigra*), our old friend the common Walnut should not be despised. Indeed, for the especial purposes to which it is suited there is no more valuable tree. Before the introduction of mahogany this tree was the cabinet maker's favourite wood, and there was none better adapted for his purpose. It is tough and strong in proportion to its weight, beautifully variegated, admitting of a fine polish, durable, and growing to sizes large and solid enough to be cut into veneers. The wood when young is white and when used in this state is frequently found worm-eaten, but as the tree grows old the wood becomes solid and compact, but easy to work, and also acquires a brown colour. There is no introduced tree that bears this climate so well, or that is so valuable for manufacturing into furniture. It is grown in immense quantities in the east of France, the south of Germany, and in Switzerland. There is hardly any other timber tree in the plains of Bergstrasse, which runs parallel to the Rhine between the Neckar and Nain. In sheltered situations and on good land it grows rapidly, and is, under ordinary circumstances, fit for felling when sixty or seventy years old. In addition to its wood this tree is valuable for its fruit, both in the green and matured states. From the nut the tree is freely propagated, and when grown for its timber is best sown where the tree has finally to remain. D.

Peculiarities of the Oak.—We have no tree in England more sensitive of exposure to wind than the Oak, and the best and fastest growing woods are those in sheltered positions well inland. There is a tract of country in the south-east of Sussex, lying between Battle and Hailsham, the soil of which is well adapted to the growth of Oak, but which, from its nearness to the sea—about ten miles as the crow flies—fails to produce, except in very deep, narrow gills, other than short, stumpy trees with bushy boughs, evidently thrown out as a protection against the south-west wind. These trees, I observe, produce knotty and unsaleable timber. About thirty or thirty-five years ago, the planting in St. Leonard's Forest was begun with Larch and Oak, the proportion being about five of Larch to one of Oak. Since the Larch were seven or eight years old they have been gradually thinned out, and although in no case have they thoroughly disappeared, the land is fairly planted with straight-grown, silver-rinded Tellars, which bid fair in due time to become a fine Oak forest. This land is ordinary forest land. My experience is that Oak will grow in almost any description of clay, from the poorest and stiffest to a good deep loam. As the Oak, in its earlier stages of growth, has a long tap-root, a deep soil, free to a certain depth from rock, is necessary to its rapid development. Oak will grow with considerable luxuriance in a gravelly soil, but on arriving at a size fit to be called timber, it becomes what is termed shaky, and it will be found on felling to be little more than a bundle of laths, utterly unsuitable for the uses to which Oak timber is generally put.—R. W. C.

VALUE OF THE WILLOW.

ANYBODY who has the patience to wait five-and-twenty years for a large return upon a small outlay should plant the Willow tree. The demand for this wood is very considerable, and fairly good wood will realise a good price. The wood is used for a variety of purposes; boles free from disease and stain are made into carriage bodies; cricket-

bats, worthy of the name and the game, are made of no other wood. It is the material also for many articles of modern furniture; the inferior parts of the trees serve for toys, bobbins, or for conversion into charcoal. For many purposes the wood is scalded; then it may be twisted, kneaded, cut, or stamped out like a piece of cheese. Properly, the Willow should be grown upon the margin of a ditch or brook; it will grow more slowly and less perfectly in very moist and heavy soil. It should be planted in the spring or autumn. Those who want as rapid a development as the tree is capable of should not plant little sprigs, but a good sized pollard lop, say from 7 feet to 9 feet long and as thick as a man's wrist. If such a lop as this be placed 3 feet in the soil, failure is next to impossible. L.

WOODS NOT PAYING.

I AM told by those who are trustees and agents for several large estates that the almost universal complaint is that woods do not pay. I heard of one case in which the proprietor declared that rather than continue to employ a woodman and men in his extensive woods for the mere gratification of paying wages in which he did not share in some degree, he would let his woods go without managing, and he has since carried this resolution into effect. Asked how they thrived, he replied, he supposed "they just grew." When he sold timber he had the lots valued and superintended, but there it ended. I am, moreover, informed that on some of those estates most noted for the extent of their woods and their good management no income has been derived from them for many years, nor is there any prospect of an income being derived. This is due to several causes and chiefly to the injudicious planting of useless species, like Spruce and Fir, in excessive quantities, and also in no little degree to a needless expenditure of labour in keeping. The wood accounts are not sufficiently looked into on many estates; the management is left entirely to the party in charge, who may perform his duties ill or well just according to circumstances. The expense involved in keeping some plantations is enormous, and might be greatly reduced. I know for a fact that if some foresters who, like Mr. Michie's example, are second to none for general ability, were tried by a debtor and creditor's account, they would cut a poor figure indeed. Excessive supervision and want of method in conducting the management are also fertile sources of expense on all estates. The woods are saddled with many expenses connected with roads, game preservation, keeping from an ornamental point of view, and other things which do not properly belong to them, but when the totals are reckoned up at the end of the year, these are forgotten, and all are put down to the woods. If proprietors would separate the culture of their plantations and all that strictly relates thereto from incidental estate expenses, things would assume another aspect. Planting, thinning, felling, pruning, draining, &c., are really the duties belonging to the woodman, but on some estates—I may say many—too much is spent even on these, and much needless work and supervision are permitted. WOOD AGENT.

"NURSES" IN YOUNG PLANTATIONS.

WHAT are "nurses" in young plantations, and what purpose are they intended to serve? Who invented them, and what good do they do? I read some time ago of the vast quantities of Scotch Fir that were planted in the New Forest—I think it was to serve as nurses to the Oaks intended for the final crop—and it is well known that young foresters and old ones plant on the same principle in the most unquestioning manner. What I want to know is what good the nurses do? In what way is an Oak nourished by a Scotch Fir as its neighbour better than by one of its own species? It has always appeared to me that the grouping of Firs and Spruces with Oaks and other deciduous trees, in order to nurse the latter, was something about as reasonable as rearing horses and

cows together with a similar object. I maintain that any of our hardy deciduous trees will turn out just as well or better without nurses of any species as with them, and that the nursing practice is one that is not founded upon any rational theory whatever, but is a rule-of-thumb practice and if this is not so, I shall be glad to know the reason why." There are no better neighbours of any kind of tree than its own species, and I would nurse Oaks with Oaks and Firs with Firs, and no other way. It is possible to grow Fir and deciduous trees together, but my experience is that unless thinning is carefully attended to, the nurses smother their charge oftener than otherwise. Why a Scotch Fir should be deemed necessary to nurse a British Oak is more than I understand, but I do know that neither needs the other's assistance. There is some sense in planting a mixture till one sees which species is the best in any soil or locality, but no other reason connected with the production of timber exists in mixed plantations that I am aware of. I believe I am within the mark in asserting that the practice is nothing analogous to "nursing" in plantations understood by the British forester to be fourfold: Nature, and Nature produces the best timber left to herself, as the timber trade amply proves. YORKSHIREMAN.

THE BLACK AUSTRIAN PINE.

THIS fine hardy tree, introduced into Britain about the year 1835, has proved to be a good acquisition not only from an ornamental point of view, but also as a first-class timber tree. On the calcareous mountains of Lower Austria it attains an average height when at maturity of about 100 feet. There is no other species of Conifer with which I am acquainted capable of accommodating itself to a greater variety of soils and situations than this Pine; in fact, I have planted it in Scotland with success in all positions, from the sea border up to some 1000 feet above that level, and in soils composed principally of poor gravel, resting on both granite and limestone rock. In Armagh I have planted it extensively on deep peat in which it thrives admirably, and if allowed plenty of room retains its side branches, and is invaluable for cover, shelter, and general utility. At Loughgall, in the same county, it makes rapid progress on calcareous soil resting upon limestone and in the vale of Avoca and Glenelly, in Wicklow, it is quite at home on poor inorganic fragments of clay slate containing but very little silica. It is admirably adapted for planting as a screen in out-of-the-way corners, and forming a background for trees and shrubs of different habits and shades of colour. It likewise makes a grand specimen tree when planted singly on a lawn, its finely balanced conical top rendering it very effective: large terminal buds of the side branches, too, capped in spring with a white downy substance which looks at a short distance off like a finished silver, contrasting strikingly with the beautiful, dark green glossy foliage. When the trunk is cut up for use, the timber is found to be of a close, firm texture, full of resin and very durable. In cases, however, in which the tree has been grown for ornament and their side branches retained, the timber is rather knotty and coarse, but when planted and reared up as for trees for utility, and the thinning regulated in such a way that the side branches die and fall to the ground of their own accord, they acquire fine clean stems, comparatively free from knots, quite workable, and useful for all ordinary purposes. Young trees used in the round state for fence purposes last equally long as trees of the same Scotch and Irish Fir of the same age. Irish Pine is identical with the true Highland Pine (*Pinus sylvestris*); fine specimens of the latter are to be found in many parts of Ireland. I have propagated it from seed, as well as the true Highland Pine, in the natural forests of Braemar, and likewise cut up the trunks of both trees extensively for constructive purposes, and have not the least doubt that the two are identical.

PROPAGATION.—The Austrian Pine is propagated from seed, which should be sown in April on well pulverised soil, formed into beds about

wide. Should the soil be of a stiff character have found a dressing of lime to be beneficial; it renders the soil more friable, and infuses vitality into its dormant constituents, thus rendering it not only workable, but also capable of nourishing and nourishing the young plants. Slightly over the surface, but not too thickly, as the plants under such circumstances get drawn up largely from want of proper space in which to develop their side branches. When they attain a height of from 4 inches to 6 inches, they should be planted out in nursery lines at a distance of 8 inches apart and about 14 inches asunder between the lines, thus affording room for weeding and keeping the ground in proper order. Care could be taken to spread the roots properly out, operation on which much depends. The ground which I use for these nursery plantations is in an exposed locality at the base of a hill, and consists of three kinds of soil—viz., good strong loam, sandy soil, and light peaty ground. It is protected from the inroads of cattle by a common fence constructed in the usual way, with a row of wire netting about 30 inches high stretched along the surface and fastened to posts; this prevents hares and rabbits from getting within the enclosure. Thus the young trees have no shelter whatever, and being inured to the blast from infancy they receive no check as regards growth when planted out on exposed situations. On properties where extensive planting is contemplated it is a good plan to form a nursery for young plants as near the ground to be planted as possible. I have sometimes had four such nurseries in different places on the same estate, and have used them to the useful in every sense of the word. In selecting and enclosing ground for such nurseries preference should always be given to places as contain different kinds of soil, in order that the different species of young trees can be planted on the description of soil most suitable to their development. J. B. W.

THE AMERICAN ROCK ELM.

(ULMUS RACEMOSA.)

This tree (says Professor Sargent in "Notes on Trees and Tree Planting") is found growing with the common American Elm, and in situations similar to those selected by that tree, from the north-western county of Vermont westward to Illinois, and from the Ohio northward into Canada. It is common in New York, along the banks of the Mohawk and its tributaries, in Yates County, near Penn Yan, and occurs in many parts of Ohio and Illinois, but it is in the southern peninsula of Michigan, Wisconsin, and the province of Ontario that the Rock Elm is most frequently met with. This species will be readily distinguished from the disposition of the flowers, which, unlike those of other Elms, are borne in racemes 1 inch to 2 inches long, and composed of several clusters of from two to four flowers together. It may be distinguished also from the common American Elm at all seasons of the year by the thick corky ridges which extend along the young branches.

The wood, too, will be found to be very dissimilar from that of the American Elm. Its specific gravity is .832, while that of the American Elm is but .649, or 22 per cent. lighter. It is almost as heavy as the best Eastern Hickory, 4 per cent. heavier than the best San Domingo Mahogany, and 26 per cent. heavier than second-growth Eastern White Oak. The wood is fine grained, compact, and shows but little of that inclination to splinter which renders the wood of the American Elm unfit for many purposes of construction. The heartwood, which is buff in colour with reddish tints, is susceptible of high polish, and is warm and agreeable in tone. Architects and cabinet-makers, to whom specimens have been submitted, speak of it with unqualified praise for furniture-making and interior decoration, for which purposes its hardness, strength, and beauty seem to particularly adapt it. The wood of this tree is unknown in the Eastern markets, but considerable quantities of what is called Canadian Rock Elm are annually exported into

Great Britain from Canada; but, judging from the descriptions of it, I am inclined to think that this is nothing but American Elm, or perhaps a mixture of the two, as lumbermen do not well distinguish this species, calling all Elms grown on high and dry land Rock Elm, and all that is produced along the river banks and in damp situations Bastard Elm.

Although still unknown in the East, the wood of *Ulmus racemosa* is highly valued in those portions of the Western States where it is abundant enough to form an article of commerce. It is very largely employed in the manufacture of heavy agricultural implements, such as ploughs, mowing and threshing machines, and similar articles, in the construction of which the best White Oak is used in the East. In spite of its weight and strength, this wood is very flexible, and, when properly seasoned, retains any shape into which it has been bent, a quality which finds for it important employment. In some parts of Michigan Rock Elm is largely used for the framework of chairs, and for the hubs of wheels and the heavy beams of stump pullers it has no equal. It is used for the slats of stock-cars, and for this and other purposes large quantities are annually consumed by the railroads. Indeed, the wood of this tree is generally employed wherever it can be procured, and where a material combining at once strength, toughness, and solidity is required. Should it reach the Eastern markets, the qualities which have caused it to be eagerly employed wherever it is known will find for Rock Elm a ready sale here; while, unless the opinion of those experts to whom specimens have been submitted is a mistaken one, it will be one of the most valuable, as it is one of the most beautiful, of American woods for the architect and cabinet-maker.

Taking the standard of weight as the best test of the heat-giving quality of any wood and of the length of time it will continue to burn, Rock Elm is barely surpassed as fuel by Hickory itself. The specific gravity of Eastern second-growth Hickory is .838, that of Rock Elm .832, and that of second-growth Eastern White Oak .662; so that, applying the test of weight, Rock Elm as fuel is worth only 1 per cent. less than Hickory, while it is worth 26 per cent. more than White Oak, the best fuel which now ever reaches this market in any quantity. Actual experiments show that this wood burns slowly, with a bright, steady flame, and without snapping; ash equal to sixty-seven hundredths of 1 per cent. of the dry wood consumed is left after burning. As is to be expected of a tree yielding such heavy, close-grained wood, the Rock Elm grows very slowly. Never a common tree, the Rock Elm is fast disappearing from even those parts of the country where formerly it was most abundant, and steps should be at once taken to propagate and plant.

PINE FORESTS OF NORTH CAROLINA.

HAVING read with considerable interest the article on the Pitch Pine in THE GARDEN (p. 382), I send you the following, which gives a further insight into the doings in these forests. There is no place that seems further out of the world than the Pine forests of Carolina. For 50 miles in every direction the wind at night finds nothing to touch it into music but the harps of leaves that hang 100 feet high on millions of Pines. This continuous monotone is the most lonely sound that ever reached human ears. It is as depressing as the constant sigh of the melancholy, drooping Moss of the live Oaks along the Gulf coast.

Throughout three or four counties one can frequently ride a distance of ten miles without seeing a house or a living thing. The roads through this region are always deserted in winter. Just at this season, however, one sees the turpentine gatherers at work in the forests.

Near the railroad, of course, lumber waggons are seen, and the smoke of turpentine distilleries and saw mills rises from the Pines. The Pines monopolise the soil. In these extensive forests there is little other growth except along the

streams. There Juniper and Poplar abound; there too a vigorous undergrowth of smaller trees flourishes. But on the highlands, on all the grounds except the immediate banks of the streams, little undergrowth can be found. So clear are the forests of small trees, that one can easily drive a vehicle for miles through these primeval regions without the trouble of making a road.

No other tree is as variously profitable as the Pine. The first money that is made out of it is by the turpentine men. The process of gathering this was so well described in your previous article, that it is unnecessary to repeat it here. Nothing, however, can be more beautiful than the virgin resin when in its liquid form; it flows from the distillery and shapes itself into all the fantastic forms of the snow crystals and icicles and many wonderful tints. There is also here plenty of wood for the lumberman, as it is here the yellow or long-leaved Pine attains its best growth. The trees are branchless for 50 feet, sometimes for 70 feet or 80 feet from the ground, and they are nearly all heart. The sap is very thin. When a tree has been drained by the turpentine men for four or five years the timber is not so good, but no expert can tell the difference if the tree has not been worked too long.

If fire breaks out among the Pines, hundreds of men will emerge from a region where it would seem scarcely a dozen dwelt—everyone with a spade, a rake, a horn, or something. On horseback and on foot they come swiftly from the direction of the wind, and, under the leadership of the old deer-hunting commander and ex-confederate, an army of fire-fighters is quickly organised. Y.

PROPOSED SCHOOL OF FORESTRY.

SIR JOHN LUBBOCK moved in the House of Commons the other night that a committee should be formed to inquire whether, by the establishment of a forest school, our forests and woodlands could be rendered more remunerative than at present. The subject, he said, was one of considerable importance. England was almost the only country without a forest school. Such institutions existed in almost every other country. The need for a forest school in England had by no means reference only to the State forests. There were some 2,800,000 acres under wood, while in the colonies the forests were estimated to cover no less than 340,000,000 acres. In fact, our interests in this respect were larger than those of any other country. He would only give two instances out of many which might be quoted to show how much might be effected in this direction. Thirty years ago the Landes was one of the poorest and most wretched regions in France. It had been judiciously planted, and was now one of the most prosperous. The increase of value was estimated at no less than £40,000,000. In India fifteen years ago the net forest revenue was only £52,000, while since the establishment of a forest department it had risen to over £400,000, which would represent an immense increase in capital value. Competent authorities estimated that there were 5,000,000 acres of land in this country which might be planted with advantage. M. Boppe, one of the greatest French authorities, had recently visited this country on behalf of the India Office, and clearly indicated his opinion, though he expressed it as courteously as possible, that we were behind other countries in the management of our woodlands. Our own highest authorities were of the same opinion. Indeed, so necessary was a scientific training, that the officers intended for the Indian Forest Service were sent to study at Nancy. No doubt that was an admirable institution; but, naturally enough, it was specially adapted to French requirements. For instance, one of the subjects was French law; again, of course, French technical terms were used. The India Office proposed, he believed, that a part of the course should in future be passed at Cooper's Hill, but that the students should spend some time in France to study the practical part. That, of course, was an acknowledgment, first of the advantage to be derived from systematic training, and, secondly, that such

advantage could not be procured in this country. The present was a favourable time for the inquiry, because Dr. Schlieb, the head of the Indian Forest service, was now in England, and, he believed, that this was also the case with his predecessor, Dr. Brandis. This was not a case, he thought, which could be left altogether to private enterprise, because a forest school necessarily required access to a considerable area of forest. He did not, however, wish to commit himself to the establishment of a Government school; he thought it at least worthy of consideration whether or not some intermediate system might be adopted which would enable some one or more existing institutions to benefit by the national forests. At present, the landed interest was so greatly depressed, that we ought not to neglect any step by which its condition might be improved. To show the demand for timber, he reminded the House that our annual import was about £16,000,000. He believed that the average income derived from woodlands might be substantially increased. Moreover, it was desirable that the whole question should be investigated before the Government committed themselves to a new system of training for the Indian Forest officials. He trusted, therefore, that Her Majesty's Government would consider that he had made out a strong case, at any rate, for inquiry, and that the House would accede to his motion.

Dr. LYONS, in seconding the motion, reminded the House that he had for some years past called attention to this subject in connection with Ireland. It was undoubtedly the case that of late years a very considerable diminution had taken place in the amount of wood planted. In reports, which included the greater portion of Europe, it was clearly laid down that those countries could no longer afford to export an unlimited amount of timber to this country. It was the same with regard to the United States and to Canada, where the timber had been recklessly cut down, and where constant forest fires destroyed as much timber as would have supplied European demands for some years. Our timber imports had been referred to as amounting to £16,000,000. That return, he thought, must refer to timber alone, without other forest produce, such as tar, pitch, resin, and bark. The whole of the forest produce imported into this country really amounted to about £30,000,000. The amount of woodland in Ireland was decreasing; there were now 45,000 acres less than in 1841. The total amount of timber now standing in Ireland was only 350,000 acres. How much this was below the amount of woodland Ireland ought to possess was seen from the fact that the best authorities had held that to keep a country in good order and insure the proper growth of crops, from one-third to one-fourth ought to be protected by woodland. The amount of woodland possessed by Great Britain, though much larger in proportion than that of Ireland, was small compared with other countries. In Prussia there were 34,000,000 acres, in France 22,000,000 acres, in Austria 23,000,000 acres, and in Hungary 22,000,000 acres of woodland. To the excellent management and cultivation of her forests he believed that the present prosperity of Hungary was in a great measure due. He had no hesitation in saying that the amount of timber in the British empire was infinitely below what it ought to be for the proper protection of the soil, the proper protection of flocks and herds, and for the general development of industry.

Sir HERBERT MAXWELL said they had reafforested many of the barren hillsides of Scotland. He might instance the county of Inverness, which now contained 900,000 acres—he thought the largest, Yorkshire coming next. What were they to expect from the appointment of a select committee? The Prime Minister said little could be expected from a committee at this period of the session. (Mr. Gladstone dissented.) Then he must have misunderstood him. An immense amount of information would be collected and placed at the disposal of the public. It might be asked what was the difference between forestry and horticulture that it should be encouraged by

the State. There was this great difference—that forestry called for an amount of foresight, patience, and self-denial which was not required in any other cultural pursuit. No one could fail to be distressed in going about the country to see thousands of acres of neglected woodland. They all knew that the present Prime Minister took a great deal of pleasure in connection with arboriculture, and he trusted he would devote his energies to constructive as well as destructive operations.

Mr. GLADSTONE said that those who cut down trees are the only true conservators of our woods. Sir Herbert Maxwell says most truly that there is a multitude of ill-managed woods in this country, because of the superstition of their owners, which prevents them from properly thinning and clearing them. I confess that the principle is capable of very wide application, going far beyond the limits of the present debate, but I may contend that nothing does more to increase the ground of complaint with respect to the condition of our woods and plantations than that superstition which leads owners to think that it is a kind of sacrilege to cut down trees, instead of regarding it as the only way of keeping them properly. I agree that it is quite worth while to appoint this committee, but I must make certain reservations. I do not wish to be bound that the Government will establish a forestry school. I will give the reason why there should not be any foregone conclusion on the subject. Sir J. Lubbock who made this motion has spoken of the forestry schools which have been instituted abroad. That was quite true, but there are two observations to be made upon it. First, they have to depend on direct aid; and, secondly, the scale of operation is infinitely larger. I cannot agree with Sir Herbert Maxwell that Inverness contains 900,000 acres of woods. There can be nothing approaching to that in the county of Inverness—in fact, I think the whole amount in Scotland does not reach 900,000 acres.

Sir HERBERT MAXWELL said he might have been wrong about the figures, but Inverness was larger than any other county in the United Kingdom. The amount was probably 400,000.

Mr. GLADSTONE said: I wish to be quite free on the question of establishing schools, and I will mention one reason for this. Allusion has been made to the study of forestry in India. The Indian Government have had most special reasons for giving attention to it. First of all, it was found impossible to make forestry profitable. I certainly do hope that this subject is in course of being dealt with satisfactorily in India. We must, however, recollect that there are important facts connected with the climate and with the due supply of moisture in the atmosphere in India which are not present in this country. The Indian Government has a school of forestry in India and also in England, and it should be known that the latter is not confined to the instruction of persons in India or contemplating residence in India. Any person who chooses to find the necessary fees for admission to the English school can receive instruction there. A great deal of difficulty in the way of studying forestry in this country arises from the limited scale of operations which can be conducted here in consequence of our woods being broken up into such small areas. The number of properties on which there is a sufficient amount of wood to admit of large operations or a systematic training is not great. Woods of 6000 or 7000 acres in extent are extremely rare in England. One great difficulty in the way of a proper culture of woods in this country arises from the fact of their being kept, not for the purposes of profit, but of landscape beauty, or pleasure and sport. The interest which I take in this subject has caused me to pay particular attention to the way in which our woods are managed, and have led me to believe that we should gain a great deal if we were to have more common traditions upon the subject. There are some parts of the midland counties where the art of wood cutting is practically unknown, and there are also many other parts of the country where

scarcely anyone knows how to cut down. That is the result of a general want of attention to the subject. I think that great utility would result from the inquiries of this commission. I may say that we give our hearty approval to the proposal.

Sir W. BARTELOT said that few men know how to thin a plantation, and scarcely two would agree as to the proper time when the thinning should take place. It was on this account our plantations in England had suffered severely. In the eastern division of Sussex had turned their attention towards the cultivation of undergrowth and underwood, with the result that they found employment for large numbers of people during the winter months. In principle this course, however, they could not shut their eyes to the fact that the value of this underwood and timber had greatly depreciated, and it was not until there was a diminution of the supply from abroad that the value of timber in this country would rise to a fair level. He informed, however, that nearly all the timber near the watercourses of America, from Italy to Spain, had been cut, and there was but a chance of many large supplies reaching us in the future from those countries. He therefore hoped that we in this country should not neglect planting timber which would grow fairly well on land that was not good for agricultural purposes. He believed that this committee would do a great deal of good, and he should be glad if one of the results of the inquiry was to teach young men the art of cultivating timber. As it was, there was considerable difficulty in getting men to manage woods properly.

Sir G. CAMPBELL thought one had no need go further than Kensington Gardens to see what a lamentable want existed of scientific forestry in this country. He agreed that the Indian Forest Department had done good work, but he was inclined to think that it had been a little overpraised, as there was a great want of scientific method in the system which it pursued.

Mr. ACKERS said that there was no good science of forestry in the country, and the art of forestry might be said to be absolutely unknown. Sir Herbert's treatment was apparently applied to all timber alike, and it did not appear to be known that what was good for one tree killed another. When agreeing with the Prime Minister that there should be no foregone conclusion, he hoped the matter would not be entered upon with the idea that a school of forestry was not necessary, as that Government assistance should not be given to it.

Sir J. Lubbock's motion was then agreed to.

Selecting Oak timber.—In the selection of Oak a great deal depends on a knowledge of the soil on which it grew. It is generally found that when Oak is grown on a peculiarly rich soil it is deficient in strength in consequence of rapid growth, and therefore coarser fibre. In addition to the character of the soil, we have to look at the effects which the atmosphere produces upon the trees in the situation in which it is grown, as it has been found that even on a few acres the quality would vary greatly according to the position of the trees. Timber cut down in winter should always, when possible, be chosen in preference to that cut in the spring, as it will require less seasoning. Great attention should always be paid to the centres of the trees, as it is there that decay generally shows itself.—D.

Felling by the saw.—I am much obliged by "C. R. S. D.'s" information on this subject. Will he further oblige me by stating what it costs per ton of 40 feet to throw timber by the saw, and how many feet a couple of men can throw in a day, including the cost of "setting out the tree by the axe"? I shall then be able to estimate its advantages, if any, over the axe which is used by expert workmen, such as we have here, and who make better wages at felling by piece work than they can by day work at 3s. 4d. per day.—WOOD AGENT.

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"This is an Art

Which does mend Nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare*.

GARDEN HEDGES V. WALLS.

As regards strength and durability for a fence, there is probably nothing better than a stone or brick wall, and walls have the advantage of not exhausting the soil in their immediate neighbourhood, nor encouraging the growth of weeds, as is the case with most hedges, as they are generally turned to good account in training fruit trees. When this much has been allotted, it is about all that can be said in their favour, for anything more out of character with the use they are raised to protect is hard to conceive. Live hedges are certainly much more beautiful and in many cases quite as effective as fences; they are more cheaply raised, easily kept in order, and should be used as garden fences whenever wherever possible. The common Hawthorn is widely diffused, that very little is thought of nevertheless, although so common, a good Hawthorn hedge is a very effective feature in a garden. When kept closely clipped to the somewhat formal outline necessary for the preservation of boundary lines, we lose the wealth of blossom which should otherwise obtain from the matured hedges, but the foliage itself is not unornamented, therefore the Hawthorn may justly be styled as one amongst deciduous hedge plants. The position must be accorded to the Holly amongst Evergreens, as although Holly hedges are of comparatively rare occurrence, for certain uses and under certain conditions Holly is of great value. This is notably the case in forming hedges under the shade of large trees where the Hawthorn refuses to grow. The Yew, again, is an almost everlasting hedge plant and one well adapted for cold, heavy ground. The slowness of growth and the poisonous nature of its leaves, however, militate against its more general use. As an evergreen fence where it is not absolutely necessary for it to be proof against the inroads of animals there is much to be said for the common Portuguese Laurel. In exposed positions and on light gravelly soils where many fences will not grow it is very valuable. An instance of this recently came under my notice where this Laurel is now thriving on a spot where other hardy shrubs had perished from the cold and insufficient soil. Another shrub that may be fairly termed evergreen, *Crataegus Pyracantha*, has been spoken well of as a hedge plant. Its leaves are much smaller than those of the ordinary *Pyracantha* and it may easily be distinguished from it. It is also hardier, grows rapidly, and with a little attention will readily make a good impervious hedge. It would be impossible in a paper like this to include the wide range of shrubs that may be drawn upon for training hedges and screens for gardens, but it cannot be too strongly insisted upon that in order to make the spot they are intended to surround as much as possible in harmony with Nature, hedges should, wherever practicable, be employed instead of bricks and mortar.

D. J. Y.

NOTES FROM KEW.

DURING the months of May and June the Cape house at Kew is more than usually interesting, owing to the large variety of Cape and other spring flowering plants which are in bloom at that period. Last Saturday we noted the following as being in flower, and on inquiry we learned that the collection of Cape bulbs in the Royal Gardens shows good promise of being this year exceptionally rich in both number and variety of flowers. *Gladiolus recurvus* was represented by a potful of plants with tall, grassy leaves and erect 18-inch flower-spikes, each of which bore a pair of tubular flowers about 2 inches long, and with the segments undulated and recurved. The ground-colour of these flowers was creamy yellow, thickly covered with spots and blotches of purple-brown. A most delicious fragrance is emitted by them, which reminded us of a mixture of cinnamon and almonds. This species is sometimes met with under the name of *G. grandis*. *G. cuspidatus* has long, flag-like foliage and erect spikes 2 ft. long, the upper portion zigzag, and bearing half-a-dozen long graceful flowers, which are creamy white, the three lower segments having each a blotch of purple, the upper three being as long again as the lower, and twisted and recurved. The general characters of this species are very near those of *G. trimaculatus*. *Watsonia humilis* has grassy, slightly-twisted foliage and flower-spikes 1 ft. long, with rose-red flowers of good substance, the limb spreading, and about 1½ inches across.

Moraea pusilla.—The *Moræas* are small, Iris-like plants, with long, narrow, Grass-like leaves and flowers of various colours, *M. pusilla* being dark blue, with the three inner convolute segments blotched and lined with yellow—a very pretty little plant. The *Scillas* were represented by flowering plants of *S. livida*, *S. lancifolia*, *S. natalensis*, *S. ovalifolia*, *S. maculata*, and several others, none of them being in any way attractive except *S. natalensis*, which bore erect scapes of bright blue flowers. The beautiful orange-flowered *Sandersonia aurantiaca*, with its erect, slender, angular stems and tapering bright green leaves, was nicely in flower; as also was its near relative, the *Littonia*, the flowers of which are bright orange and bell-shaped. *Ismene* (*Elisena*) *longipetala* bore its tall, stout scape of what may be termed misshaped flowers, the long, nodding corona being curiously compressed. In some points the flowers of this plant are very like those of the *Eucharis*. *Coburghia luteo-viridis* is a *Hippeastrum* (*Amarylhis*) like plant, with an erect flower-scape surmounted by a large brown sheathing bract which half envelopes the half-dozen or so long urn-shaped white and green flowers.

The genus *Coburghia* is rich in species of an exceptionally beautiful character, but owing to their being rather difficult to flower, they are not generally known in gardens. In addition to the above bulbous plants, there were also in flower numerous species of *Oxalis*, some of which make really handsome pot plants, as they flower freely and are often very brilliantly coloured. To such belong *O. oregana*, *O. speciosa*, *O. floribunda*—with its white, pink, and red-flowered varieties—*O. Munbyana*, and many others. The recently-introduced pretty white-flowered *Streptocarpus* was represented by two panfuls of well-flowered plants, and in the succulent house close by there are hundreds of both this and *S. Rexi* now in flourishing condition, and likely soon to be very gay with flowers. As plants for fringing borders in greenhouses or conservatories, these Cape *Streptocarpaceae* are exceptionally useful.

The *Mesembryanthemums* were many of them covered with hundreds of large bright-coloured Daisy-like flowers, and, on seeing them, we wondered how it was that such useful spring and summer flowering plants did not receive more attention from gardeners generally. At Kew this summer it is intended to grow a collection of *Mesembryanthemums* in beds out of doors, and, judging from what was done there in the same direction last year, we expect this proposed

liberal treatment of *Mesembryanthemums* will have valuable garden results. *Lobelia laxiflora*, a Mexican species belonging to the shrubby *Tupa* section, was in flower, and to us seemed a good garden plant. It has been introduced from a Continental garden under the name of *Siphocampylos lancifolia*, and in the form and coloration of its flowers it bears a resemblance to *S. Humboldtianus*. The leaves are, however, very like those of *L. crassicaulis*, being long, Willow-shaped, and slightly tomentose. The branches are erect, stout, and bear on the upper portion numerous axillary flowers 1½ inches long and coloured bright orange-red.

Passiflora cinnabarina.—One of the few Passion flowers found wild in Australia, and which produces medium-sized cinnabar-coloured flowers, followed by fruits as large as Apricots, and which are very ornamental, being of a bright orange colour. *Solanum jasminoides* was growing and flowering on one of the rafters, where it is evidently quite happy and proves most satisfactory as a flowering plant. *Vaccinium serpens*, a very handsome epiphytal Cowberry from the Himalayas, was in bloom, the long, curving branches, clothed with Box-like foliage, and bearing numerous pendent urn-shaped flowers, like beautiful ear-drops, and coloured orange-red, with darker veins, being exceedingly pretty. *Dimorphotheca graminifolia* was one of the most interesting of the plants then in flower. It forms a dwarf plant, with the habit and foliage of a Thrift, and sends up a long flower-scape bearing a large beautiful flower, which in form is like a Paris Daisy, the ray florets being over an inch long, pure white, with a purple blotch at the base, so that a ring of purple surrounds the central florets, which are each tipped with bright yellow pollen. In addition to the above, there were also flowering in the Kew Cape house many *Ericas*, and a collection of Cape *Pelargoniums* were pushing up their interesting and, in some species, pretty-coloured flowers.

NOTES OF THE WEEK.

Nepsera aquatica.—This is a near relation of the useful little *Melastomad*, *Centradenia rosea*, and although the flowers are small individually, they are produced in such abundance and the habit of the plant is so compact, that the *Nepsera* may be recommended as a useful little stove or warm greenhouse plant. It has been introduced from Dominica to Kew, where it is now flowering in the T range. It forms a dwarf shrub, branching freely, the leaves an inch long, ovate, pointed, dark green, from the axils of which thin-stalked panicles are developed, the flowers being half an inch across, star-shaped and white, except the rather conspicuous cluster of anthers, which are violet-purple. By pinching the points out of the branches, so as to cause the plant to form a shapely compact little pot shrub, it would be easy to grow this new introduction into a pretty and useful flowering plant. There is no difficulty in causing the plant to flower, as it appears to be, like the *Centradenias*, an almost perpetual bloomer.

Burbridgea nitida.—Under cultivation in our stoves this really handsome *Zingiberad* has not proved so satisfactory in a garden sense as was at first expected. In the *Botanical Magazine*, where the genus was first figured and described by Sir Joseph Hooker, who named the plant "in recognition of Mr. Burbridge's eminent services to horticulture, both as a collector and author," it is stated that *B. nitida* produces from ten to thirty flowering stems, "rarely exceeding 10 feet high, and each bearing a panicle of twelve to twenty flowers." Specimens such as these words describe would be highly ornamental stove plants, but instead of the flower-stems being nearly 10 feet high they are usually little more than as many inches, whilst the flowers are small, dull in colour, and are developed in twos or threes together. Such at least is the most that careful cultivation has produced in this plant at Kew, where there is a specimen now in flower. No doubt something

unfavourable in the conditions supplied to the plant when under artificial treatment is the cause of this falling off both in size and in flower-colour. Perhaps Mr. Burbidge will kindly inform us what treatment would be most likely to produce such specimens of this his genus as are described in the *Botanical Magazine*. The plant is a native of Borneo, and was introduced through the Messrs. Veitch and Sons in 1878.

Cereus paucispinus.—For the introduction of this Cactus we are indebted to Mr. E. G. Loder, who brought living plants of this and other Cacti to England from New Mexico, one of which found its way to Kew and was figured in the *Botanical Magazine* last year. The same plant is now again in flower at Kew, where it is grown in a warm greenhouse temperature, although in some parts of England this and several other species of *Cereus* may be grown in an unheated frame if kept quite dry during winter. *C. paucispinus* is represented at Kew by a plant 8 inches high and about 4 inches in diameter, and is irregularly ridged from top to bottom, the ridges being broken up into almost round, gouty-looking projections, in the centre of each of which is a star-like cluster of long brown spines. The flowers are produced near the top of the plant and are tubular below, afterwards spreading out so as to form a limb about 3 inches in diameter, and having in its centre a thick cluster of purple anthers, surmounted by a conspicuous dark green stigma, the petals, which are numerous, being a dark orange-red. *C. paucispinus* is apparently a free-flowering species which may be recommended for cultivation in cool sunny greenhouses or frames. Like all Cacti, it requires plenty of water during the early part of summer, less in autumn, and in winter complete dryness.

Klugia Notoniana.—A pretty annual, with terminal racemes of rather large blue Utricularia-like flowers, is now in flower in the Begonia house at Kew under this name. The genus is composed of three or four species, natives of India and Ceylon, where they are frequent in swampy land. Under cultivation *K. Notoniana* appears to prefer a loamy soil and plenty of water, but, unless grown in a rather airy stove, the leaves are apt to damp off, as the plant is very herbaceous and succulent. The stems are slightly hairy, the leaves alternate, unequal-sided, slightly toothed, and about 2 inches long. The flowers are arranged on the raceme all along the lower side, and are pendulous. Each flower is composed of an angled green calyx and a two-lipped limb, the upper lip being small, the lower one broad, as large as the thumb-nail, three-lobed, and coloured a rich dark blue, with a few lines of yellow at the base. The plant appears to be winter flowering in habit, though in this respect it is most likely to vary according to the time of sowing the seeds and the conditions under which the plants are grown. As an interesting and pretty Gesneraceous plant, this *Klugia* is deserving of a place along with such plants as *Torenia*s and *Scutellaria*s.

Anemone sylvestris.—What purer flower of May is there than this *Anemone*, a handful of whose blooms has reached us from Messrs. Bunyard's nurseries at Maidstone, where it evidently grows to perfection? Its large white cup-like blooms are as beautiful in form as any of the race, and, seen nodding to the breeze in the open border, seem doubly beautiful than when cut, although a capital vase flower, lasting a long time quite fresh.

Clematis montana.—A few flowers of this climber from the walls of Mr. Kingsmill's house at Eastcote remind us of its loveliness. Anyone desirous of having a wall adorned in May with myriads of white star-like blossoms should get this *Clematis*, and plant it in good deep soil in a sunny, sheltered spot.

Pyrenean Adonis.—This is so much hand-somer in every way than *A. vernalis*, that it should always be grown in preference to that species. Before us are some very fine blooms and buds from the York Nursery, than which we have rarely seen lovelier yellow May flowers. They are about

3 inches across, and have several rows of petals which shine as if varnished, their bright golden hue contrasting well with the deep green Fennel-like foliage. Being rather rare, not much is known about the culture of this species, but it no doubt thrives in the open border, and it seems to be a stronger plant altogether than the commoner *A. vernalis*.

Munstead Poppies have been sent to us during the week in beautiful condition by Mr. Kingsmill, who is delighted with the variety he has obtained from seed, and by carefully selecting the best colours he has managed to secure a very fine race of Poppies. Those which he sends us are bright orange-scarlet and clear yellow and white, with every shade between these extremes. The border that does not contain these Poppies is deprived of a wealth of beauty at this season and onwards till midsummer.

White Pyrenean Lychnis.—Messrs. Backhouse send us a plant of this pretty alpine plant, which is the counterpart of the ordinary form, except that the flowers are pure white, and about the size of a sixpenny-piece. This grows in a tufted way, and is particularly floriferous. It is an exquisite alpine plant, perfectly hardy, and thrives in any open spot in loamy soil. Grown in a mass along with the typical form, we can conceive nothing prettier in a rock garden at this season.

An exhibition of paintings and other work, by Mr. Frank Miles, is now and will be on view for a few weeks at Messrs. Dickinson's, 114, New Bond Street, and is well worth seeing. It is free, and will be interesting to gardeners, as it contains the picture of the Bingham garden and a quantity of his mother's beautiful flower paintings, as well as a collection of his landscape work.

Varieties of Lilac.—A series of varieties of Lilac, about a dozen in number, has been sent to us by Messrs. Bunyard, from their Maidstone nurseries, in order to show the difference between the old and new varieties, which, as may be imagined, is very great. Such sorts as the Old White, Old Persian, Old Purple, and White Persian are in contrast to such fine new sorts as Alba Magna, one of the finest whites. Among the coloured modern sorts the finest are *Croix de Brahy*, *Belle de Louvain* (late), and *Charles X.*, one of the best of all for forcing; the flowers are pure white, while in the open now they are deep purple.

Central Asian plants.—In Dr. Lansdell's new work, "Russian Central Asia," some thirty-five pages are devoted to the flora of this little-known region, and to anyone interested in the many beautiful plants that have been introduced of late from that quarter cannot fail to derive much information from this book, which is thoroughly complete in every department.

Pansies.—A large gathering of very fine Pansies has been sent to us by Mr. Grant, from Brookman's Park, Hatfield, where at the present time there are no fewer than twenty-seven beds filled with the finest varieties, and, judging by the blooms sent, they must have a beautiful appearance. We should have to make a long list were we to mention all the sorts that pleased us in this gathering; we can therefore only say that it seems to comprise the cream of named sorts.

PARKS & PUBLIC GARDENS.

New public garden.—The Duke of Westminster on Saturday morning performed the ceremony of opening as a public garden an enclosure of nearly two acres, which for more than a century was the burial-ground of St. John's parish, Westminster. Canon Furse, in requesting the duke to open the garden, spoke of the desire of the originators of the movement which had led to the opening of this ground to ameliorate the lot of the poorer dwellers, and of the children,

especially, in that crowded neighbourhood, as believed that there were between 30,000 and 40,000 people living within a quarter of a mile of that spot, and the only public garden was near the Victoria Tower. If any should have scruples about using a burial-ground for purposes of recreation, he might, perhaps, mitigate the objection by stating that, although the ground had been used as a place of burial for 122 years, there had been no burial within the last 32 years. But for the liberality of the Duke of Westminster, who had contributed largely to the expenses, the work could not have been accomplished. On pressing a hope that the solemn associations of the place would prevent any disorderly conduct, he added that the District Board of Westminster to whom he was now, as the freeholder, expected to hand over the ground, would, he had no doubt, take every possible care of the garden. The Duke of Westminster, to whom the garden was given to be handed by him to the Hon. A. Ponsonby, chairman of the Works Committee of the District Board, in the course of some remarks upon the occasion, referred to the good which had been done by the Kyrle Society and by Brabazon's Committee in securing means of useful simple enjoyment for the poor who lived far from the parks to use them. The garden was then declared open, and with some complimentary speeches the proceedings closed. The Duke was converting the burial-ground into a garden about £1800, and of this sum £1000 has been given by the Duke of Westminster and £500 been contributed in the locality, leaving £300 to be obtained. The garden has been laid out under the direction of Mr. Meston, with broad straight asphalt walks, radiating in different directions from a common centre, the graveyards being ranged against the walls, with the exception of two monumental tombs. The most has been made of the limited area, for which Mr. Meston has allowed plenty of paths. He has, at the same time, designed little plots of turf, which will give relief to the asphalt and surrounding buildings. Good use, too, has been made of Ivy edging on the Thames Embankment, and both evergreen and deciduous shrubs have been chosen with due regard to their smoke-resisting properties. The trees consist exclusively of London Plane (*Platanus acerifolia*), than which none could be better for such a spot.

QUESTIONS.

5352.—**Tuberose after flowering.**—Can any of your readers kindly say if it is of any use to save the buds of the Pearl Tuberose after flowering, or is it better to throw them away?—D. A.

5353.—**Lyctum barbarum.**—Can any of your readers inform me as to the value of this shrub for hedges, or whether anything used in the north of England that would make a better hedge? Is it expensive?—K.

5354.—**Calochortus.**—Can any reader of THE GARDEN inform me how to manage *Calochortus* bulbs? Having seen flowers of these and other bulbs, such as *Freesia*, *Spargelia*, *Milla biflora*, *Ornithogalum arabicum*, &c., in Algeria, I fear I had nine started quite at the wrong time, and being so much about *Freesia*s in THE GARDEN for March occurred to me I might be set right by some kind advice.—TABBERA.

5355.—**Gardenia shoots dying.**—I have some *Gardenia florida*, of which some of the young shoots are dying off. It appears as though it was a kind of canker. The plants are kept in a temperature of about 60°, and syringed on fine mornings about 7 a.m. They have been carefully watered, and are kept in a nice moist atmosphere. I should like to know the cause of the shooting off, and whether it is prevalent in that variety.—

5356.—**Raising single and double Roses from seed.**—Would some of your readers kindly say what method they have found most effective in raising Roses from seed. Last October I got a number of Hybrid Perpetuals from Swanley. A number of the best kinds had plump seeds with fairly ripe seed; those I saved, and have sown them also some of *Rosa rugosa*. In raising the seedlings, is it desirable to use heat? How soon will they germinate?—W. J. M., Clonmel.

5357.—**Narcissus poeticus.**—Will anyone kindly help me in my investigations by sending flowers, and, perhaps, a bulb in due season (for which I will gladly make a return) of *N. p. patellaris*, or any other notable varieties of *N. poeticus*, including doubles? And I am glad to hear from careful observers—1, whether they have noticed two or more distinct kinds of double poet; and, 2, to what single types they are inclined to attribute them respectively.—G. H. ENGLEHEART, Appleton, Andover.

GARDENS IN ALGIERS.

THE suburbs of this strange old town, placed, as they are, on a northward-facing hill, from their ideal exposure are favourably situated for gardening. The want of water, the great natural difficulty of the town, and indeed of the whole province, is overcome by a system of irrigation, the supply being carried through aqueducts, some of ancient and others of recent construction. The climate suits the greater part of what is classed as subtropical plants. Within a mile or so of the town, and mainly in the north-western suburb, are many gardens, of this, old and modern. Here, as of former days, the wealthy Arab had his villas, with gardens of many acres, carefully terraced and irrigated. Some of the older ones are rich in picturesque groups of Olive and Caruba, stately Cypresses, climbing Vines and scarlet Pomegranates, whose pale grey stems, polished undulating leaves, and brilliant flowers are to a northern eye strangely striking.

Picture of plant life. The high garden walls, roughly plastered and originally whitened, but now dim and grey with age, where not hidden by groves of Orange, Lemon or Shaddock, stately Bamboos, Cypress or Myrtle, are clothed with a variety of fine rambling plants, of which Bougainvillea, Plumbago capensis, Solanum asminoides, white Trasmine, and Tea and cluster Roses are perhaps the most frequent. The edges are made of mountainas; Magnolia and iflora is a very large tree; weird, thickly leaved are the white Brugmansia rises high and overtops the wall, its great white trumpets and silage leaves borne aloft on a sheaf of straight wrong stems. Date Palms form groups of majestic beauty; Rosemary is at home, and is commonly used for low hedges and edgings, but apt to ramble away at will into forms of picturesque raggedness. Poinsettias, grown as 8 feet high standards and pruned annually with a billanok, are a mass of scarlet glory at Christmas. Pomeas, crimson and blue, and Bignonias ramble through trees and bushes; Tecoma australis, either climbing or trained to walls, surprises one by its delicate beauty; and Hibiscus of kinds are frequent

garden plants. In open-air cisterns are strong growths of Arums, Nelumbiums, and Papyrus.

Sometimes a garden encloses a half-wild narrow dell with a trickle of water. Here will probably be a thick growth of Oleander and the wild Arundo Donax, the great Reed often 30 feet high; then clumps of Acanthus mollis, and perhaps a grand old white-stemmed Bay, with straight vigorous young growths shooting from the base.

In such a dell, damp, sheltered, and half shaded, may generally be found a grove of Bananas, those conditions being suitable for its cultivation.

The Arab houses are built of rubble masonry, plastered and invariably

Many of the French and also the English winter residents who have built villas in the beautiful suburb of Mustapha have wisely adopted the Arab style of building, which, though externally of extreme simplicity as to its main parts, groups admirably with the evergreen trees of the country and with the wealth of flowers that these gardens are capable of producing.

FLOWER GARDEN.

SOWING PRIMROSE SEED.

I QUITE agree with "J. C. B." in reference to the time for sowing hardy Primrose seed. If those who wish to obtain seed of hardy Primroses or Polyanthuses would instruct their seedsmen to send them packets of new seed as soon as ripe, and sow it at once, they would act much more wisely than leaving the order till next spring. Having sown seed of my own saving and the best I could secure for many years, I have found new seed the quickest to germinate, and the proportion of growth to be from 25 to 30 per cent. better than when sown in spring. Primrose seed saved ever so carefully includes some that is well matured and some that is small and imperfect. Very often this latter has been obtained from the finest varieties. Yet if such seed be held over till next year, its chance of germinating is very doubtful, especially when sown in a cold frame or house. Many lovers of these early spring flowers cannot command heat, and writers always render this class good service if they point out to them how best to command success with such means as they have at disposal. Never risk Primrose seed in the open ground, for if sown in over stiff soil it is apt to get scorched up in hot weather, and if sown in the spring, the ground may be either too cold, or slugs may decimate the seedlings. My plan is to sow it in shallow pans or boxes as soon as the seed is well ripened and to keep these under glass until the plants are fairly strong; then stand them outdoors to get robust and fit for dibbling out in the open ground—that where early Potatoes have been taken from comes in admirably for such purposes—and as by that time the heat and drought of summer are past, the plants thrive well, soon take root, and many bloom finely the following spring. Thus they are as strong in the spring as they would be in September were the seed sown in April. That is a great gain, and it is all the more evident the following spring when the plants



A garden entrance in Algiers.

whitewashed both inside and out. The central court is often highly decorated; the passage or gallery that gives access to the upper rooms is supported by horse-shoe arches springing from slender twisted columns; between and over the arches the wall-space is panelled with glazed tiles of fine design and colouring, generally of two or three colours on a white ground. The railing which forms the parapet of the gallery is of wood-work, elaborately pierced and turned. In such a court, as shown in the engraving (p. 493), a few small Palms in tubs and other suitable subjects form delightful pictures of combined house and plant beauty. The above engraving shows the garden entrance of such a house, with groups of Bananas and other plants.

bloom grandly; indeed, a bed of such plants, if in good soil and they have done well, beats by a long way any similar bed of plants raised only the year previous. By constant selection and raising seedlings from year to year, not only are strains greatly improved, but much greater interest in the produce is created. In ordinary gardens Primroses are not grown in beds, as here, but are planted out in borders, wild spots, and in various places where they may thrive. In such cases it is an admirable plan to have them in clumps of colours, say of half a dozen plants—white, mauve, red, crimson, and so on. The first year's blooming enables plants to be selected and planted in this way from the bed to the border. That is a great convenience. Seed-saving is an uncertain business, as its production is very much dependent upon the season of blooming. Should several sharp, white frosts occur just then, very much bloom is spoilt. So also is that the case when very heavy rains prevail. Sometimes, also, we get an exceptionally warm, dry time, and then seed suffers and is imperfectly ripened and small. Next to *Myosotis dissitiflora* there are few spring flowers the seed crop of which is so often adversely affected as is that of the Primrose. Very often *Polyanthuses* suffer also from drought, but less from frost, because these bloom later. The present season, in spite of some white frosts now and then, bids fair to be one of the best seed seasons seen for some time, for the plants have not only bloomed profusely, but have not suffered from weather. Those who wish to raise plants in thousands should make up a soil bed in a frame looking north, and sow seed in that. They would then secure a grand lot of plants, and in coming springs much beauty.—A. D.

I sow choice Primroses in April, and I find that plants from that sowing make large handsome specimens which flower the next season. Those which I exhibited at South Kensington were the largest at the exhibition, and they were the produce of seeds sown last year. I used to sow show Auricula seeds as soon as they were ripe, but we have also dropped that system, and now sow in the following spring. I preserve the seed in the capsules until the time of sowing. I do not find them to germinate freely when sown as soon as ripe; a large proportion of them lie dormant in the ground until the following spring.—J. DOUGLAS.

HARDY ORCHIDS.

It is satisfactory to know that these interesting plants are at last attracting attention. That the majority of our native, and not a few Continental, terrestrial Orchids are capable of being successfully cultivated as garden plants has been long ago proved. As early as 1597 Gerard cultivated *Cypripedium Calceolus* in his garden; while in the Liverpool Botanic Gardens, in 1816, a number of terrestrial Orchids, principally British and Silesian, were cultivated successfully. In the Epsom Nursery (1824) a large number of Orchids, including *Orchis pyramidalis*, *O. Conopsea*, *Habenaria bifolia*, *Aceras anthropophora*, *Herminium Monorchis*, *Ophrys apifera*, *O. muscifera*, *Epipactis pallens*, *Orchis latifolia*, *O. Morio alba*, and about half a dozen North American species were cultivated with perfect success. In the same year Mr. J. Thompson, jun., of Welbeck Gardens, writes that he cultivated and domesticated with satisfactory results most of our British species. The methods of cultivation in the above cases are more recorded, but would take up, in writing, more time than I have at command.

I am much afraid that "K." (p. 440) is, however, alone in the field as regards the cultivation of North American *Habenarias* in this country, and it would certainly be interesting to not a few to know the conditions under which they have been so successfully managed, as well as if they have been established for any length of time, and also if they reappear in full vigour from year to year. I have grown in a most unsatisfactory manner all the species of *Habenaria* mentioned in the list, for although they flower well for the first year,

yet they gradually dwindle away, and finally disappear. The Rev. C. Wolley Dod and the late Rev. H. Harpur Crewe have both told me that they could not succeed with any of the *Habenarias*, our climate being too cold in summer to ripen the tubers.

In my opinion all our native Orchids may be cultivated with a little care; indeed, at the present time I know of several gardens in which, when taken collectively, most of these plants are grown to perfection. Between native and foreign species I have had over one hundred kinds of Orchids under cultivation, but amongst these the following are about the only ones I have really succeeded with—that is to say, got to re-appear and flower well from year to year. They are arranged in point of merit:—

Native species: *Orchis mascula*, *O. pyramidalis*, *Herminium Monorchis*, *Orchis maculata*, *O. laxiflora*, *O. Conopsea*, *Liparis Loeselii*, *Epipactis palustris*, *E. ovalis*, *Listera ovata*, *Orchis fusca*, *O. tephrosanthos*, *O. Morio alba*, *Epipactis latifolia*, *Habenaria bifolia*, and *Spiranthes autumnalis*.

Foreign species: *Orchis foliosa*, *O. undulatifolia*, *O. globosa*, *Cypripedium parviflorum*, *Orchis sambucina*, *O. pallens*, various species of *Serapias*, notably *S. Lingua*, *Cypripedium spectabile*, *C. pubescens*, *C. Calceolus*, *C. acaule*, and *C. candidum*. No doubt, as your correspondent says, soil and situation go a long way in the successful cultivation of these plants, but allow me to add that a more important factor still is the procuring of strong, well-rooted specimens with which to start; this is more than half the battle won.

A. D. WEBSTER.

NOTES ON HARDY PLANTS.

BARDFIELD OXLIP.—Though a somewhat plain flower compared with the numerous Oxlips now to be had, this still has a cosy beauty of its own; the erect habit of both leaf and scape, the downiness pervading the whole plant, and the enormous quantity of bloom which it produces render it sufficiently distinct and decorative to merit a place in our gardens. But to see it to advantage, it should be allowed a space 4 feet or 6 feet across, where it may sow itself. The delicate sulphur-coloured flowers form a charming setting for here and there a scarlet Anemone, or, say, *Scilla sibirica*, Tulips of scarlet shades, Grape Hyacinths, or *Gentianella*; but apart from these associations, one grows to like this Oxlip in the same way as one likes the Primrose and Violet.

EPIMEDIUMS.—I never remember to have seen these so perfect as they are this season. Not only are they soon injured by frosts, but they are even more exposed to them than most hardy plants, from the fact that their crowns always work up to the surface and from their tendency to push early. But the past winter has been open and growth unusually late this spring, and evidently these lovely Barren-words have escaped the blackenings of frost. Seen as they are now, with just enough of the slender stalked, quaintly shaped, and prettily tinted foliage to show off the curiously formed bright flowers, they attract the notice of everybody. *E. pinnatum* is quite as early as the rampant *E. alpinum*, and the red variety of *E. macranthum* comes out before it is past. When these are seen near to each other, the effect is truly charming. Much is due to *pinnatum*, its yellow colour is so clear and the raceme so well disposed, and the plant is without the grossly spreading habit of the native species. These plants do well enough in full sun and in light loam; from their habit of working to the surface, dressings of leaf-mould and manure should be applied annually. Some kinds are two years before they get fairly off, then they make tolerably good progress.

CROWN IMPERIALS.—I should be happy to tell "Salmoniceps" (p. 393) the secret of ensuring flowers from these every year, but with "C. R. S. D." I would rather not be "responsible for the doings of these capricious bulbs." I

believe, however, as I have said, that last summer's high temperature has had a good effect to do with the production of this year's flow. For one thing, I am of opinion that they require to be well established before their flowering annual can be relied upon, and that the time may be ten or many years, according to weather and cultural conditions; for instance, if the early growth of counters withering frosts when the roots are in good form, they are not likely to produce flow the next season. My experience differs from that of "Salmoniceps" in regard to frost, which with me, does bite them hard. On another point, however, we agree, and it is that the tops of such things should not be taken off. It is a rule here to remove nothing except when it is beyond doubt safe to do so, and so far is this rule observed, that many old tops are left longer than they ought to be. Show gardening is not attempted. At the present time old tops of *Paeonies*, *Asters*, *Tritomas*, *Grasses*, *Campanulas*, &c., yet remain; therefore, in case of my plants at any rate, "Salmoniceps' assumption is wide of the mark in respect to trimming. I have an impression that these bulbs are partial to calcareous soil, either from its dryness or from its comparative freedom from ground pests. Reports from those who have grown *Imperials* for some years in lime state how they have behaved. My reason for thinking that they are partial to lime is because I have observed them to do well in limy tracts. I may add that the plants to which I referred (p. 362) are blooming now for the time in seven years.

A CAPITAL NURSING SITUATION for potted hardy plants is under deciduous trees, where, with the help of sifted coal-ashes, pots may be plunged from the autumn potting period up to the present month. The ashes need not be slightly if neatly bedded and squared, or if liked, sand may be used instead. The plunging material, whatever it may be, ought to be deep enough to come up to the pot rims, and allowance should be made for 2 inches of bed at the bottom which will probably keep out worms. Fall leaves are protective, and the bare trees in winter when from them there is little or no drip, are the same. The raised bed affords dryness and a degree or two of higher temperature. In spring when we have biting frosts and strong winds, a sometimes what is hardly less trying to small plants—intense sunshine, it is pleasant to be under the yet bare trees and see the new plants, free from blackness and cosy, in striking contrast to those of plants exposed. Up to the middle of April the trees do no more than shade to an extent which is beneficial, and by that time most plants will not only have made a fair start but will have got over the worst time. The great care should be taken that the object of the whole business is not upset by leaving the low canopy of foliage. Take them to another place where April showers can fall direct upon the plants. I have often had in better condition than those in frames. Amongst some hundreds I have not a single blank this spring. It is a practice I have followed for several years from want of space and frame accommodation.

GENTIANA VERNA.—This flowers the second year from self-sown seed. On a bank being cleared of *Rhododendrons*, and where the surface was bare two years ago, little plants with but a crown and one flower have appeared amongst sundry other welcome visitors. The soil is stony but mixed with rich loam and decayed vegetation; it never seems to be wet or sticky, it does it bake in hot weather, but clothes itself with a crust of thin Moss. From the first it has been very little disturbed indeed; a few have been set there anyhow until the roots of the shrubs are removed, and somehow I have got there with that of other remains rough and neglected piece of ground. *Gentiana* most interesting; on it old and young. This well as total strangers, have put in and have been and I fancy that many a new friend, one's stock of patience had been an appearance of seed on the ground, and with

with the rubbish from under the potting tables, was taken to level up the holes left by the rhododendrons, has there found more genial conditions than one ever dreamt of giving. But, as I have before said, *G. verna* seeds germinate in the ground enough sometimes, for I have seen them hatching up in sand in which the seedling plants in the autumn were plunged. These facts suggest a happy practical style of gardening, which is to well clear the ground and set thereon a small collection of desirable species deemed suited for it. Leave them alone and the surface soil too, with the exception of removing such weeds or introduced plants as might not be further tolerated. In this way a pretty and instructive garden—almost a wild one—might be had in a few seasons.

NUMBERS.—It will have been noticed that many plants of doubtful hardiness are safest in the hands of young plants, be they strong seedlings, cuttings, or well-rooted cuttings—that is when they become well settled where they are to stand through the winter. For instance, of *L. arboreum* and *L. flavum*, whether from seed or cuttings, a stock in pots or boxes stand better than old cuttings if they have been allowed to grow late in the autumn in their positions. *L. narbonne* (by the way, I found to be but of biennial duration) stands with winters when the plants are from the seed of the season's self-sown seed, and whilst *L. aureum* but seldom makes presentable plants for the second year's blooming with us (though British), young stock can always be relied upon. The stems, shrubby Veronicas, Hypericums, and newly worked Tree Peonies, and many other things, when raised early from cuttings, can be put out, and they are seldom hurt to any material extent, whilst the parent plants may be killed. It thus manages one's stock of such plants is like reefing against the coming storm, and certainly the frost has less grip on it. But something more may be said for such plants as these; not but the severest winters they are better in open air than nursed in cold frames. A quantity of *L. arboreum* in a frame has, half of them, damped off, whilst others in the open are healthy and without blanks. A long list of plants might be named which do better in this way than in frames; they are mostly such kinds as are somewhat woody.

NARCISSUS JUNCIFOLIUS on a bit of rockwork exposed to the sun all day is a rare bloomer. Just now, however, there are a few flowers, small as they are, are not likely to be over-ordered, for their golden blossoms appear at the end of the ample Rush-like tuft of dark green foliage, and the whole plant among Narcissus is distinct when in bloom. Here this Narcissus is practically evergreen; scarcely have the leaves gone brown before others are pushing, and this notwithstanding the baking situation. Mild, by some means, a longer period of dormancy be secured, perhaps flowers would appear earlier and in greater quantity. No doubt to the English weather of the past year these, as well as many other unusual developments, may be attributed. No more striking example of the good effects of a hot summer is to be found than in the Narcissus, of which in Yorkshire good flowering specimens are few and far between. A few plants are, much older in years than large in stature, but they seldom give us a sight of flowers; this is, I think, flower-buds are, however, more numerous than ever they have been since I knew them—on the whole as well as the common kind. Hardy as shrubs are, to make sure of their flowers being useful, is needful to grow young plants in pots to mature the wood than anything else.

RAMONDIA PYRENAICA.—Under no circumstances is one's admiration of this beautiful alpine plant likely to wane; it wins from us all the loving care that is bestowable on uncommon plants of somewhat difficult culture, and some of which, when mastered, hardly hold their own in our gardens. But this neat *Ramondia* holds us by the neck of its perennial charms; we do not ignore it, though it has grown strong and is capable of taking care of itself. Its flowers, like hidden

secrets, come forth suddenly from between the big, flat, hairy, wrinkled leaves, and the latter, which had seemed dead, somehow grow verdant. The winter aspect is thrown off, and the paler green of the new growth lights up the centres of the rosettes. It certainly requires special treatment, but, fortunately, there is nothing difficult about it where the atmosphere is fairly pure—i.e., not poisoned by smoke and all kinds of gases such as are given off in manufacturing towns. In short, it needs vegetable soil, a moist situation, and shade. To be more precise, on rockwork it should have a north-east or north-west aspect and be set between stones, where the rain can run to its roots. It should be set firmly in pure leaf-mould thoroughly decayed; it will stand any amount of cold, but drought and hot sunshine are death to it.

IRIS STYLOSA.—No less welcome are the flowers of this because late. I grew some in pots, but fully exposed, except that they are plunged where they are somewhat sheltered from rains driven by west winds. The sun can only shine on them a little while in the early part of the day, and this may account for their lateness, because they are not newly-potted plants, some being two and others three years in their present pots. No; by no means are the flowers unwelcome in May; in fact, they show to some advantage over those which appear in the dull and murky winter, for their rich colours are then soon spoiled. Then there are as yet none too many Irises open, and the finely-painted forms of *stylosa* would always be attractive even if divested of their delicious scent, which is not unlike that of a copse of Bluebells. This Iris is partial to dry treatment, which, however, may be fairly secured by shelter from the heavy rain quarter and very porous soil.

VIOLA BIFLORA.—This is a lovely plant when in flower; small as the blooms are, they stand out distinctly on stalks just a little longer than those of the *Soldanella*-like leaves. The habit, too, is neat; in short, it is a brilliant gem, and the wonder is that it is not more plentiful than it is. Its hardiness and perennial duration are beyond all doubt. It is readily propagated if ever it needs it. I say if ever it needs it studiously, because here it has increased itself in one corner by means of self-sown seed for many years almost as freely as the common Pansy; all it needs is a loose surface of sandy soil, which should not be disturbed by digging; somehow I have not succeeded with gathered seed, so that something must have been omitted or overdone. It loves sunshine, makes a capital rock plant, and pot specimens are fit for any purpose requiring dense bright green tufts of foliage, bespangled with orange-yellow Violets. I speak of pot culture because from requiring to till the plot where it has so long dwelt, we have put the bigger roots into pots for a time, and in this way they show themselves off to advantage.

SENECIO PULCHER.—Of this we are just potting the rootlets, which have made nice plants since last autumn; the roots, as thick as a penholder, from old plants were cut into lengths of 3 inches, inserted in sandy material, and placed on the greenhouse shelf. Thus treated, it is astonishing to see the amount of root action that has been going on, and it is interesting to observe how, where the rootlets were accidentally put wrong end down, they have pushed from the bottom, a circumstance which not only shows the great vitality of these bits of root, but that care should be taken with other things less robust to put the roots in more naturally. I think it a good plan to grow on young plants freely in frames until they can be put out without fear of cold checking them; thus time is gained, an important, if not essential, item to consider in the case of a plant so valuable, but also so late in flowering.

NARCISSUS SIR WATKIN.—Doubtless others will have observed the remarkable length of time during which the flowers of this Daffodil remain perfect. True, the season has been favourable for early spring flowers, but, compared with other Narcissi, Sir Watkin lasts about twice as long. For three weeks individual flowers remained good,

and, big as they are, the stalks have carried them during some high winds without a single breakage. By the way in which this Narcissus increases, one may venture to say that the price will soon be much less than 3s. 6d. per bulb.

PLATYCODONS.—The roots of these might often be profitably examined in autumn or even early in spring. In most sorts of ground they will be found to be badly eaten by grubs, wireworms, &c., and it will be no unusual thing to find that near the ends of the best roots they have been so eaten through as to cause decay to set in and the tips to rot off. This must be against the prosperity of these desirable Bellworts, and has doubtless something to do with their supposed biennial duration. Anyhow, in beds liberally dressed with charcoal and wood-ashes the roots are strong, clean, and quite perennial. Their position should be perfectly drained; they like dry quarters, for their long Horseradish-like roots find the needful moisture at considerable depths.

RUDBECKIAS.—The *Newmanni*, *fulgida*, and *serotina* section just now needs a helping hand. It is very common for these in many gardens to die off annually. The surface stems about this period naturally die at their junction with the old stool, and if they have not made plenty of roots to sustain growth, the plants which may have looked fairly healthy all winter will dwindle away. I also find that slugs are very fond of *Rudbeckias*; they seem to eat the young fleshy roots. It is a good plan to dress the network of rooted surface stems with wood-ashes; if this is done at night when the slugs are out of their holes, the clearance of them is likely to be more complete than it otherwise would be. Next, a dressing of sand and manure may be given, and in a week's time the effect will be most marked. With an eye to the future, a few rooted bits should be set in well-prepared soil for growing on to the following spring; such stock has a maximum of vigour, and for a year at least is free from the decay which besets old clumps. J. WOOD.

Woodville, Kirkstall.

Slag sand.—Some correspondent strongly recommended the use of this for alpine plants in your columns a year ago. I got a quantity and tried it on various plants, especially Saxifrages, Sedums, and Androsaces. On looking carefully over my rockeries, it appears that in almost every case the results have been very bad; the centres of the plants are generally quite dead. I should suppose that some deleterious element remains in the slag and a year's rain dissolves it out, so that it is very possible that one may be using a very dangerous material, and not merely sand.—W. BROCKBANK.

Harpallum rigidum.—I find old plants of this vanish every year, and young ones come up in most unlikely places many feet from where the original plant stood. I have sunk a large pot in the ground sufficiently deep to cover the rim and put a strong plant in the middle of it, which I hope will be the means of preventing the roots from spreading. When one thinks of the hardy character of this *Harpallum* and its great beauty, we can hardly help feeling sorry that, owing to its rambling character, it is not likely to be appreciated as it deserves to be. Every visitor here last year was struck with its bold and finely-formed flowers.—J. C. C.

Narcissus cernuus.—I can verify Mr. Wood's recent note respecting this Daffodil. Quite accidentally I noticed that I had much the finest blooms from a few bulbs on the verge of an almost disused gravel path. I therefore moved the greater part of my bulbs to this position; they are in shallow earth, just over the edge of the path, with plenty of big stones beneath, and they are baked all day in the sun; the result is I get magnificent blossoms, and have now between two and three thousand bulbs, and they are rapidly increasing. I also get bloom from bulbs in the shade and in ordinary earth. In this case I find that the bulbs are better taken up when the leaves wither and dried in the full sun. I have

seed of this crossed with other kinds, which I hope to be able to report on some day.—J. R. NEVE, *Camden, Gloucestershire*.

Phacelia campanularia.—Apropos of annuals and their culture, I think "J. D." may still add one to his list (p. 466). I have seldom been more delighted than with the first opening blossom of *Phacelia campanularia* which greeted me this morning. The colour is of the deepest ultramarine-blue, and it can vie with the colour of the *Gentians* or *Tecophylæa*. It is a recent introduction from California, and we are indebted for it, as for so many other good things, to Mr. W. Thompson, of Ipswich. This delightful little plant should find its way, I am sure, into the hands of every lover of flowers.—H. EW BANK, *St. John's, Ryde*.

Sarracenia purpurea and other Canadian plants.—I brought several roots of this plant last autumn from Ottawa, where I found it growing abundantly in a swampy wood close to the town. I planted them in a wet place in my garden, and they are now beginning to show vigorous signs of growth, as are also some specimens of *Cypripedium acaule* which I collected at the same time. I heard in January from a Canadian friend that they were then having 55° Fahr. of frost. It is not, however, cold that injures Canadian and alpine plants so much as the dampness of our English climate in winter. Can anyone inform me whether the pretty little *Cornus canadensis* of the American woods is an easy plant to grow in England? I brought some roots home and planted them, but at present they have not put in an appearance.—F. W. HARMER.

Orchis purpurea.—Apropos of the interesting article on hardy Orchids in THE GARDEN (p. 440), it may be serviceable to some to mention that I have now a little clump of *Orchis purpurea* in flower in the open ground. I sent the bulbs home from Aix-les-Bains, in Savoy, in 1882; they were till last year in an ordinary small rockery, where they grew, but never flowered. Last season I moved them into another rockery, which is largely composed of lime rubbish, and there every plant has blossomed, some stronger than others. It is a pretty and interesting species, but not very showy, the colour being white and mauve. Close by the original position of *O. purpurea* (i.e., not in lime soil) is a cluster of *Ophrys aranifera*, also in bloom, sent at the same time from Aix-les-Bains. It has flowered every May but once since its arrival. In the open border *Gymnadenia conopsea* flowers well, but possibly, owing to the dryness of last summer, it is not coming so strong as usual this year.—GREENWOOD PIM, *Monkstown, Dublin*.

Narcissus biflorus spreading.—I believe it is accepted by the authorities that *Narcissus biflorus* is absolutely sterile in consequence of the ovaries being abortive. I wonder, therefore, if anyone learned in *Narcissus* lore can throw light on the mode in which the plant so effectually succeeds in spreading itself, as it undoubtedly does here. My lawn of several acres in extent is now quite conspicuous with it. I have known it here from my childhood, but it has immensely increased, and has spread into places where unquestionably it used not to be even a short time ago. It does not grow into dense masses, as does the double *incomparabilis* in the same field. It makes handsome clumps more or less close together; but here and there, often at considerable distances apart, I can see single plants all over the field. Of course, if the field were now and then tilled, the explanation would be easy enough; but it has not been broken up within the memory of man, but is used as a pasture, and occasionally mowed. That *N. biflorus* spreads I can vouch; the mode of its doing so is a problem which I at all events am unable to solve.—FREDERICK TYMONS, *Cloghran, Co. Dublin*.

Seedling Violets.—Some time ago THE GARDEN contained a question about seedlings from double Violets. Here, some seedlings from the Neapolitans proved to be all single dark blue.—W. P., *Kent*.

TREES AND SHRUBS.

THE WHITE BEAM.

(PYRUS ARIA.)

THIS tree thrives well in the most exposed situations, and for ornamental effect is worthy of attention. A young White Beam (*Pyrus Aria*) in a portion of my shrubbery exposed to the full blast of the north and east winds, and on a very shallow soil overlying limestone rock, is making vigorous growth, and has entirely outgrown some young Spruce Firs planted at the same time. Loudon says of this tree that for ornamental purposes it has some valuable properties. It is of a moderate size and of a definite shape, and in summer when clothed with leaves it forms a compact green mass, till it is ruffled by the wind, when it suddenly assumes a mealy whiteness. In the winter season it is attractive from its smooth branches and large green buds. When the tree is covered with fruit it is exceedingly ornamental. In confirmation of my remarks as to situation, Loudon further says, "A dry soil is essential, and the tree will not attain a timber size unless it is placed in an airy situation." It may be exposed to the highest and coldest winds that prevail in this country, and yet the tree will never fail to grow erect and produce a regular head, and for this reason no tree is better adapted for sheltering houses and gardens in very exposed situations. The rate of growth when the tree is young and in favourable soil is from 18 inches to 2 feet a year; after it has attained the height of 15 feet or 20 feet it grows much slower, and at the age of twenty or thirty years it grows very slowly, but is a tree of great duration. The roots descend very deep and spread wide, and the head of the tree is less affected by the prevailing winds than almost any other. It bears lopping and permits the Grass to grow under it. The wood is very hard, of a fine close grain, yellowish white, and susceptible of a high polish. In its green state it has a strong smell, which it retains to a slight degree even when dried. It may be raised from seed and the varieties grafted on stocks of the Pear, Thorn, Quince, or Medlar. When grown from seeds, these should be sown as soon as the fruit is ripe, otherwise if kept till spring and then sown, they will not come up until the next year. When it is inconvenient to sow immediately after they are gathered, they may be mixed with soil and treated like Haws, and if sown in the spring will then come up the same season. When layers are made it must be of the young wood and remain attached to the stool for two years.

D. J. Y.

Variegated Larch.—I send some sprays of a variegated Larch which I found in a plantation about fifteen years ago. It is now growing in a small arboretum here, and is 25 feet high. It is somewhat fastigate in habit, and through the early summer months the whole tree is conspicuously blotched with pale yellow.—J. M., *Charmouth, Dorset*.

** As a tree we should imagine this variegated Larch ornamental associated with green kinds. We do not remember seeing a similar form before.—ED.

Neillia opulifolia aurea.—The common Nine-bark of the United States is a most useful hardy shrub, producing a profusion of umbel-like corymbs of white flowers which are succeeded by swollen membranaceous purplish fruits. The golden-leaved form is quite as hardy as the type, and grows about as freely. For foliage effect it is thoroughly deserving of a place in the shrubbery or by the woodland walk. This shrub is also known as *Spiræa opulifolia aurea*.—G.

The striped Maple or Moose wood (*Acer pennsylvanicum*).—This is a small tree, seldom attaining a height of 20 feet, but is well adapted for planting on lawns and in shrubberies. Its native situation is in mountainous districts, particularly New England, New York, and in the Alleghanies to Georgia. The bark is smooth and

light green, mingled with longitudinal blackish stripes. The leaves are large for the size of the tree, with a rounded or heart-shaped base, and spreading into three nearly equal short lobes. The fruit hangs in loose and graceful clusters, and, like that of the Sugar Maple, is not ripe until autumn.—G.

The Golden Robinia.—The *Acacia*, as *Robinia Pseudacacia*—the Locust tree of the Eastern United States—is familiarly called in British gardens, has furnished a host of sports and seedling varieties. Habit and size of tree, colour of flower, size of foliage, &c., are exhibited in the large range of cultivated forms to a very considerable extent. The Golden *Acacia* is, perhaps, the most distinct of all in its foliage characters, the leaves being a rich golden green; it is a tree, moreover, which grows freely and does not scorch—a common fault in many golden-leaved shrubs and trees. A specimen of this in company with dark green foliated trees forms a striking object during the early summer.

Fraxinus Mariesi.—The common Flowering Ash of Southern Europe is undoubtedly a very handsome tree, and one far too seldom met with. This new species is, however, much the more beautiful; its panicles of white flowers are larger and more dense. No doubt, when it becomes more widely known it will be largely planted. It is a native of the Chinese province of Kiu Kiang, where it was discovered by the collector, whose name it bears, when travelling for Messrs. Veitch. The species thrives thoroughly well in the Coombe Wood Nurseries, where we lately had the pleasure of seeing it in bloom. The entire plant is quite glabrous, except the petioles and the branches of the panicle, which are clothed with a very dense, almost microscopic, pubescence.

Genista elatior.—Few shrubs make a more brilliant show during their blooming season than the subject of this note. From a purely botanical standpoint it is simply a gigantic form of our native Dyer's Greenweed (*G. tinctoria*), but for garden purposes no two plants could well be more distinct, the latter rarely exceeding more than 2 feet in height, whilst *G. elatior*—or *G. elata*, as it is often called—attains a height of 8 feet or 10 feet, and forms compact bushes, densely clothed with bright yellow blossoms. There are some good examples in the shrubberies, &c., at Kew; and as the species bears cutting in well and seeds freely, there seems no reason why so valuable a hardy shrub should not be much more common than it is.

Wistaria sinensis.—This well-known and deservedly popular climber is never seen to such good effect as when allowed to climb naturally amongst large trees. At Knap Hill, in the famous nurseries of Mr. Anthony Waterer, some extremely happy combinations may be seen. Here the *Wistaria* is allowed to make itself thoroughly at home in the tops of large Pine trees, and the novel and beautiful appearance afforded by its masses of bloom amongst the branches of *Pinus macrocarpa*, *Pseudo-tsuga Douglasi*, deciduous Cypress, &c., 50 feet or 60 feet or more from the ground, is more easily imagined than described. To see these *Wistarias* alone—not to reckon the magnificent *Rhododendrons* and *Azaleas*, and specimens of hosts of rare trees—is well worth a journey to Woking from London.

Crataegus tanacetifolia.—Here and there in old-fashioned country places fine specimens of this handsome Thorn are now and then met with. When the beauty of the flowers—more fragrant than those of the common May—of the distinct and striking foliage, and of the large yellow fruits—as large as small Medlars—are taken into consideration, one cannot fail to wonder why the species is not more generally planted. It is, moreover, perfectly hardy, and will succeed under almost any conditions. Probably in a short time deciduous trees and shrubs will once more be taken into public favour, and then *C. tanacetifolia* will undoubtedly not be overlooked. Another Thorn of similar habit and aspect is the scarlet-fruited *C. odoratissima*; this, as well as the purple-

fruited *C. orientalis*, is thoroughly deserving of a place in any shrubbery. All three make beautiful objects when planted as single specimens on lawns.

Late-leaving trees.—It is amusing to me to read that hardy trees in England are in leaf and flower when the same species growing here

trees are soon clothed with luxuriant verdure.—NEW YORK.

Idesia polycarpa.—This interesting Japanese tree was not known to science until 1866, when it was described by the Russian botanist Maximowicz, who met with it in cultivation at Nippon and Yedo, and ascertained that it was a

spreading sepals and an indefinite number of pale green filaments with orange anthers. Each blossom is about half-an-inch across; they form long, gracefully drooping, branched racemes, springing from the axils of the upper leaves. The female flowers are similar in appearance, but are succeeded by very numerous orange berries, which



In a garden court, Algiers. (See p. 489).

had not burst a bud. It is now the 16th of May, and the Kentucky Coffee tree, common Persimmon, Fringe tree, Catalpa, and some others are leafless still. Pear trees are in full flower; Cherries, past; Apples, opening; Chinese Wistarias leafless, but beginning to bloom; Forsythia suspensa, a little past its best; viridissima, at its best; also the Japan Quince, *Spiræa Thunbergi*, and Missouri Currant (yellow); the Lilacs will be in bloom in a few days, and the Horse Chestnuts in a week or two. Growth is slow in starting here, but when it does begin it goes ahead in earnest, and leafless

native of the island Kiusiu, at the foot of a mountain called Hikosan. It is a handsome tree-like spreading shrub with fine foliage; but, according to Professor Maximowicz, it attains in Japan the dimensions of a large tree. The leaves, which have crimson stalks, are irregularly serrate, slightly cordate at the base, the larger ones measuring about 6 inches across, bright green above and whitish or almost glaucous beneath, with five prominent branching nerves, which are reddish towards the base. The flowers are dioecious; the males have from four to six yellowish green

appear, from dried specimens communicated by the discoverer to the British Museum herbarium, to be about as large as a small Cherry. The flowers are deliciously fragrant, their odour resembling that of a Vanda; and although their colouring is not brilliant, their effect, combined with the red leaf-stalks, the varying green of the leaves, and their elegant drooping habit, is extremely pleasing. The tree belongs to the Order Bixineæ (or Flacourtiaceæ), to which our gardens have not hitherto been largely indebted. It was named by M. Maximowicz in commemoration of a

Dutch traveller named Ides. It appears to be quite hardy about London; a good-sized specimen of it may be seen in the arboretum at Kew.—W.

The Poison Ivy or Poison Oak.—Under both the English names just given, *Rhus Toxicodendron* is widely known through the Northern United States. It is a deciduous shrub, which is admirably adapted for forming a summer covering to unsightly buildings, &c., and perhaps is seen to greatest advantage when allowed to climb at will over rocks or old trees. I remember seeing it some years ago in a neglected old shrubbery, where it had taken possession of some old Spruce Firs, and the contrast afforded by the autumnal tints of its large, handsome foliage was very striking. The novel effect, accidentally attained, was certainly one not likely to be forgotten by anyone with any particular leaning for hardy shrubs, &c.

Judas trees in Lisbon and Cintra.—Every visitor to the Portuguese capital in the concluding weeks of March and throughout April cannot avoid noticing the beautiful effects of the Judas trees (*Cercis Siliquastrum*) in the public squares and gardens. The light purple among the budding foliage of the deciduous trees is charming. The Judas trees here when old have large thick arms and spreading heads. Several fine specimens are planted on the Tagus embankment between Belem and the metropolis, and many others are to be met with in various parts of the city. By the roadside in the direction of Cintra Judas trees are passed, protruding their gaily caparisoned arms over the garden walls. At a short distance beyond the English hotel at Cintra numbers of them are planted in deep valley ground against a background of Cedars, Cypresses, and other trees. A very large specimen grows in an angle of the dismal-looking Marialva Palace. The Paulownia and Wigandia flourish most vigorously in Portugal, and being of a kindred colour, lend their aid in brightening and enriching the vegetation early in the year. Shading the narrow entrance of the Moorish palace in Cintra is a tall Paulownia dressed in violet when in flower, and upward through its branches protrudes the tall mast of an Agave.—C. A. M. CARMICHAEL.

INDOOR GARDEN.

SEEDLING SHOW PELARGONIUMS.

SEEDING that these seed freely, the wonder is that lovers of flowers do not oftener than they do turn their attention to raising seedlings—an interesting occupation. It is necessary to gather the long spear-shaped seed-pods when they have turned black-brown and before they burst; if they are put into a box or a paper bag, the capsules will burst and seeds be secured for sowing. The best time to sow is the spring in shallow pans, sufficiently drained and filled with finely-sifted light soil made up, say, of two parts of finely-sifted loam, one of finely-sifted leaf-soil, and enough sand to make it quite free; the pans should be filled to within an inch of the rims, the surface made smooth, the seeds sown thinly over it, and then covered with a quarter of an inch of fine soil. The pans should then be placed in a gentle heat and a piece of glass placed over each. The seeds are not long in germinating. When they appear above ground they must be watered sufficiently to keep them growing, but take care that they be not made too wet, as an excess of moisture might do them an injury. When large enough, they should be pricked off singly into small 2½-inch pots, using a compost similar to that in which the seeds were sown; place them in a moist house and near the glass to keep them from being drawn, and they must not be allowed to suffer for want of water. When the pots are fairly full of roots, the plants should be shifted into pots 3 inches in diameter, when a soil a little coarser than that previously used can be employed, and then shifted again as required until they are in pots in which they can flower. The process is a simple one, and it is not difficult to manage a few

plants in this way. If anyone wishes to have a select collection to grow for the purpose of obtaining seed, I would name Brilliant (Foster), Claribel (Hoyle), Fortitude (Foster), Illuminator (Foster), Maid of Honour (Foster), Purple Gem (Foster), Martial (Brehaut), and The Baron (Foster). These will be found to give colour, form, and habit, and seedlings from the foregoing can hardly fail to produce something very good. As to artificial fertilisation, I am not certain that much can be attempted in that way. In the case of anyone not up to this work I would recommend the plan adopted by Mr. E. Beck years ago—that of selecting the finest flowers, placing them by themselves, and leaving the bees to do the crossing. Many of his finest flowers were produced in that way, and he found that better results flowed from this method than from crossing by hand. Here, then, is a field open to amateur cultivators, in which some honour is to be reaped, for we are not yet nearly at the end of the work in relation to the improvement of the Pelargonium.

R. D.

AMARYLLISES FROM SEED.

A SHORT time ago but few kinds of Amaryllises were in cultivation, but now the number of varieties is great. They have been crossed and intercrossed, and some very fine hybrids have been raised, which produce large, charmingly coloured and marked flowers, some being brilliant selfs and others striped. Although named kinds are dear, there are numbers of seedlings but little inferior to them which may be had at a moderate price, and those who have room and convenience to grow them should go in for a dozen or two of these by way of a start, and gradually add to them afterwards. What makes named sorts scarce and expensive is, that they are slow to propagate. The only mode by which they can be increased is by means of offsets, which the bulbs form at their sides, and they do not produce them at all freely, and only once a year at the most. Those who do not mind waiting may raise plants from seed. The best time for sowing it is early in spring in a pot of fine sandy soil. When sown, place it in a propagating box or other situation where there is a brisk moist heat, when the young plants will soon come up, provided the soil is kept just damp; when up, the pot should be set near the glass in a hot pit or house to keep the young seedlings from becoming drawn. As soon as they are large enough to handle they ought to be potted singly, the soil most suitable for the purpose being a good, fibry loam, or that and peat with a sprinkling of sand. In potting, the point is to be careful about the roots, none of which should be broken or damaged when turning out and separating the plants, which, when potted, will require a brisk temperature to give them a start, and the same to keep them growing actively all through the summer and autumn; after that they should be allowed to rest during the winter by giving less water and placing them in a cooler and drier position. There let them remain till the time comes round for starting them again in spring. They should then be shaken out and repotted in fresh fibry loam, which, mixed with a little thoroughly decomposed cow manure, suits Amaryllises better than any other soil; but as they require a good deal of water when growing, it is important that the pots be well drained. The best place I have ever found for them, except when resting, is over a hot-water pipe on a board or shelf, which proves that they like a brisk heat at the roots, and they also do remarkably well plunged in tan or other fermenting material, but they must have full exposure to sun and light, and every encouragement should be given to induce them to make clean, healthy foliage. To keep them free from red spider and thrips, they should be heavily syringed before shutting them up, and if this is continued all the summer, they cannot fail to make fine bulbs that will flower freely every year. Offsets need just the same treatment as seedlings, the time for taking them from the old plants being when the latter are shaken out for repotting, as then, being at rest and partially

dormant, they may be pulled away without hurting the bulbs. Seven-inch pots will be large enough for Amaryllises; they do not require much root room, and may be fed with liquid manure as soon as they have made plenty of leaves.

S. D.

NOTES ON BORONIAS.

B. HETEROPHYLLA seems to be a distinct and beautiful addition to this genus of New Holland plants. As stated in *THE GARDEN* (p. 436), it is indeed difficult to get people now-a-days to take an interest in hard-wooded plants. If the merits of *B. elatior* are not yet recognised, they are not likely to be. It has been before the public for fifteen years at least. It has a fault that does not apply to some of the older species, viz., the flowers do not open well, though freely produced. The cultivator expects them to open fully, and instead of doing so, the petals close and the flowers fade. *B. megastigma*, a species with yellowish brown flowers, is much esteemed for the strong scent which its flowers emit. *B. pinnata* is now seldomer seen than some of the newer kinds, but those who are old enough to remember the grand specimens of it exhibited more than twenty years ago will not soon forget its value as a decorative plant for the greenhouse or conservatory. Equally beautiful is the more compact-growing *B. serrulata*. It forms a handsome specimen, and its pretty rose-coloured flowers are freely produced. The time will yet come when these and other hard-wooded plants will be eagerly sought after. They are easily grown if rightly treated, but few of them can bear neglect. An exhibitor equally as successful with hard-wooded plants as with Orchids told me that when it was necessary for him to be from home for a few days at a time in summer, he was always more afraid of his hard-wooded plants suffering than his Orchids. They sustain most injury from being allowed to become too dry at the roots; once let them suffer in that way, and the chances are that small plants will never form good specimens and large specimens will be much depreciated in value. They require careful potting and good drainage. I have grown nearly the whole of them as freely as Pelargoniums by potting them in sandy fibrous peat with the addition of a small portion of turfy loam. I kept them in a cool greenhouse freely aired and not far from the glass.

J. DOUGLAS.

Pelargoniums Rising Sun and The Czar are two new show varieties well worth attention. The flowers of both are of a deep crimson colour and of great substance and the perfection of form. The habit is likewise good, and the plants, even when young, are extremely floriferous. Both may be set down as distinct gains. Other varieties sure to be favourites with every class of growers are Gold Mine and Carl Klein, both of an orange-tinted scarlet with distinctly marked petals; the latter is also semi-double. The freest flowering pure white is Bridal.—M. C.

Doronicums for winter decoration.—I first learned to admire these from seeing them growing in Trinity College Botanic Gardens, Dublin. The deep, rich, old loamy soil and the rather warm, sheltered, though fully exposed, borders there seem to suit them better than I ever saw them elsewhere. It is only recently they have been recommended for the above purpose, but thus utilised they are unique. I am potting up some strong crowns not showing for bloom that will harden and fully ripen in the open air, and I would recommend others to try the experiment; slugs are fond of the young buds.—W. J. MURPHY, *Clonmel*.

Cyrtanthus Tuckii.—This exceedingly pretty bulbous plant, which I believe to be a native of Natal (and for which I am indebted to the generous kindness of my friend, the curator of the Botanic Garden at Glasnevin, near Dublin), is now nicely in flower in my greenhouse. The bulb produced four leaves, and out of the centre of

these arose about three weeks ago a stout flower-stalk some 13 inches in height, crowned with a bunch of no less than sixteen prettily-curved pale orange tubular flowers, somewhat resembling those of *C. Macowani*, as figured by Dr. Regel on the 960th plate of his "Gartenflora," but of a rather paler shade of orange and with the extremity of the tube quite straight instead of slightly reflexed, as in that variety. It has, I believe, bloomed annually at Glasnevin for some years past, but seems very slow to increase. It was received as *C. species* from Natal, and has been named by Mr. Baker as above.—W. E. G.

Salvia nigrescens.—This very curious and apparently free-blooming Sage is now nicely in flower in my greenhouse on a very small plant received, in the shape of a tiny quite recently struck cutting, about a month ago from Messrs. Cannell, of Swanley. I had never heard of this variety till I saw it offered in their catalogue and ordered it out of pure curiosity, never imagining it would bloom in so small a state. The foliage is neat, narrow, and pointed, of a light shade of green and white underneath. The flowers are of the darkest shade of purple, almost black, and are produced in curious bunches of half a dozen each at equal distances up a bare stem, and, protruding as they do from an ample and conspicuous whitish calyx, they have an exceedingly singular appearance. They also exhale distinctly an odour similar to Black Currants.—W. E. G.

Eucharis amazonica.—This useful winter and spring-flowering plant is very easily grown. The resting time is the most particular period. It should then have very little water, just enough, indeed, to keep the foliage green and no more, and it should be placed in a temperature about 62° by day and 55° by night and be shaded from the hot sun. If, when resting, the air is hot and dry, the syringe may be used once a day, care being taken that too much water does not reach the bulb. When repotted, the old soil should be shaken from the bulbs, and the young bulbs should be removed and grown on if stock is required. The bulbs that are to flower should be potted in some rich fibry turf and leaf mould, and sufficient silver sand to keep it porous should be used. Keep the bulbs well up to the surface. The temperature should then be raised to 75° by day and 65° by night. The syringe should be used twice a day when the weather renders it needful to do so, and if a very drying time sets in, the paths must be damped, as when shaded the plants require a moist atmosphere.—W. EVANS, *Hawkesyard Park, Rugeley.*

Leschenaultias.—These are scarcely known to young gardeners of the present day. They are not quite so easily managed as some hard-wooded plants are, but given the right treatment they generally do well. Old plants are apt to become leggy and in time unsightly, but this may usually be avoided if they are grown from the first near the glass, and the points of the growing shoots are pinched out when 2 inches or 3 inches long; at the same time they must be tied out with care, or they will be likely to split off during the operation. They like good turfy peat mixed with some charcoal and rough sand to grow in. There is no more lovely greenhouse plant known than *L. biloba* major. Its rich, deep blue flowers are freely produced and continue on the plant for a long time. *L. formosa* is also pretty, its flowers being scarlet and abundantly produced. This makes a larger and better specimen than the blue species, and those who grow greenhouse flowering plants for exhibition would do well to bring both of these beautiful subjects to the front. Well-grown examples of either of them would make strong points in favour of any exhibit containing them. They are liable to be attacked by aphides, which cling so closely to the stems of the young growths, that a sharp eye is required to detect them.—J. DOUGLAS.

Cinerarias from seed.—It is surprising how greatly *Cinerarias* vary both in size and quality, but better flowers might be obtained if we were only more particular than we are in the

selection of plants from which we save seed. If the finest only were picked out for this purpose and kept by themselves, the seedlings would not show such mixtures as those which we now often see. To prevent them from being crossed and spoiled by inferior kinds, it is necessary to isolate them early, as bees and other insects are at them directly they come into bloom, and aphides must be kept off the plants, or they will spoil the setting and seeding. Those who have exceptionally good sorts which they wish to preserve and keep true should, after the plants have done flowering, plant them out in light rich soil on a north border, or other cool shady situation, where they can be sprinkled and kept moist; then they will form and throw up offsets, which may be taken off, potted singly in small pots, and then set in a frame, where they can be syringed or damped overhead to give them a start. As soon as the young plants are well rooted they will require plenty of air, and must be shifted into larger pots as they need them. The best soil for them is fibry loam and leaf mould with a little rotten manure. I know a first-rate grower of *Cinerarias* who has his plants out-doors all summer, and I have never seen any more sturdy or with such stout thick foliage as his have.—S. D.

Veronica Hulkeana.—This must be considered one of the best of the New Zealand species of *Veronica* and an exceedingly ornamental greenhouse plant. It proves hardy in somewhat sheltered positions outside or when the winters are not severe, but, like other shrubby kinds introduced from the same country, its hardiness is questionable when put to a severe test. Small plants may be readily raised from cuttings each year, and nearly all such may be relied on to flower the following season even when in very small pots. The flowers are pale lavender; they are rather small, but produced in the greatest profusion in April and early in May under glass, and the latter part of the month outside. For increasing stock, any points of shoots which are not flowering if inserted in a little warmth will strike freely at the present time. The young plants may be potted off singly afterwards in 3-inch pots, grown in a cool frame throughout the summer, and be wintered in any place free from frost. In preference to placing them in larger pots for the first season it is advisable to keep them in the same, and apply a little manure water or artificial manure when the first appearance of the flower is seen. Old plants may be repotted and grown on, but a few young ones should be raised each year for flowering in a small state, eventually replacing any of the others that become leggy and unsightly. *V. Hulkeana* is deserving of extended cultivation, as it is very useful, ornamental, and easily grown. It never requires much heat; consequently space for a few plants should be available in all gardens.—BETA.

GARDEN LABELS.

In the recently published official guide to the Royal Gardens, Kew, the authorities express their opinion of the various labels employed there in the following terms: "The subject of permanent labels, which should be large enough to be legible to the public and also durable, presented the greatest difficulty with which we had to contend, and a variety of experiments have been instituted with woods of many kinds, iron, tin, earthenware, and porcelain, with the result that no kind of tree or shrub label is free from objection. For ground—i.e., lawn—labels, upright slate ones, with black letters on a pale green ground, are far the cheapest, most durable, and light. They should be placed leaning a little forward, so that the birds, which will perch on them, should not defile the writing. Such labels have been seen perfectly legible and good after being exposed for thirty years. The principal objections to ground labels are that they often get knocked over by visitors or by mowers, and that in light soils they become splashed with dirt during rain. Hanging tree labels may be made of slate, wood, or (best of all) Maw's earthen or Parian-ware slabs, with ena-

melled lettering. The objection to all hanging labels is that, however fastened, they often get displaced; either the nail or stud comes out of the tree, or, if suspended by wire from a branch, this becomes twisted by the wind and breaks; or if by an oiled strip of hide, this eventually rots. For shrubs, slate labels in the ground like those for trees are good, but better still are Maw's Parian slabs with enamelled lettering, mounted on slender, long-legged iron crutches, which latter should be coated with gas tar occasionally."

Notwithstanding the opinion thus expressed by the Kew authorities, it by no means follows that the result is the best that could have been obtained; for instance, the long upright slate labels with black letters on a pale green ground are not easily read, especially if leaning a little forward, as recommended; and, moreover, all labels (especially large ones) are not so readily deciphered when the words run in a perpendicular manner as when horizontal. This latter advantage is secured by cast iron T-shaped labels, and I venture to think that up to the present no label equal to these has yet been brought forward. These iron labels, too, are practically indestructible. They generally have black letters on a white ground, but if too conspicuous a black ground with white letters, or any of the neutral shades of brown, green, or grey might be substituted. Sharp frosts often play sad havoc amongst enamelled labels. For hanging ones I like tin, which is both durable and light. Iron or tin labels are certainly more indestructible than those made of porcelain; moreover, if required for other names, the old ones can be painted out and new substituted, while the enamelled labels cannot be treated in this way.

H. P.

ROSE GARDEN.

ROSES AND THE COLD NIGHTS.

HITHERTO our Roses have stood the cold well, but the north-east winds and the frequent hail-storms that hold the blooms in check do not seem to have any control over the grubs, which seem more numerous and plentiful than usual, and need constant attention; hence the importance of looking over our Roses once or twice a week. There are two obvious and easy methods of making an end of the grubs. One consists in carefully unrolling every curled-up leaf and finding and picking out the grub in the centre of it. This is a sure method, though very slow. And where there are many Roses it is far better to gently squeeze every rolled-up leaf between finger and thumb. Experience will soon teach the amount of pressure needful to squash the grubs, and also whether in fact there were any grubs in the leaves to be squashed; but a dozen grubs may be destroyed thus for one carefully unhoused and picked out.

In hunting for grubs it is an easy matter to rub or squeeze off the aphides if the latter are taken in time. A mere touch almost suffices to dislodge or kill them; and at this early season dislodgment, and consequent casting to the ground, is probably almost equivalent to their destruction, for it is doubtful if they ever mount again when cast upon the earth so early in the season.

This is a capital time to get rid of suckers as well as grubs and insect pests. The common mode of merely removing suckers at the level of the ground, or an inch or two beneath it, is really of little or no use. Root suckers should now, before the busy Rose season begins, be traced back to their source and neatly amputated so closely to the roots, that they would never be likely to grow again. In this way one of the worst nuisances in Rose culture would be removed for good instead of having to be nibbled at throughout the season. Of course suckers on the stem should also be promptly removed as well as all superfluous shoots on Briars. Most rosarians would pronounce all beyond two superfluous, and not a few would probably prefer one; but it is safe to leave two until once seen which shoot will

prove the best. And it is well also in budding, for amateurs at least, to have two strings to their bow—that is, two shoots on their budding Briers.

The Rose harvest, as well as the fruit one, is most promising, and no less the nightly frosts increase from the present rate of 2° to 4° nightly to about double these degrees of cold, the fair prospect of an abundance of Roses is not likely to be cut off.

D. T. FISH.

STANDARD TEA ROSES IN POTS.

WHERE there happens to be a house that can be devoted to the growth of pot Roses and their display when in bloom, they are much easier to manage than when, as is the case with the majority of those who cultivate them, they have to be accommodated in a mixed collection consisting of the various kinds of greenhouse plants. Where the Roses are all confined to the ordinary bush form, there is often a difficulty in arranging them when in bloom so as to show themselves off to the best advantage in an ordinary greenhouse or conservatory, where they usually have to be budded together amongst a host of other plants; whereas if the head of flowers can be got to stand clear above other things, not only are they much better seen themselves, but they vastly improve the general arrangement. With a view to their being used in this way, ordinary standards are not unusually employed—that is, Roses that have been budded standard high on Brier or Manetti stocks, but in a general way standards of this description do not seem to conform well to pot culture. Probably the best of these ordinary standards that have been seen are those that Messrs. Veitch have exhibited at South Kensington, kept in the same soil and pots for three or four years without disturbance, sufficient vigour being imparted to them by applications of Clay's manure. I recently saw at Mr. Rumsey's nursery, Waltham Cross, a quantity of pot standard Tea Roses in fine condition with beautiful, well-furnished heads. But in place of being budded the usual standard height on stocks of the ordinary description, these Roses are on their own stems, being fashioned out of plants grafted low down at the bottom; they had been just simply grown on from ordinary winter propagated stock, grafted in the customary little pots, grown on in heat in the way in which the large Rose growers now treat immense quantities of Roses.

In this manner a single shoot to each is trained up to 3 feet or 4 feet high as required, at which point they are stopped so as to cause them to break out and form a head, any eyes that may happen to push lower down the stems than needful for the head in question being removed. As a matter of course, the plants have larger pots given them as required, getting the collars lower down so as to induce them to push roots above the junction of the graft with the stock. Nothing could be more satisfactory than these standards, as they admit of being used in the way mentioned, so as to stand up with their heads quite clear above the occupants of a greenhouse or conservatory, or, in a like manner, in a structure devoted to Roses alone, along with bush-shaped plants. But it is for conservatory decoration that Roses grown in this way will be the most useful to general cultivators. Treated as the stock of pot Roses in this nursery is where the requirements of Roses are well understood and where the immense amount of rich feeding that they will bear is fully realised, it is surprising how soon standards with finely furnished heads can be got up. Good loam and rotten manure in nearly equal proportions are used. At one time it would have been supposed that the roots could not have lived in soil containing such an amount of manure, but the shoot growth, big leaves, and quantity and size of the flowers show that it is just what they like. These standards were dotted about amongst a beautiful stock of bush Tea and hybrid kinds in 8-inch and 9-inch pots, filling a good sized span-roofed house constructed so as to admit a maximum of light; the bush plants were placed on the floor or on inverted pots. A glance

at the whole, with the standards standing out in relief from the dwarf plants, at once showed how effective they were. In another long span-roofed house, which is partly filled with similar stock, were a number of huge specimen *Maréchal Niel* in large pots, with heads big enough to furnish a good part of the roof of an ordinary greenhouse at once; they consisted of the right sort of growth—thick strong shoots, calculated to yield full-sized flowers from almost every eye. Quantities of *Maréchal Niel* are here budded on Brier standards from $2\frac{1}{2}$ feet to 3 feet high; grown in this way in place of being budded or grafted down at the base of the stock, this Rose in many places appears to go on longer than it generally does before forming the unhealthy protuberances which end in its death. Numbers of standards so budded last July had made shoots which for strength I have not before seen equalled.

T. B.

Blight on Roses (*Mrs. H.*).—The orange-coloured blight on your double white Rose, and which you compare with iron rust, is a parasitic fungus named *Coleosporium pingue*—the orange fungus of gardeners. To lessen the virulence of its attacks, the first appearance of the fungus should be looked for, and as soon as the coloured patches appear on the leaves or leaf-stalks, the infected parts should be cut off and burnt. If the orange dust (spores or seeds) is washed by rain into the ground, the disease will appear the following season. The ailment can be induced in healthy Rose trees by simply watering the bushes with water charged with a little of the orange powder; hence the necessity of removing the diseased material as soon as it is seen.—W. G. S.

Rose synonyms.—The following Roses, bracketed together, are considered synonymous by the National Rose Society, viz.:—

{ Charles Lefevre	{ Baron de Bonstetten
{ Marguerite Brascac	{ Monsieur Boncenne
{ Paul Jamin	{ Avocat Duvierv
{ Exposition de Brie	{ Maréchal Vallant
{ Ferdinand de Lesseps	{ Eugénie Verdier
{ Maurice Bernardin	{ Marie Finger
{ Sir Garnet Wolseley	{ Duchesse de Caylus
{ La Rosière	{ Pénélope Mayo
{ Prince C. de Rohan	{ Adam
{ Comtesse de Choiseul	{ President
{ Marie Raily	{ Alba rosea
{ Chroamel'a	{ Josephine Malton
{ Cloth of Gold	{ Madams Bravy
{ Climbing Devoniansia	{ Madams de Sertot
{ Devoniansia	

Niphetos in a cool house.—It is well known that Niphetos is not only one of the best shaped Roses in bud, but also one of the whitest, especially when grown under glass. Outside, especially in cool situations, the purity of the white is not seldom marred by a dash of greenish yellow; hence this Rose, very much to the surprise of those who grow it under glass or on warm walls, is not seldom described in catalogues as pale yellow. Yellow! why, it is white as cream, or even new milk. But much depends on site and temperature. Why, recently we have been cutting Niphetos from a cool house almost too greenish yellow to be used in a bridal bouquet; and yet last October, and indeed all through the past year, the flowers from the same house were white as snow and matched even Gardenias—difficult flowers to match in whiteness. As the season advances, or rather the weather becomes seasonable in geniality, doubtless the Niphetos Roses will become as pure as they possibly can be. They are never so perfectly beautiful, however, as when a small portion of two or three of the outer petals are suffused rather than stained with pink on the outer edges. This dash of colour brings out the white with yet more vividness and distinctness.—D. T. FISH.

Rose American Beauty.—This was recommended a first-class certificate at the late meeting of the New York Horticultural Society. Of all the new Roses of recent introduction this is said to be the sweetest in fragrance. Its colour resembles that of Countess of Oxford in its best stage, but brighter. The greatest merit of this Rose is reported to be its free-flowering qualities.

GARDEN FLORA.

PLATE 494.

HYBRID PITCHER PLANTS.*

ALTHOUGH Pitcher plants have long been known to cultivators, it is only comparatively recently that they have been much grown, a circumstance doubtless attributable to the indifferent success which attended the efforts of many who attempted their cultivation. Now, however, when their requirements are better understood they are gradually finding their way into the collections of those who can appreciate beauty beyond that afforded by brightly coloured flowers. With *Nepenthes* or Pitcher plants, as with everything else of an attractive character, hybridisers have been busy, and their labours have been rewarded by the production of a large number of varieties possessing great merit, and which, whilst combining as they do more or less of the general character of the species from which they originated, are yet so far distinct from the parent plants in both colour and form, as to render them most acceptable additions to the family. Apart from varieties resulting from cross-breeding, *Nepenthes* raised from seed, the produce of plants fertilised with pollen of the same species, vary considerably in their marking; in some the spotting is much deeper and more intense than in others. A great difference in this respect may be seen in such kinds as *N. Rafflesiana*, the colour in the spotting of some forms of which is much more intense than in others. *Nepenthes* being dioecious, it is difficult to have a plant bearing female flowers open at a time when pollen can be had to fertilise them, and this has doubtless been the cause of comparatively little having been done in the way of getting improved forms of the most desirable species. There is, I think, good reason to suppose that, lurking in the islands of the Indian Archipelago, there are still species bearing much larger pitchers than any that have yet been introduced or described. Hence, the late Messrs. Rollisson's collector in these regions, showed me at one time dried pitchers much larger than such as are borne by any kind that we yet have in cultivation.

The three hybrid varieties are, as will be seen, quite distinct both in form and marking from kinds which we already possess. In *N. Dormaniana* the peculiar flask formation is less decided than in many of the species; the pitchers from their widest part at some distance from the bottom almost gradually taper upwards, whilst the deep red of the irregular markings stand out conspicuously, owing to the ground colour being much paler than that of most kinds. There is, too, an absence of deep colour on the lid and rim surrounding the orifice. *N. Williamsi*, the smallest in the group, is a very handsome, highly coloured variety, with the red colouring, paler or darker as the case may be, distributed over almost the entire pitcher, and as the pitchers get older the whole surface becomes as deeply coloured as a well-grown example of *N. sanguinea*. *N. Henryana* has the green ground colour deeper, whilst the marking is much the deepest in the upper portion of the pitcher; it is the largest sized one of the group, with the lower part more dilated than in the others. The wings of all are conspicuous and the teeth prominent. Amongst other hybrid *Nepenthes* in Mr. B. S. Williams' nursery, Hollo-

* Drawn in Mr. B. S. Williams' nursery, Upper Holloway, in January.





way, may be named *N. atrosanguinea*, a variety in which the pitchers are medium sized; their ground colour red slightly marked with pale yellowish green. In form they are somewhat cylindrical, the bottom being broadest, and the wings fully developed and fringed. *N. coccinea* has pitchers similar in size to the last; their ground colour is crimson, spotted with yellow; they are flask-shaped above, cylindrical towards the top, and the ribbed rim round the mouth is of a dark blackish red. One of the best features connected with these Pitcher plants, which are of American origin, is their fine and vigorous growth; the shoots are short-jointed and the plants profusely clothed with leaves that produce pitchers

ground colour is green, densely spotted and shaded with deep crimson. *N. Mastersiana*, a grand variety, was raised between the rare and beautiful *N. sanguinea* and one of the forms of *N. distillatoria*, the former being the seed-bearing parent. It is a robust grower, and bears pitchers about 8 inches long, somewhat distended in the lower part and cylindrical above; the whole surface of the mature pitchers, as well as the lid, is of a deep claret-red, relieved by slightly lighter markings. This fine kind is the result of Mr. Court's handiwork. *N. Morgania*, a variety raised in America by Mr. Taplin, who has also been very successful in hybridising *Nepenthes*, is a large-sized, very distinct kind, with stout, flask-shaped pitchers, remarkable for their breadth in the lower part; the wings are also ample. Whilst young the pitchers are mottled with bright red

cuttings, which when rooted I placed in quarters where they got more light, through being more elevated towards the roof, and also through using a thinner shading. The first season there was a marked improvement, which induced me to try some of the stock hung up, so that the extremities of the shoots were not more than a foot from the glass; here the growth made a season after was of a very different character, the shoots not being half the length between the joints, with leaves much shorter and of greater substance and pitchers double the size, with the colour of those that were not naturally wholly green much deeper. Since then, whenever an opportunity has occurred of saying anything on the cultivation of *Nepenthes*, I have continually urged the necessity of a completely opposite course being followed to over-shading with a confined, reeking atmosphere, as well as the plants being kept too far from the glass, conditions collectively the cause of many failures. At the same time it is well to remind beginners in the cultivation of these plants that the opposite extreme of anything approaching a dry, parched atmosphere, too much air or exposure to the unobstructed rays of the sun, is equally fatal. Neither is it any use looking for a full measure of success unless where plenty of heat can be given them at all times of the year. To do justice to them, they require to be kept moving even through the winter, at which season the temperature by night for nearly all the species should not be much under 70°, for although they can be grown when kept something lower than this, still, under such conditions, many of the leaves will fail to produce pitchers, and those formed will not attain nearly the full size which they are capable of being grown to. The material which I have found them to thrive the best in is the fibrous matter from good Orchid peat with every particle of the earthy decomposed matter shaken out. This chopped up, with something near a like portion of Sphagnum, to which is added a third part of small crocks or charcoal and a sprinkling of sand, will keep in a condition to suit the roots longer than Sphagnum and crocks alone. The house in which I grew them was span-roofed, standing ends north and south. The blinds, composed of thin gauze canvas, were run down in summer when sunny a little before nine in the morning and wound up from half-past four to five in the afternoon. The plants were syringed and watered daily through the season of active growth and every other day in the winter. Leaving out some of the hybrids which I have not grown, all the kinds, excepting *N. lanata*, an extremely rare species, did best when in a house standing in the position mentioned with no more shade than I have named; this species I found could not bear so much light as the others; consequently it was hung some 18 inches lower. As already stated, the plants were hung up close to the roof midway between the eave and the ridge, to which latter were the ordinary hinged ventilators; if nearer the ridge than this when the ventilators were open, the air would have been too much for them. When the ventilators were open in sunny weather, the blinds being down, the air was still further prevented from acting unduly on the plants. Each side of the roof being furnished with ventilators, the air was always admitted at the opposite side to that on which the wind blew, otherwise the current would have been injurious. The house was nearly 50 feet long by 20 feet wide, and was occupied by a general collection of stove plants. The night temperature through the winter was kept as near 70° as possible, except during severe frost, when it was some 4° lower; the rise in the day was proportionate to the state of the weather. In warm summer weather, as a matter of course, the night temperature was higher, and all through the growing season with sun-heat in the daytime, it was much increased, often running up to 90° or 95° with plenty of moisture in the atmosphere, which latter in the winter season was never so dry as most general plant stoves are kept.

I have been particular in these details as to the position of the plants in the house, the temperature they were subjected to, admission of air,



A new hybrid Pitcher Plant (*Nepenthes compacta*), showing habit of growth.

much more profusely than many species; they also appear to retain them in a fresh condition longer than most Pitcher plants. Even in spring, before much active growth has commenced, the plants are as fully furnished with highly coloured pitchers as others are in autumn.

Mr. Dominy was, I believe, the first who attained success in hybridising Pitcher plants. *N. Dominiana*, a cross between the well-known *N. Rafflesiana*, still one of the finest known kinds, and a green-leaved species, is a very handsome plant, in general character much resembling its female parent, *N. Rafflesiana*. The work begun by Mr. Dominy has been successfully continued by Mr. Seden and Mr. Court, and many handsome kinds have been the result. Amongst these may be mentioned *N. Courti*, obtained by crossing an unnamed Bornean species with the pollen of *N. Dominiana*. It is a handsome variety, with flask-shaped pitchers 7 inches or 8 inches long. The

and light green, but when older they become nearly wholly deep red.

AS REGARDS CULTURE, the general opinion that used to be entertained was that Pitcher plants not only required to be kept in all but a saturated condition at the roots, but that they also must have a reeking atmosphere and be heavily shaded. Under such conditions, with a high temperature, the plants with me grew apace—in fact, they grew too fast, but the shoots came long-jointed and weak, with comparatively little disposition to produce pitchers, without which, it is needless to say, they have little that is interesting or attractive about them. The leaves made in the late autumn, winter, and early part of spring never pitcherized at all; it was only from those produced in summer that pitchers were formed, and these not more than a fourth of the size they should have been and with proportionately little colour. Little satisfied with such results, I headed some of the plants down and made the shoots into

atmospheric moisture, as well as to the roots, for upon these collectively depend the full measure of success being attained. The fact of *Nepenthes* requiring to be kept always wet at the roots naturally tends to the potting material in the course of years getting so far decomposed as to become close and pasty. This they cannot bear; consequently when it gets into anything approaching that condition, it requires replacing. But *Nepenthes* cannot bear shaking out like many other plants will, through the extremely fragile nature of their roots, as if this is attempted, the complete destruction of the fibres is all but certain. When the soil happens to require renewing, I have found it best to turn them out of the pots, plunge the ball in a pail of tepid water, and in it, by careful movement of the fingers, gradually get the material from them. Some difference of opinion exists as to whether pots, or baskets made of some open material, answer best for *Nepenthes*. After trying both, I unhesitatingly give the preference to pots. Baskets may do where a house can be devoted to them, and consequently where the admission of less air is necessary than in a stove with a mixed collection of plants, as under such conditions the roots, as they protrude through the baskets, are not likely to have their growth stopped to such an extent as unavoidable with the greater admission of air necessary when grown in company with other plants that would not succeed kept so close. But for one instance where a house is devoted to *Nepenthes* there are scores where they must either be grown in a general stove or not at all; and if ever they are to come so generally into cultivation as they deserve, their treatment requires to be such as to give the best chances of success when grown along with other things. Beyond this, under pot culture I have had plants more than double the size, with proportionately larger pitchers according to their kinds, than I have ever seen grown in baskets. I have had *N. Rafflesiana* in a pot with over half a hundred perfect pitchers, the largest of which held over a pint each. T. BAINES.

WORK DONE IN WEEK ENDING MAY 26.

MAY 20.

THIS has been a day of unceasing rain; 0.69 has fallen between 6 a.m. and 6 p.m. Work out-of-doors has been at a complete standstill, and the hands have been employed cutting pegs for pegging down bedding plants, making labels, pointing sticks for Dahlias and herbaceous plants, washing pots, grinding scythes and billhooks, oiling leather watering hose, and cleaning and oiling lawn mowers. Outdoor labourers that were not required for the jobs just named have been employed lime-washing walls in plant and Peach houses, weeding the mulching of fruit tree borders, and re-arranging the plants that stand on them. Indoor hands have completed Grape thinning for the present; Lady Downes, latest Muscats, and a house of mixed varieties have yet to be thinned, but are not quite ready; most of the surplus bunches have been cut off to-day, and thinning will have to be done three or four days hence. Young Vines planted this spring having reached the top of the house, pinching off side shoots will now be discontinued till such time as there is danger of the growth getting so thick that sunlight cannot reach the main stems and buds; these must always have full exposure to sunshine. The border has been given another watering and thickly re-mulched with long stable litter. Grapes are colouring well, and to keep them doing so satisfactorily during this damp, cold weather, fires are continued day and night in order that abundant ventilation may be given at front and top both night and day. Early Muscats have also begun colouring, and the treatment of these is exactly similar to the house of early Hamburgs, except that more care is required to avoid cold currents of air, which I believe is a frequent cause of shanking. Potted late batch of *Chrysanthemums*, and shifted into larger pots *Fuchsias* and *Pelargoniums* for autumn flowering.

MAY 21.

Heavy showers all the morning, but dry and sunny in the afternoon, and our soil being very light, we have been able to plant out a successional plot of Brussels Sprouts, the first lot of Savoys, and another plot of Cauliflower. Thinned out Salsafy to 4 inches apart, also Leeks, and French and Runner Beans to from 6 inches to 9 inches apart. Pricked out on a west border seedling *Anemone coronaria* and Primroses, and filled up gaps in Sedums and Saxifrages, that are used as carpeting plants in the bedded-out garden. It was too wet to start putting out plants, and mowing and clipping Grass verges has been done instead. Tied up and pinched the shoots of Melons, and those swelling up their fruit have been given a good soaking of manure water; the plants ripening fruit have been given clear water only. The soil at this stage of growth we keep much more moist than do the generality of gardeners, and by this means only can the leaves be kept in a healthy state, and if they are not it is quite useless to expect fruit of high quality. Planted out a first lot of ridge Cucumber; other plants are ready for putting out soon as frames are at liberty in which to start them. Peaches ripening are given the fullest amount of ventilation, and the fruit we gather a day or two before it is what is termed dead ripe, and retarding or preserving thus becomes an easy matter. Our earliest is Hale's Early, and is closely followed by the American variety Alexander, both kinds far out-distancing Early Louise and Early Beatrice, and particularly in quality, which is first-rate. Tomatoes are ripening off splendidly; Sutton's Earliest of All well deserves its name and the highest praise for free setting and fruiting, but it loses ground when appearance is mentioned—there is too much corrugation, but with some this is a small matter. Chiswick Red and Hackwood Park Prolific are our latest favourite varieties, and all three are wonderfully free fruiting kinds and of the very best quality. Potted more Tuberoses; the largest bulbs are planted singly in 5-inch pots, but the smallest are planted three together in a 6-inch pot.

MAY 22.

Another showery day, and so cold that it seems more like March than May. We have given up the idea of proceeding further with planting of the flower beds till it is drier and warmer. In addition to the usual indoor wet weather jobs, all old roots of Dahlias have been got out and sorted ready for planting. Fruit rooms have been cleared out, and the walls lime-washed and shelves and floors well scrubbed. Netting for protecting Strawberries and other small fruits has been overhauled, mended, and otherwise got ready for use. Red spider has appeared in our second vinery, and the affected leaves are being sponged over with soapy water; the Grapes are too advanced for syringing to be done without liability of injury to the berries, more particularly in regard to bloom; besides, sponging is by far the most effective way of preventing the spread of this troublesome insect. Picked over a quantity of Strawberries that were set, leaving from six to nine on a plant. President is the only variety we have in at present, and, every point considered, I doubt whether there is a better variety grown. Top-dressed and staked auratum Lilies. The pots are plunged in coal ashes, and the position is the sunniest we have got. Marguerites have been potted in large pots for autumn flowering, and are plunged the same as the Lilies. Fuchsias are being hardened off preparatory to being grown on in the same way.

MAY 23.

Till noon to-day the rain was continuous, and though fine this afternoon, the ground was so wet that open-air work has been all but *nil*—mowing with scythes and rolling some of the walks being really all that could be done. Indoor work has been of the same description as for several days past, but it is getting into such close quarters now, that another such a watery week will quite work us out of a job, and, worse still, it will make our flower garden season a very short one, for it is quite useless to put out tender plants whilst

the ground continues so cold as it now is. I do not anticipate any particular damage to fruit crops, and all are yet safe, and this moisture, combined with the warmth that we shall surely get very soon, will cause the fruit to swell to the largest size. Weeded and stirred the surface soil of Pines; the stirring was not done so deep as to break off any rootlets. The plunging beds have also been tidied and such plants as needed it watered. Tied up fruits that were not growing upright, gills and superfluous suckers being pulled off at the same time. Tied down the shoots of Figs, and care was taken that neither shoots nor foliage screened the fruit from sunlight.

MAY 25.

More rain, but not sufficient to prevent our working outside. Planted our Asters, Stocks, *Helichrysums*, and *Phlox Drummondii*; as they were all pricked out in light leaf soil from the seed bed about a month since, they now move with abundance of roots and soil adhering thereto; hence they will scarcely feel the removal. Began to clip Box edgings. This sort of work we always defer to this late period in order to avoid frost, for the Box is so very susceptible of injury when first cut that I have known it to continue brown—as if burnt—throughout the entire season when frost has occurred immediately after trimming. Clipping the Grass verges and clearing up coach roads. There will be so little time to spare for that kind of work when summer weather does begin, that we are making a push to get it all done now. Rhododendrons are opening well in spite of the weather—perhaps I ought to say in consequence of it, for they like plenty of moisture, as is instanced by some clumps that we have growing and flowering extremely well in swamps that are never drier than our garden soil now is from the daily downpours of the last week—a hint, in respect of keeping the roots cool, that we have not been slow to act upon when planting others. We have to-day made an end of weeding the clumps and of trimming up the edgings. Got out the remainder of tender bedding plants to harden; they will be covered with mats for a few nights, and if the weather becomes seasonable they will be ready for planting out a week hence. Potted a few roots of Musk, and divided and repotted a few plants of the beautiful drooping Grass, *Isolepis gracilis*, and put in a few pots of cuttings of *Lycopodium denticulatum*; all three of the species of plants named are excellent for furnishing the outer edges to baskets or large vases of decorative room plants.

MAY 26.

Dull, but fine, and some 10° warmer than yesterday, and therefore we again made a start at bedding-out, and have quite finished planting *Pelargoniums*, *Heliotropes*, *Ageratums*, Dahlias, and Lobelias. Tied up *Pyrethrums*, *Pæonies*, *Delphiniums*, the flower-stems of Geums, and a few *Phloxes*; planted out a few more Asters and pricked out Zinnias; clipped Box edgings, weeded them and cleared up the clippings of the same; began to thin Lady Downes and Alnwick Seedling Grapes, the spare bunches having previously been cut off. Though there has been but a very few hours' sunshine the whole time they have been in flower, they have set very well without it in a temperature ranging between 70° and 78°, and the late Muscats are equally promising under exactly the same conditions as to temperature. Yet another turn at thinning out the fruit in the late Peach house; the crop was so heavy, that we began to be afraid that the fruit would be small, and this thought impelled the removal of a few hundreds more. Potted into flowering pots the *Chrysanthemums* that have been pinched back for growing in bush form for conservatory and house decoration. HANTS.

FRUITS UNDER GLASS.

STRAWBERRIES IN POTS.—Peach houses, vine-ries, and other heated structures in which Strawberries are forced should now be cleared and well cleansed to prevent the spread of spider to the legitimate and more valuable occupants, for no matter how careful the management may have

been, these troublesome pests are sure to spring into life in hothouses, from which it is difficult to dislodge them. In many gardens, where Strawberries are forced under great difficulties, the back shelves in late vineries and Peach houses are generally occupied for some months in succession. These should be well scrubbed with soap and water, painted if necessary, and the walls washed with a mixture of quicklime and sulphur. All plants that have not finished their fruit will ripen it up perfectly in light pits or frames where they can have plenty of air by day, which will give them the delicious flavour peculiar to Strawberries from the open air.

Late Strawberries in pots, which form the link between forced and outdoor fruit, are generally plunged in beds of leaves in cold pits in the autumn, where it is best to leave them undisturbed until the fruit is ripe. If proper foresight was brought to bear upon their original arrangement, they will be a fair distance from the glass, not too close together, and the roots, having taken hold of the decaying leaves, will support a heavy crop of the finest and most valuable fruit of the season. Under such treatment the tender Queen and the shy Doctor Hogg can be grown to the highest perfection, and with infinitely less trouble than when they are moved about and the pots are exposed to the baking influence of a bright sun. Moderate thinning will, of course, be necessary, and the fruit will require a few Birch twigs to keep it well up to the influence of light and air; the pots being plunged, watering will be reduced to a minimum, but when water is required it should be of a stimulating nature and fine mornings favourable to liberal ventilation should be chosen for its application. If it is thought desirable to retard ripening, the lights may be thrown off the pits on fine days and closed at night; otherwise, good syringing and early closing with sun heat will favour the production of the finest fruit. Occasional syringing with clear soot water will be found an excellent stimulant and insecticide, and the use of clear sulphur water will keep the plants free from mildew. When properly hardened off, forced plants should be turned out for autumn fruiting, and maiden plants from which the early runners are to be obtained will require mulching and plenty of water in dry weather.

PEACHES—If not already done, the fruit in early houses now taking the last swelling should be elevated on pieces of lath placed across the wires of the trellis, so as to expose the points to the full influence of the sun. The shoots that will be removed after the fruit is gathered, as well as leaders approaching the extremities of the trellis, may at the same time be stopped, to throw size into the Peaches and to prevent the foliage from becoming crowded and impervious to a free circulation of air from the lower to the upper side of the trellis. If soft water free from lime can be obtained, the trees may be syringed until the fruit has attained its full size, when a drier atmosphere, combined with liberal ventilation, will become necessary to the production of perfect colour and the cardinal test of quality—good flavour.

Gathering.—When Peaches have to be packed for a railway journey they should be taken from the trees before they are dead ripe; otherwise, they will not travel well, neither will the flavour be so sprightly as it might be. The fruit should of course be softening and throwing out that delightful aroma which no one can mistake at the time of gathering, when the greatest care must be observed in handling, as the slightest pressure of the fingers produces bruises. But all this can be avoided by taking a pad of cotton wool in the left hand and a pair of Grape scissors in the right, by means of which the largest fruit can be detached with perfect safety. When gathered and placed singly on squares of silver paper in well padded baskets, a dry, warm Grape or stove room will be found equal to the Peach house for storing purposes. If wanted for home use, the fruit may be kept until it is quite ripe; if, on the other hand, as is most probable, the Peaches have to be packed for a journey to London, no time should be lost in getting them dispatched after they are taken from the trees.

Mid-season houses.—The trees in the succession houses will now be passing through, if they have not completed, the stoning process, and as this period produces a severe strain upon them, steady day and night temperatures, the latter not too high, with plenty of air, will be imperative. Good syringing twice a day, at least when the weather is bright and fine, will not now be too often, as more air can be given and the foliage will have plenty of time to get dry before nightfall; but this part of daily management is a matter which must be regulated by local conditions, the position and size of the house, and last, but not least, the health and vigour of the trees. The same rule applies to watering, for much as the Peach in a growing state delights in copious supplies of water, the quantity and quality must be regulated by the state of the border and the facilities that are offered for free perspiration, as it is worse than useless trying to force food when the digestive organs, through want of fresh air, are unable to perform their functions. Old trees carrying heavy crops of fruit may require mulching with rotten manure, while vigorous young ones will make better wood and finish their fruit equally well on poorer diet, but all will derive benefit from frequently repeated supplies of fresh stable litter spread thinly over the borders. If only a few straws are introduced at a time, the ammonia will be detected on entering the house after it has been closed with moisture, and the foliage will soon assume a dense colour and substance; but it may be well to remind the amateur that it must be used with the greatest caution, as it is powerful in its action on the tender leaves. This danger, however, can easily be averted by exposing the litter for a day or two in the open air and leaving a chink of air on the top ventilators during a like period after it is introduced.

Late houses.—These will require an abundance of air, good syringing, and plenty of water at the roots, particularly where they are confined to inside borders and the drainage is satisfactory. If the fruit is wanted as late as it can possibly be had, this is the proper time to retard by day and night ventilation, whenever the temperature can be lowered without producing cutting draughts, otherwise the ventilators may be opened soon after the sun strikes the house on fine mornings, and they can remain open until about 4 p.m., when the foliage must be well syringed. Late Peaches should be well disbudded, so as to secure a thin and even growth of young wood that can fully develop its leaves without becoming crowded in the autumn; and all shoots that will be removed after the Peaches are gathered, shortened back to five or six eyes, while increasing the size of the fruit by throwing back the sap, will favour the perfect formation of the flower-buds and the maturation of the wood.

Peach cases, like late houses, can be kept as cold if not colder than open walls in bright weather; consequently there is always the danger in unfavourable seasons of having the wood imperfectly ripened. The trees should, therefore, be thoroughly disbudded, and well balanced by stopping and tying down the strongest shoots before they become gross and rob the weaker parts. The trees will require occasional, perhaps daily, syringings in fine mild weather, but unless these structures are heated and warmth can be obtained in cases of emergency, it will be well to avoid a sloppy condition, as one of the greatest evils in cold house culture. When properly disbudded, the young shoots should be neatly heeled down with ties of soft matting, all gross breaks from the centres of the trees constantly and persistently stopped, and, while guarding against future crowding, provision should be made for covering and protecting every bit of old wood from direct exposure to the sun. Narrow Peach cases being subject to rapid alternations from heat to cold and *vice versa*, they require constant watching to prevent them from getting too hot on bright spring mornings, when the foliage is tender and easily injured, and the young fruit will not stand a very high temperature. They also require frequent fumigation to prevent the spread of aphids, which seems to thrive under rapid changes

of temperature. If not already done, the inside borders should be well mulched, and, if possible, arrangements made for supplying the roots with water through a hose pipe.

CHERRIES.—As soon as the fruit in the earliest house shows signs of changing colour, direct syringing must be discontinued, as too much moisture will cause the Cherries to crack. Indirect syringing may, however, be continued on all favourable occasions, and late kinds, such as Bigarreau Napoleon, still one of our very best red Cherries, may be kept steadily swelling by being well washed with soft water whenever it is thought advisable to apply moisture to the stems of more advanced varieties. More air will, of course, be necessary with, perhaps, just a half turn of the valve at night or on dull days to prevent the atmosphere from remaining stagnant, but beyond this gentle circulation the use of fire-heat should be discontinued. Extra air will, of course, entail extra care, as birds of all kinds are numerous, and the blackbird, much as we enjoy his morning song, is not a desirable assistant in the Cherry house. A piece of tanned garden netting drawn over the ventilators and over the whole roof, if bright and airy, will keep feathered friends out of mischief and do good service by and by in protecting the ripe Cherries from the heat of the sun. Freedom from insects when the fruit is ripe is so important, that a repetition of the advice to smoke for the destruction of the first fly will not be out of place; but this should be done long before there is any prospect of the Cherries being wanted for use, and thorough disinfection with pure water should always follow.

Late houses.—Next to the mixed orchard house a large structure well filled with the finest Bigarreaux is one of the most interesting sights that can meet the eye. Many have seen and been charmed with the beauty of the fruit, or the purity of the sheets of blossom, but all have not seen the magnificent foliage which some of the kinds produce when grown under glass. As some of these varieties make large leaves, require a long time to ripen, and suffer from damp as well as birds, they should always have what they so richly deserve—a light, airy house devoted to their culture. Cherry trees are cheap; they can be grown for years in the same pots, provided they are well drained and receive the proper annual attention, or they may be planted out and lifted every other year. As these kinds improve by hanging longer than they can possibly be kept in the open air, and they do not come so quickly to maturity as Dukes and some others, they are not well adapted for forcing, but their period of ripening can be considerably advanced under glass, although fire-heat may not be needed for weeks together. If trained to a trellis the wood should have plenty of room, and the fruit will pay for liberal thinning. The trees will require liberal syringing at all times when they are not in flower, plenty of air through the day, and the usual remedies for the destruction of the insect pests which invariably attack the Cherry during certain periods of its growth.

CUCUMBERS.—Where winter Cucumbers are grown in small compartments, the oldest plants which have been in bearing since November will now be getting past their best, if they are not more or less infested with red spider. Should this be the case, and the produce of the pit can be dispensed with, their replacement by fresh young plants will be found the most satisfactory course to pursue. The pit should be completely cleared out, thoroughly cleansed, and refilled with well-worked fermenting material, which cannot be made too firm. Hills or ridges for summer culture are preferable to pots, as the plants are not so liable to suffer from checks produced by want of water; but instead of forming them close to the pipes, they should be as far removed as possible. Vigorous young plants raised about the middle of May come quickly into bearing and produce fine fruit throughout the season. They require turfy loam somewhat heavier than that recommended for winter culture and succeed best when grown on the extension principle. Give plentiful supplies of tepid liquid to old plants now

in bearing. Top-dress frequently and earth up the stems to draw out new roots, which will revel in the fresh compost and force clean young growths free from insects. Remove old leaves and vines as they can be spared, as the young ones require space. Avoid overcrowding and overcropping, and syringe copiously on fine mornings when the temperature begins to rise and again when the house is closed at a temperature of 90°. Dress the plants at least three times a week, and dispense with shading unless the house is very bright and the tender fruit shows signs of scalding. Well-worked fermenting material, consisting of stable manure and leaves or Oak leaves alone, forms an indispensable agent in summer culture, as the warmth enables the cultivator to dispense with fire heat, and the ammonia it gives off is an excellent insecticide. It can be used as a plunging medium only where fire heat is laid on, or for supplying all the bottom heat needed through the summer months.

The frame ground.—Where plenty of stable manure is always at command there is no more profitable or interesting mode of preparing it for the kitchen garden than turning it to account in the culture of Cucumbers and Melons. If, as previously advised, beds in pits and frames have been prepared and planted, the plants will now (the end of May) be making good progress, if not already producing fruit. The summer management of frame Cucumbers is by no means difficult, provided the top and bottom heat can be maintained within a minimum of 70° and a maximum of 90°, and the plants are kept healthy and free from insects by the timely admission of air. Plentiful supplies of warm water are of course necessary both to the roots and foliage, and the best time to apply it is about half-past three on fine afternoons, when the frame is closed for the day. On root-watering days, say twice a week, the water, at about 80°, may be applied over the foliage through a large watering-pot, when syringing will not be needed. On other days the whole of the interior, including plants and frame, should be well syringed and shut close in time for the glass to run up to 90°. The next and last important points are judicious or moderate cropping and bi-weekly stopping and thinning to prevent the foliage and vines from becoming crowded.

W. COLEMAN.

Eastnor Castle, Ledbury.

GARDEN IN THE HOUSE.

PLANTS FOR ROOMS.

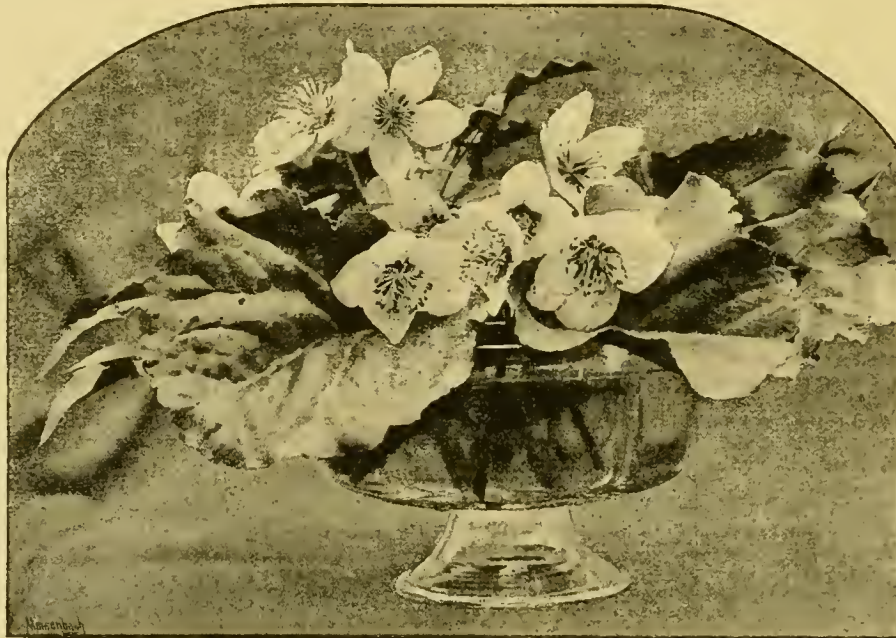
PARIS is always beautiful in the spring time, and it owes much of its country-like freshness to its town trees and flowers. Great as are the improvements made of late years in the growth of decorative plants, the Parisian florists are ahead of ours in their growth of plants for indoor ornament. The meanest café has a few really fresh and beautiful plants to relieve its more sordid surroundings. The best of these are Palms, Aspidistra, and small Orange, Ficus, Oleander, and Pomegranate trees, and hardy shrubs, such as Laurels, Aucubas, and Euonymus. Less coal is burnt in Paris (where wood or char-

coal fires are the rule) than in England, and so perhaps plants have, on the whole, a better chance there than with us; but we must not forget that in Paris the plants best suited for permanent growth in rooms and windows are grown for sale by the market growers, while in London this is not so markedly the case. Cyclamens, Pelargoniums, Calceolarias, and, above all, Heaths are perhaps the worst of all room plants; hence many people have resorted to those fearful monstrosities, artificial plants, instead of beautiful real ones. The best of hardy and half-hardy decorative plants are grown so well, and are sold so cheaply in the Paris markets, that if our own dealers do not care to grow them, we might at least import them in quantity, just as we do Azaleas and Camellias.

F. W. B.

A BOWL OF CHRISTMAS ROSES.

A GARDEN well stocked with hardy flowers can at all times of the year furnish bold groups of flower and foliage for indoor decoration. Thus in the deadest midwinter, such good bouquets as that



Christmas Roses and Saxifrage leaves.

shown in this engraving may be had in fair abundance. The leaves are those of the broad-leaved Saxifrage (*Megasea cordifolia*), whose ruddy winter tinting is highly becoming to the pure white Hellebore blooms; a spray or two of foliage of *Berberis Aquifolium*, also red-tinted, gives quite as much variety as is necessary in an arrangement intended to show the quiet dignity of one or two noble forms of flower and leaf. In arranging flowers for room or for table decoration, a good bold group of flowers and leaves of few kinds, or, better still, of one only, has a far better effect than the mixed bouquets so commonly seen, where a mass of flowers huddled together without an adequate proportion of greenery destroy each other's effect by overcrowding and probably bad colour mixtures. The engraving (p. 501) shows a handful of Christmas Roses and *Aralia* leaves, arranged freely in a glass bowl, with a *Hyacinth* and a spray or two of *Laurustinus* and *Berberis*; had the group been still further simplified by omitting the two latter, it would have been all the better.

Bouvardia leiantha cinnabarina.

Among newer *Bouvardias* this Continental variety is a bright and striking kind; the blossoms have the vivid vermilion tint of the typical *leiantha*, but the habit of the plant is more vigorous and

the individual blooms are much larger, besides being borne in broader trusses. The raising of new *Bouvardias* would seem to be occupying more attention at the present time than usual, for besides the above we have the three double varieties, *Victor Lemoine*, *Triomphe de Nancy*, and *Sang Lorrain*, from M. Lemoine, and the semi-double-flowered *Thomas Meehan* from the United States.—T.

THINGS WE HAVE UNLEARNED.

Rhododendrons.—This heading was suggested to me the other day when looking at an island of *Rhododendrons* on a neighbouring estate on which the roots of the whole of the plants were submerged. A finer lot of *Rhododendrons*—and the island was about an acre in extent—I have never seen. They afford cover to coots, water-hens, and wild ducks, and have for many years clothed the island with a dense, luxuriant growth, and all are, I believe, growing in pure loam. The island, an artificial one, is built round with loose stones and is quite flat, standing only a few inches above constant water level; hence the roots of the *Rhododendrons* must always be waterlogged. I could not help thinking on the pains taken on some other estates that I know well where *Rhododendrons* are extensively planted out in the woods and where unheard of expense has been incurred in draining the sites and filling them with peat, removing the perfectly suitable natural loam to make room for it. The idea that *Rhododendrons* thrive in peat only and in well-drained situations is one of the things that have not only not been proved, but have been disproved.

Vines.—Under the same category comes the oft-repeated belief or supposition that Vines prefer a loose, spongy rooting medium composed of fibry turf. An exponent of this idea once showed the writer a Vine border exclusively composed of fibry turf torn from the trap-rock cliffs hard by, and which in texture looked more like that kind of Fern root peat that is now recommended for Orchid culture than anything else with which I can compare it. What gave rise to the notion that a Vine border should resemble a sponge I know not, but that was the notion, hardly yet quite exploded in some quarters, although it is now admitted by most good growers that a well mixed compost, however hard and firm, suits the Vine and other fruits better than a loose compost wherever long life and fertility are concerned. It is a fact at all events that Vine borders of the last description are now sustaining Vines that were planted before porous borders were invented.

Steaming Vines.—Another useless practice founded upon no rational theory that ever was heard of was that in order to grow Grapes well the Vines must be constantly subjected to a steaming process, except when the fruit was ripening. An early pioneer in this line in Perthshire I remember put blankets round the hot-water pipes and flues, and by keeping them sprinkled with water kept up the necessary amount of steam; and some method resembling this was in full play till an improvement was effected in the shape of steaming trays, which permitted a constant flow of water out of the hot-

water pipes themselves, and so insured a supply of moisture. Much was written on this latest device for steaming natives of the driest regions of the globe, and a great deal of vegetable physiology and science was expended to prove its utility; now neither the inventors nor anyone else well skilled in Grape culture permit such appliances, it being admitted that they were unmitigated evils, and nothing else.

Setting fruit.—The universal opinion at one time was that mostly all fruit trees required a dry atmosphere in which to set their crops successfully, and high and dry temperatures were the order of the day at certain seasons, and although no tangible result followed, they were adhered to persistently till it was proved beyond a doubt that a genial natural temperature, that was neither constantly too dry nor too moist, answered best, and the dry system was abandoned. Between steaming trays and a baker's-oven temperature one would have thought there was a gulf too wide to be bridged over in anyone's practice; but it was not so, for both found favour in the same school as long as any defence was possible, but now we never mention them. In conjunction with this belief was held the other that Grapes would not set their fruit under a tropical figure, and it became the practice to afford Vines as high or a higher temperature in the spring of their growth than at any other season; but this also was broken through and discontinued. Examples of this kind could be multiplied from memory to fill pages, but those given are sufficient to show how empiric our garden practice still is, and likely to be, when not guided by some rational principle or put to the test of proof. We cannot be too careful in making assertions in regard to the culture of plants, which, not being amenable to experiments like inanimate objects, cannot be controlled or subjected to experiment in the same way. S. W.

DRAWING FOR GARDENERS.

THERE are many points from which this question must be viewed. I willingly grant that for a life's work at art special training is necessary, and in that case, perhaps, the School of Art system may be the most convenient, even if not the best. But for the young gardener such a course is too tedious and too long, and besides hundreds of them have the ability to make a fair start at sketching on their own account if some little encouragement be given to them. To all those who want bread "J. D." (p. 444) offers a stone! One of our best flower painters, so far as published floral plates are concerned, actually did what I recommend all young gardeners to attempt—that is, he taught himself drawing in his leisure hours. I never had the chance of being nearer, when a boy, than ten miles to a school of art, but I taught myself to sketch simple things fairly well,

and that my self-help was of some importance was proved by my obtaining a second grade certificate in the Society of Arts examinations for drawing when I first got to London. A gardener has so many subjects to learn, all or nearly all of more, or at any rate of equal, importance with drawing, that some short and efficient course of training is all he can expect. I believe there are now special courses of instruction in drawing for artisans in some towns, but too often the gardener is in country places; therefore to him they may be said to be a dead letter. I have taught many people drawing—young gardeners, amateurs, and even children, and found the children especially apt in rapid progress. My plan is to teach them first to observe the exact size by actual measurement, then colour, texture, &c., of the object ere they begin to draw it. Then I show them how to model the object in form and colour on the paper, instead of making them become untrue

has done (p. 444). He has shown us that it is tedious and uninteresting; that it has no life-like elasticity; that by it the born genius and the incapable are taught in precisely the same way! On "J. D.'s" own showing the School of Art system has not produced us a dozen good flower painters in twice as many years. Need one say more?

F. W. B.

PLANTS SOLD UNTRUE TO NAME.

It often surprises me, seeing how amateurs are cheated by foreign nurserymen, that they go on sending abroad for rare plants. There is no real saving, now that many English firms advertise spring and other bulbs at a price which, the lesser rate of carriage considered, comes to the same as the cheapest Dutch houses. But to buy of any of the great advertising Dutch or Belgian houses rare bulbs or plants is merely trusting to luck. For years Messrs. Roozen have advertised in their

lists *Iris aurea*. I wonder if they ever had it at all. I have received for it in past days, when I did not know *Iris rhizomes*, many common *Irises*. For *Iris cristata*, a little delicate dwarf kind, they sent me regularly the common wild Flag (*Iris Pseudacorus*) and, I presume, from the nearest ditch.

A favourite practice is to put up *Iris anglica* or *Fritillaria latifolia* in twenty-five varieties. From one great Dutch firm I received *Iris anglica* in twenty-five varieties, all the same. From Van Houtte a packet of *Fritillaria latifolia* in twenty-five varieties of the broad-leaved kind; all were narrow-leaved, and only two were really distinct. M. Van

Houtte has lately sent me the variegated-leaved *Funkia Fortunei* at 1s. 8d., but there is no sign, nor ever will be, of variegation on his plant. Take three trees standing together in my little Chelsea garden, where any Londoner can come and see Van Houtte's labels still fixed on the trees in the well-known writing; all three are wrong, and another sent at the same time makes four out of four. These three are *Cerasus Sieboldi fl. albo-pleno*; *C. S. fl. roseo-pleno*, a glorious plant, sold true by Veitch and Smith, of Worcester, and the common white Persian Lilac, which has unfortunately come lilac and not white. His tree of the so-called rose-coloured Cherry is a common wild Cherry. The double white Siebold's variety has not yet bloomed, but is quite distinct in its cut leaf from the true *Cerasus Sieboldi*. I must say I have never received a Lily untrue to name from either Van Houtte or Roozen. But as for M. Mater, of Leyden, the amount of things untrue to name sent by him is quite astonishing. One naturally thinks that, as Siebold's agent, and with such a careful and apparently trustworthy catalogue, there is here a store of valuable things. When I get anything from him I have learnt by experience to expect it untrue to name, however high a price I have paid for it. Take, for instance, *Clematis Sieboldi* (of which, by the way, one of the Altrincham nurserymen



Christmas Roses with Aralia leaves. (See p. 500.)

to Nature from the beginning by attempting outlines which are not there. Outlines of any kind may be expedient or convenient, but they are conventional at the best. The common lead pencil is a relic of a barbarous age, and there can be no hope for any art which is based on its productions. Thanks to the lead pencil, we have woolly German lithographs to-day by the thousand, all as bad as they can be. Ruskin, in his "Proserpina," recommends pen and ink and tints or washes to show local colour and markings, after which the sketch so produced may be touched with the pen again to show texture or hairs, &c. The lead pencil is the burnt stick of the savage without its primitive power. It is remarkable what an advance in wood engraving has been made since the pencil has been supplanted by the brush filled with colour. As I have said, not only all drawing, but even ordinary writing is done with a brush by the Japanese and Chinese alike. When I alluded to the drawing of the Japanese, I was not thinking of the crude fan and fire-screen productions now so common in the English market, but of the best of Japanese art in all branches—in books, on pots, wood, and textile fabrics, all of which owe their extreme beauty to exquisite brush work. After all, no one could possibly have made out a worse case for our best English Government system of art training than "J. D."

has a true stock); he sent me instead some form of lanuginosa. It is a great nuisance, after wasting a year or two for a rare plant to bloom, to find it only something common, and it is high time some disinterested person wrote to prevent the innocents from being victimised. De Graaff or Krelage always have things true to name, and everyone can get rare plants from them through our English trade. I have never yet received from any English firm a plant wrongly named except by some rare mistake, nor can I yet complain of Swiss, German, or French dealers.

FRANK MILES.

26, Tite Street, Chelsea, and Sunninghill,
Shirehampton, Bristol.

P.S.—A little light thrown on the subject by other victims who can clearly prove their cases would perhaps be beneficial.

FRUITS AND FLOWERS TOGETHER.

I AM again tempted to send you a few further notes, which may interest such of your readers as are amateurs, like myself, especially as I consider that I have re-discovered an old flower, just the one I have been wanting for years. Doubtless some of your experienced readers will say that I have found it, as Donald found the tongs—before they were lost; but we shall see. Last autumn I bought along with my bulbs half a dozen *Ornithogalum arabicum*, which were planted two in a 6-inch or 7-inch pot in poor soil. A fine crop of leaves like those of a Hyacinth came up, and the pots stood in a cold house all winter. About the middle of April (still in the cold house) a strong stem sprang from each bulb, and the first to bloom gave me twenty-three flowers in a cluster, each much larger than a crown-piece, with six pure white petals, set off by a shining black carpel, or seed vessel, about the size of a Pea, greatly to the delight of my wife, who found that a single head of bloom sufficiently filled one of the vases at church. One head was sent to a florist in my neighbourhood, who exhibited it in his window, and I had the pleasure of hearing that a neighbour of ours, who is fortunate enough to have a large garden with houses maintained at all degrees of heat and cold, stopped his carriage to ask where in the world we happened to pick up all our rare flowers, the fact being that they are always old and cheap, or, at all events, common enough. Many other people have also inquired, and as I do not recollect ever to have seen the flower before, I suppose that it is not much grown. It has everything to recommend it, for to prove its lasting qualities I wore one in my button-hole for two days, wired round in a little soaked paper, and kept it in water for two days longer. Who is it (Keeble, I think) who says,

The herbs we need to soothe our woe
Familiar by our footpath grow?

and though Arabia is not exactly in my daily walks, bulb merchants' shops certainly are. I grow a *Clematis indivisa lobata* in a pot at the end of one of my vineries, and a friend who saw it covering the roof with its white stars in March exclaimed that he had been looking all his life for a white cool greenhouse creeper, without knowing of the existence of this New Zealand beauty, which, as I see you have remarked, is not half as well known as it should be. As a hint to those who may have church vases to fill, I may just mention that a few sprays of *Cupressus Lawsoniana* as a background last for many Sundays and keep fresh and green all the while. I began the year with *Triteleia uniflora*, Roman and other Hyacinths, Primulas, Abutilons, Harbinger Primroses, Deutzias, Cyclamens, Azaleas, Begonias, Callas, Narcissis, or so on, forwarding them as required in my propagating house, my sheet anchor being the single *Narcissus poeticus* variety ornatus, six bulbs in a pot, each bloom being tied to and supported by a slender stick, so as to turn it the way in which it would look best. Their perfume gives them an advantage even over the (to me) unattainable *Eucharis*. Then came my outdoor Horsefield Daffodils, the most beautiful, surely, of all Daffodils, which in my light soil increase easily. I tried for the first time as a pot plant common double Daffodils, eight or ten bulbs

in a pot, which came in very early, and were much admired on my table. My Cinerarias, mostly white with tipped edges (I see that there is a pure white variety advertised), are just over; my Calceolarias and Pelargoniums kept in a cold frame are coming in, and I have in my cold house, along with my solitary Peach tree, a Cheshunt Hybrid Rose covered with some three score of its fragrant blooms, and a Gloire de Dijon similarly arrayed. They are each grown in a Vine pot, and are well fed and watered. In summer they stand out to recruit, and are plunged in dead leaves. It must not be forgotten that on my bleak hillside even the earliest Roses are midsummer flowers, and few can describe better than I can the effects upon a garden of a bitter north-west wind on the 18th of May, just now blowing. Enough has, I think, been said to show that, with fruit and flowers in the same houses and with moderate appliances, ample provision may be made even in the dead season for both church and table decoration, reliance being placed on *Chrysanthemums* to carry on until Christmas.

NORTH-WEST CHESHIRE.

The Primula conference.—The following list of Primulas, compiled in 1882 by M. B. Stein, inspector of the Breslau Botanic Gardens, may perhaps be useful to the promoters of the proposed Primula conference:—

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|--|--|
| 1 japonica (A. Gr.) | 61 integrifolia (L.) |
| 2 verticillata (Forsk.) | 62 Kitabeliana (Schott.) |
| 3 Boveana (Desne.) | 63 angustifolia (Torr.) |
| 4 floribunda (Wall.) | 64 × Fackinai (Schott.) (sub-minima × 58) |
| 5 sinensis (Ldl.) | 65 × Dumoulini (Stein) (super-minima × 55) |
| 6 cortusoides (L.) | 66 × Murettiana (Moritz) (subintegrifolia × 86) |
| 7 × gracilis (St.) (6 × 8) | 67 × Dianana (Lager) (super-integrifolia × 86) |
| 8 Sieboldi (Morren) | 68 glutinosa (Wulf.) |
| 9 mollis (Nutt.) | 69 minima (L.) |
| 10 Kaufmanniana (Rgl.) | 70 × Flockiana (Schrad.) (sup.-relutiosa × 69) |
| 11 grandis (Tranto) | 71 × biflora (Huter.) (70 × 69) |
| 12 inflata (Lehm.) | 72 × Huteri (A. Kern.) (70 × 63) |
| 13 officinalis (Ja. q.) | 73 salisburgensis (Floerke.) (subglutinosa × 69) |
| 14 × media (Peters.) | 74 Forsteri (Stein.) (super-minima × 84) |
| 15 intricata (G. G.) | 75 × Steini (Ohrst.) (sub-minima × 84) |
| 16 carpathica (Fuss.) | 76 × pumila (A. Kern.) (69 × 80) |
| 17 amena (M. B.) | 77 Allioni (Lois.) |
| 18 elatior (Jacq.) | 78 tyrolensis (Schott.) |
| 19 suaveolens (Bert.) | 79 Venzoi (Huter.) (78 × 60) |
| 20 × brevistylis (D. C.) (sub-aurea × 18) | 80 cenisensis (Thom.) |
| 21 × flagellifera (A. Kern.) (supercanalis × 18) | 81 confinis (Schott.) |
| 22 × digenea (A. Kern.) (18 × 23) | 82 pedemontana (Thom.) |
| 23 vulgaris (Huds.) = acutalis (L.) | 83 villosa (Jacq.) |
| 24 Sibthorpi (Rehb.) | 84 hirsuta (All.) |
| 25 penduliflora (A. Kern.) | 85 × Bernina (A. Kern.) |
| 26 involucrata (Wall.) | 86 viscosa (All.) |
| 27 speciosa (Don.) | 87 commutata (Schott.) |
| 28 rosea (Royle) | 88 × pubescens (Jacq.) (super-aurea × 84) |
| 29 Jaschkeana (A. Kern.) | 89 × arcotus (A. Kern.) (sub-aurea × 84) |
| 30 cashmeriana (Royle) | 90 × Gobl (A. Kern.) (super-aurea × 83) |
| 31 elliptica (Royle) | 91 × Kerner (Gobl. & Stein) (subaurea × 83) |
| 32 lambricata (Wall.) | 92 alpina (Schleich) = rhetic (Koch) |
| 33 capitata (Royle) | 93 × Peyritsch (Stein.) (sub-aurea × 86) |
| 34 Fortunei (Vatke) | 94 × discolor (Leybold) (super-aurea × 80) |
| 35 Parryi (A. Gr.) | 95 × Portei (Huter.) (sub-aurea × 80) |
| 36 altaica (Lehm.) | 96 Balbis (Lehmann) |
| 37 daurica (Sprgl.) | 97 × Obristi (Stein.) (super-Balbis × 99) |
| 38 missassinica (Michx.) | 98 × similis (Stein.) (sub-Balbis × 99) |
| 39 sibirica (Jacq.) | 99 Auricula (L.) |
| 40 borealis (D. C.) | 100 Palnuri (Pesagu.) |
| 41 longiscapa (Ldb.) | 101 marg nata (Cust.) = cre-nata (Lehm.) |
| 42 magellanica (Lehm.) | 102 × venusta (Rost) (90 × 103) |
| 43 lepidota (D. C.) | 103 caruolosa (Jacq.) |
| 44 lepidota (Janka) | |
| 45 farinosa (L.) | |
| 46 Warei (Stein) | |
| 47 scottica (Hooker) | |
| 48 longiflora (All.) | |
| 49 auriculata (Lam.) | |
| 50 pycnorhiza (Ld. r.) | |
| 51 luteola (Rupr.) | |
| 52 Stuarti (Wall.) | |
| 53 purpurea (Royle) | |
| 54 nivalis (Pall.) = speciosa (Gmel.) | |
| 55 alga (Adams) | |
| 56 calycin (Dub.) | |
| 57 spectabilis (Tratt.) | |
| 58 Clusiana (Tsch.) | |
| 59 Wulfeniana (Schott.) | |

—O. FORSTER, *Lehenhof*.

DAVALLIA TENUIFOLIA VEITCHIANA.

This new species, an illustration of which is given on p. 504, seems to be destitute of the hare's-foot-like rhizomes which *Adiantums* generally possess, its fronds being produced in great abundance from a dense tufted crown formed by invisible and

essentially underground rhizomes. It belongs to that section widely scattered all over India which has for its type *D. tenuifolia*, of which this new comer is probably only a form, though a most beautiful and distinct one, and easily distinguished from it by its elegant and pendulous fronds. The latter are from 30 inches to 40 inches long, very finely cut, and arch gracefully on all sides. The leafy portion is broadly lanceolate in outline, and furnished with lace-like foliage of a pale green colour, forming a striking contrast with the warm red tinge of the round, flexible stalks on which it is borne. The numerous pinnae, too, are much longer and more slender than those of any other known kind. Its light drooping habit makes it one of the best of stove basket Ferns introduced for many years. It comes from the Straits Settlements, whence it was sent to Messrs. Veitch by the late Dr. J. T. Veitch.

S.

SOCIETIES.

CRYSTAL PALACE SUMMER SHOW.

MAY 22 AND 23.

A MORE excellent summer show has seldom been seen at the Crystal Palace than that held on Friday and Saturday last. It was not only extensive, but much more representative than usual, and the fine quality of the exhibits throughout the entire show was conspicuous. A grand display was expected on account of the liberal prizes offered, amounting to no less than £400. There was, therefore, sufficient inducement for the best exhibitors to compete from all parts of the country, and the result was eminently satisfactory.

The schedule on this occasion was, as usual, most comprehensive, there being no fewer than forty-five classes. This number, however, seems too large; had there been fewer classes, and the prizes offered for such valuable plants as Orchids been higher, the show of these plants—always a great attraction—would have been both larger and finer even than it was. The extent of the show may be judged by the fact that of the forty-five classes, only one—that for *Sarracenias*—was not represented; and amongst the more popular groups there was keen competition. The exhibits were arranged in the nave as well as in the transept, and their effect on the whole was admirable. Mr. Head, the superintendent, had made a decided departure at this show from the ordinary course. Instead of having stages for large plants, he had them arranged in groups on the floor. They were thus seen to better advantage than when raised on benches, the disadvantage of the latter arrangement being that exhibitors were unable to hide the worst sides of their specimens, and as they are in the habit of training their plants to show the majority of the flowers one way, the defect was most conspicuous. That a most effective show can be made by not having stages at all is evident, and on this occasion it only required groups of fine-foliaged plants for a background to render the exhibition as picturesque as it could possibly be made. The Azaleas and fine-leaved plants were, unfortunately, grouped by themselves, the result being that one was all glare, the other too sombre. Had the fine-foliaged plants been arranged in combination with the Azaleas and the Ferns with the Pelargoniums, what a beautiful show would have been the result. It is gratifying to see a first step out of the beaten track taken, and it is to be hoped that ere long London flower shows will fail to be the same stereotyped affairs year after year that they have been.

STOVE AND GREENHOUSE PLANTS were finely represented in every class, some of the most noted growers being among the competitors. In both the open class and that for amateurs, Mr. Spode's gardener (Mr. Chapman), at Hawkesyard Park, Rugeley, showed by far the finest specimens, all marvellous examples of skilful culture. In his collection of nine plants in the open class he had huge plants of *Erica depressa*, *Dracophyllum*, *Aphelaxis grandiflora*, *Hedera tulipifera*,

Anthurium Scherzerianum, two very fine *Ixoras*, *I. Dixiana* and *I. coccinea*, *Tremandra ericæfolia* and *Chorozema Chandleri*, which last, with its Holly-like foliage and clusters of orange-red Pea-like flowers, seemed to win most admirers. In Mr. James' second group was a grand *Anthurium Andreanum*, one of the finest in the country, carrying over a dozen spathes, overtopping the large handsome leaves. When grown so finely as this specimen, this *Anthurium* is really a noble plant. *A. Scherzerianum* was also shown admirably in this collection, likewise the old *Azalea sinensis*, of which there was a huge plant profusely covered with deep orange-yellow trusses of bloom. Mr. Chapman also showed the finest six plants in the amateurs' class, one of the most noteworthy plants being *Ixora Williamsi*, undoubtedly one of the best of all the varieties, the trusses being large and unusually bright in colour. It is, moreover, a free grower and flowerer. In Mr. Rann's second collection was a beautiful specimen of *Tremandra ericæfolia*, remarkable for its not being so formally trained as other plants of the same kind in the show. The flower-laden branchlets hung loosely about in a beautiful way. A profusely flowered *Cytisus Everestianus* in the same group was like a golden balloon; and equally remarkable was a towering white *Azalea*, named *Princess Alice*, evidently a free bloomer, and one of the purest whites.

AZALEAS were a great feature in the show, and rarely have they been finer, even at the Palace, where they are shown better than elsewhere about London. Mr. Thornton's magnificent specimens, which are grown in the immediate neighbourhood, were there, and won the highest honours in both the open and amateurs' classes. His plants were all huge conical specimens, from 5 feet to 7 feet high, and literally covered with bloom. All the varieties were, however, old and inferior to the many new sorts, which have been improved so much as regards size, shape, and colour of flowers, such, for example, as Mr. Turner, of Slough, showed in his collection of eighteen plants, which for fine growth and profusion of flower could not possibly be surpassed. Though the plants were only in 6-inch pots, they averaged between 2 feet and 3 feet through, and, moreover, were not trained in that stiff, formal way which, as a rule, mars the beauty of exhibition Azaleas so much. Mr. Turner showed the following sorts: *Apollon*, probably the best white variety known; *Roi de Holland*, *grandis*, *Comtesse de Flandre*, *Duchesse de Nassau*, *Reine des Belges*, *Mad. Van Houtte*, *Irma*, *Jean Vervaene*, *Jules Verne*, *Marquis de Lorne*, *Le Flambeau*, *Souvenir de Prince Albert*, and *Mad. Lefebvre*. This list may be regarded as thoroughly representative of the various colours to be found in the Azaleas. If some of these were taken in hand by those who grow specimens for exhibition, they would eclipse the present specimen plants a long way, although some of the older sorts, such as *Criterion*, *Magnet*, and *Iveryana*, will probably always remain first-rate varieties. These three fine sorts were shown admirably by Mr. Thornton's gardener in his group of six specimens.

ORCHIDS.—Although several classes representing valuable prizes were set apart for Orchids, the display was not remarkable, and there was no really first-rate collection among the half-dozen shown. The most noteworthy were the single specimens, some two or three of these being uncommonly fine. The best in this class was a splendid plant of *Vanda snavis* (a good variety), from Mr. Crawshaw's garden at Rosefield, Sevenoaks. The plant, though only about a yard high, bore four very fine spikes, and the plant altogether indicated good culture. It was, in fact, the best specimen Orchid that has been seen at a London show for a long time, and the exhibitor deserved more than the sovereign which the first prize brought him for bringing such a fine plant all the way from Sevenoaks. Equally remarkable in its way was a specimen of *Dendrobium Falconeri* which was shown for the second prize by Mr. Southgate's gardener (Mr. Salter). This plant appeared to be growing on a stump of Tree Fern,

and was fairly smothered with flowers. Having regard to the fact that this *Dendrobe* is one of the most difficult to grow and flower well, this plant deserved the highest commendation. Judging by the other fine specimens of this Orchid which Mr. Salter showed, he evidently has found out the secret of growing it to perfection. The other specimen Orchids were not remarkable. The collections were not numerous, only three being shown in the open class, and four in that from amateurs. Mr. Little was awarded the first prize in the open class, but the judges appeared to overlook the fact that he had two plants of *Cattleya Mendeli* among his nine specimens, notwithstanding the conditions of the schedule. The two plants, however, differed somewhat in colour, one being a darker variety than the other, but quite as much variation could be found among the numbers of plants shown of *Odontoglossum crispum* by the same exhibitor in the same collection. If an exhibitor is allowed to show several plants as one specimen after representing several varieties, and also allowed to show duplicates in a class for distinct kinds, then we must expect to see no end of controversy among exhibitors. The Orchids in this first prize group were every-day kinds, but in the second collection from Mr. Southgate were the rare *Cœlogyne pandurata*, so singular in having pea-green flowers with jet-black lips—a strange mixture of colour. This plant attracted a deal of attention. There was also a fine specimen from the same exhibitor of *Dendrobium Falconeri* and *Masdevallia ignea*, one of the best that has been at an exhibition. The amateurs' class was altogether better represented. The best half-a-dozen plants were from Mr. Crawshaw's collection, and these were all worthy of an exhibition. The best plants were *Vanda snavis*, a rather small plant with three spikes—another example of good culture; *Cattleya Mossie*, with five spikes, carrying in the aggregate a dozen flowers; *Cypripedium Lawrenceanum*, with nine flowers; also good specimens of *Lælia purpurata alba*, *Odontoglossum vexillarium*. In the next collection from Mr. Southgate was another fine plant of *Dendrobium Falconeri* and a specimen of *Masdevallia Lindenii* quite 2 feet through. The third collection was remarkable for a splendid *Cattleya gigas*, a small plant bearing six massive flowers, and *Dendrobium crassinode Barberianum*, remarkable for its lateness.

CALADIUMS were one of the special features in the exhibition. They are usually shown well here, but on this occasion they were better than ever. The neighbouring nurserymen, Messrs. Laing, of Forest Hill, who have long made the *Caladium* one of their specialities, seemed to have spread a fashion for them about their neighbourhood. They certainly set a good example, for a finer group than they showed here could not be conceived. Each of the nine plants was not less than 4 feet through, and all represented the best sorts. These were *Souvenir de Madame Bernard*, *Sanchonianthon*, *Leopold Robert*, *candidum*, *Ludemannianum*, *Mithridate*, *cardinale*, *Mary Schieffer*, and *albo-luteum*. These are all first-class varieties, the pick, in fact, of the large collection grown by this firm, and most of them are new and generally superior to older kinds. Mr. Hatchette's gardener at Lee showed for the second prize a highly commendable group, all large and well grown plants, but the varieties were not so fine as those from Messrs. Laing, being older and not so highly coloured. These two groups were the admiration of everyone, and it will not surprise us if they are the means of giving an impetus to *Caladium* culture, which for some time past has not been brisk.

FINE-FOLIAGED PLANTS of the usual stamp, such as Palms, Cycads, Aroids, were not remarkable, though they were shown quite up to their average merit. There were two classes, one open, the other for amateurs. Mr. Rann, gardener at Handcross Park, was first, and Canon Bridge's gardener (Mr. Penfold), at Beddington, was second. There was more novelty among Mr. Penfold's plants, but the Handcross Park group was superior in size, all being ponderous plants, the

Crotons being particularly fine. The first prize nine plants from Mr. Rann were *Cycas circinalis* and *C. revoluta*, *Spathiphyllum pictum*, *Dieffenbachia illustris*, *Croton undulatum* and *abicans*, the latter very finely coloured and each about 6 feet through. Mr. Penfold had a very fine *Alocasia macrorrhiza variegata*, *Anthurium crystallinum*, *Pandanus Veitchii variegatus*, *Phormium tenax*, besides grand plants of such comparative novelties as *Asparagus plumosus* and *Carludovica Drudei*, the latter a Palm-like *Cyclanth* of noble yet graceful growth, the leaves somewhat resembling a fan-leaved Palm. It is one of the most valuable introductions which Mr. Bull has made among fine-foliaged plants. Mr. James showed in the same class some good specimens, especially of Crotons and Anthuriums. Crotons and Dracenas are always a special feature at these shows, classes being set apart for them both for open competition and for amateurs. Mr. Causton, a well-known amateur at Dulwich, usually takes high honours with these, and on this occasion his gardener, Mr. Bird, took the first prizes in the open class for nine Crotons and for six Crotons in the amateurs' class, besides he showed the finest six Dracenas from amateurs. His Crotons were all huge specimens and remarkably high coloured, the selection of sorts in the class for nine including such first-rate varieties as *C. Weismanni*, *Evanianum*, *Williamsi*, *Andreanum*, *undulatum*, *Queen Victoria*, and *Prince of Wales*. Messrs. Hooper likewise represented this class admirably; their plants, though well grown and coloured, were smaller than the first group. The Dracenas made a great show, and, judging by the number of exhibitors, it seems as if these plants are coming into fashion again. They are certainly very graceful plants, and the newer varieties have such richly-coloured foliage as to render them highly attractive. Messrs. Hooper showed from their Twickenham nursery the finest nine plants in the open class, the sorts representing a capital selection. They were *voluta*, *Gladstonei*, *Elizabethæ*, *Thomsoni*, *recurva*, *imperialis*, *amabilis*, *Fraseri*, and *anerleyensis*. The amateurs' groups of Dracenas were equally noteworthy for fine growth, and nearly all the collections contained some of the sorts in the foregoing list. We might take this opportunity to suggest to Dracena exhibitors that their practice of putting such an excessive polish on the leaves of their plants (some say with the aid of oil) is not commendable. It gives the plants an unnatural appearance, though the polish may show up the leaf tints. Croton foliage receives the same kind of attention, and it wears the same artificial gloss. There were classes provided for Pitcher plants and Sarracenas, but there was no competition, which is to be regretted, as these plants always excite the curiosity of visitors. One collection of small *Nepenthes* included a good dwarf specimen of *N. Hookeriana*, and Messrs. Laing's group contained a few fine specimens.

FERNS were shown well by amateurs, and Canon Bridges' garden contributed the finest group of six. These included such fine exhibition Ferns as *Davallia polyantha*, *D. Mooreana*, both about 5 feet through; *D. fijiensis*, *Adiantum farleyense*, and *Asplenium Nidus-avis*. In the open class Mr. Wakeham had in his first prize group some fine examples of *Microlepia hirta*, *Adiantum formosum* and *gracillimum*, and *Gymnogramma Lauchiana*; and in Mr. James' collection was an uncommonly fine *Lomaria gibba*, which showed the great beauty of this Tree Fern when grown to a large size. *Todea pellucida*, one of the finest of Filmy Ferns, was also shown in perfection by Mr. James.

ROSES, as at the Regent's Park show a day or two previous, were excellent. Mr. Turner had his same group of eighteen plants, which were here also greatly admired for their unusual vigour and high quality of their blooms. Messrs. Paul, of Cheshunt, showed the second group, while Mr. Ramsey, of Waltham Cross, had a capital group for the third prize. His plants, though smaller than those of the other competitors, were remarkable for the quantity of good blooms they carried. Mr. Perry, of Cheshunt, showed a creditable col-

lection in the class for amateurs, who, as a rule, do not seem to understand Rose culture in pots for exhibition, judging by the miserable display they usually make.

PELARGONIUMS were a bright feature in the show, although it was evident that the date was full early for some of the exhibitors; some of Mr. Little's plants, for instance, were not nearly so full of bloom as they would be in a week or so. As it was, there was quite a representative display, and as usual the best in the open class came from the Slough Nurseries. The nine specimens which Mr. Turner showed of the show and decorative class were perfection in every way, the plants being profusely covered with flowers. The selection consisted of the following sorts: Kingstons Beauty, Triomphe de St. Mande, Duchess of Bedford, Lady Isabel, Mrs. Ashby, Prince Leopold, Comtesse de Choiseul, Decorator, and M^{me}. Thibaut, all first-rate varieties not only for exhibition, but for ordinary greenhouse culture, being all of vigorous constitution and abundant flowerers. Mr. Clay's garden at Twickenham furnished the second group. The fancy section was shown by Mr. Turner only, and in this class he showed some grand plants, the sorts being Lady Carington, Ellen Beck, Mrs. Porter, The Shah, East Lynn, Fanny Gair, Princess Teck, and Roi des Fantaisies. Mr. Little was a long way ahead of all others in the amateurs' class, and he also showed the best six in the class for show varieties. In the open class for eighteen plants of show and decorative sorts in 6-in. pots, there was a close competition between Mr. Turner and Mr. Little, and the judges must have had some little difficulty in deciding between them. Both had the largest plants that perhaps it is possible to grow in 6-inch pots, but one or two in Mr. Little's group were scarcely forward enough, and he thus lost a few points. A very fine selection of sorts was shown by both.

CLEMATISES were, as usual, shown grandly by Messrs. Jackman, of Woking, and their group of twelve plants which were the same as exhibited on the Wednesday previous at the Regent's Park, occupied a conspicuous position in front of the stage backed by a bank of noble foliaged plants from the company's garden. Gloxinias and Calceolarias are usually shown better here than at other great London shows, and on this occasion they were as fine as have been seen, particularly Mr. Ford's specimen Calceolarias, which ranged about 2 feet through.

DINNER-TABLE PLANTS have here a special class devoted to them, and there was a capital competition, the leading two collections of eighteen plants in 6-inch pots being as fine as could be seen. 1. Messrs. Hooper were first, their plants being particularly well grown, and we never remember

seeing the small Crotons so highly coloured. The most noteworthy plants were Croton Evansianum undulatum, Dracena Sydneyi, a very elegant variety, Kentia Belmoreana, Geonoma gracilis. Mr. Hudson showed from Gunnersbury House the second collection, the most noteworthy plants being of some excellent specimens of Erica Cavendishi, the best we have seen; Croton Queen Victoria, Asparagus plumosus nanus, Cocos Weddelliana, Aralias, and Dracenas.

FLORAL DECORATIONS, such as bouquets, wreaths, button-hole bouquets, and vases, were numerous represented, and the judges must have had no small difficulty in awarding the prizes. As is usual, their decision did not seem

of the orchestra a large group of foliage and flowering plants; among the latter their fine tuberous Begonias were most conspicuous. These, with Azaleas, Orchids, Heaths, and other bright flowers, made a beautiful group worthy of the award. On the opposite side Mr. Hyatt's gardener made a good show with a similarly large group for the second prize. The collections of Orchids were a great attraction to the visitors, as they were arranged tastefully with Palms, Ferns, and other graceful plants, those from Mr. Southgate and Mr. James being the two best. Among the miscellaneous exhibits were large displays of cut blooms, one of the most remarkable being that from Messrs. W. Paul, of Waltham Cross, who had

a very fine collection of cut Roses, and Mr. Romsey also showed Roses well, both being the admiration of visitors who know how to appreciate Roses in the open. Messrs. Barr had a great display of cut hardy flowers, including late Narcissus, Scillas, Peonies, Irises, and other plants. Mr. Van der Rees had a collection of hardy plants, among them being the new Saxifraga Macnabiana, to which the judges awarded a first-class certificate. Messrs. Carter in a collection of hardy alpine plants showed a number of freely-flowered plants of Spiraea palmata, especially welcome at this season, besides plants of their new Mimuluses, the sort Princess Beatrice being conspicuous among them for the large size and rich colour of the flowers. Messrs. Hooper showed a pretty group of Tree Carrations; among them the varieties named C. A. Hooper, Zouave, Chevalier, and Jean Sisley we thought the most beautiful.

FIRST-CLASS CERTIFICATES were awarded to Messrs. Laing & Co., Forest Hill, for Begonias Formosa, Lady Hulse, Sir Peter Lumsden, Nepenthes Mastersiana, and N. Mastersiana rubra; to Mr. J. Ford, for Calce-

laria Golden Plush; to Mr. Van der Rees, for Saxifraga Macnabiana, and to Mr. Perkins for Pelargonium Volonte National alba.

A full list of awards will be found in our advertising columns.

ROYAL HORTICULTURAL OF IRELAND. MAY 21.

THE display on this occasion was more extensive than usual, and there were many special attractions. Three tents were erected in the grounds of Rutland Square, while the Round Room, in which were numerous exhibits—notably the cut Roses—afforded grateful shelter from the intermittent rain which unfortunately fell during the greater part of the day. There was a fine show of stove and greenhouse plants. The Society's cup for twelve exotics went to Mr. Jameson, who had a grand collection, as had also Mr. Pim. A



Davallia tennifolia Veitchiana. (See p. 502.)

to be ratified by lady visitors, and for our part we think that in some cases, particularly in the class for three vases, the choice of the judges was questionable. They selected for the first prize a set of the usual trumpet-above-trumpet style of vase, filled with about fifty kinds of flowers, while they passed over some simply arranged, and in which the harmony of colour was very pleasing, instead of being a crude mixture of all tints. A gardener may be well qualified to judge of good culture and to otherwise judge plants, but it is not so certain that he is the best person to decide upon what in all these floral decorations are simply matters of taste. The judges gave prizes at this show for devices which a tasteful Covent Garden bouquetist would ridicule.

GROUPS OF PLANTS contributed a great deal to the attractiveness of the show. The chief prize for a group of plants arranged for effect was taken by Messrs. Laing, who displayed at the foot

remarkable *Anthurium Regina* was among the half-dozen plants for which Mr. G. L. Watson was awarded a first prize. An interesting feature was the hardy plants, which it is pleasing to see are beginning to be more generally exhibited. The Rev. F. Tymons—an exhibitor who, by the way, had quite a round of successes at this show—was the first prize winner in the class for twelve hardy plants. Amongst them the double-flowered *Ranunculus speciosus*, *Primula rosea superba*, and *Phlox canadensis* were conspicuous. In the nurserymen's class Messrs. Henderson, of Templeogue, were the winners of the first prize. Pot Roses filled the greater part of one of the tents, and they formed a most attractive feature of the show. The Society's cup fell to the Rev. F. Tymons for probably the best group that that successful grower ever exhibited. Mr. Tymons was again to the fore in the class for twenty-four cut Roses, amongst which we noticed Sultan of Zanzibar, a deep crimson verging almost into black. The display of florists' Tulips was large. Mr. Tymons was the first prize winner in the classes for twenty-four and twelve, and also in the class for "breeders." Mr. Laurence McCormack took second prizes in all these classes. There was also an admirable display of show and fancy Pansies. A miscellaneous group of interesting plants was shown from the Botanic Gardens, Glasnevin, and altogether the show was an excellent one.

ROYAL HORTICULTURAL.

MAY 26.

A COMPETITION in Roses, Orchids, Azaleas, and other flowers, in addition to the usual fortnightly committee meeting, made altogether a highly attractive exhibition on Tuesday last, the conservatory at South Kensington being filled with the exhibits. New plants were rather plentiful and numerous certificates were awarded, as follows:—

ODONTOGLOSSUM CRISPUM ROSEUM PUNCTATISSIMUM.—An extremely beautiful and distinct variety, remarkable for the profusion of blotches and dots on the sepals, which, moreover, are delicately suffused with rose-purple. The flowers are large and the broad sepals overlap each other, so as to make a well shaped bloom. Shown by Mr. H. M. Pollett, Fernside, Bickley.

CATLEYA SCHOFIELDIANA.—A distinct-looking species, but not very attractive. It belongs to that section which has tall terete pseudo-bulbs. The flowers, which measure about 4 inches across, are olive-green, the sepals being copiously and heavily blotched with brown. The broad lip is amethyst edged with white. Exhibited by Mr. Ingram, Elstead House, Godalming.

CARNATION PRIDE OF PENSHURST.—A new border variety having moderate sized flowers of a clear rich yellow. It is a strong grower and most floriferous, and is unquestionably one of the best yellow sorts in cultivation. Some fine plants of it were shown by Messrs. Veitch.

HELIOTROPE ROI DES NOIRS.—The deepest coloured variety we have seen, its dense clusters of flowers being of a deep, almost black-purple. Several plants of it exhibited by Messrs. Veitch showed it to be a compact grower and a very free-flowerer.

AERIDES WILSONIANUM.—A most distinct variety, quite new, and shown for the first time. In growth it resembles *A. virens*, and the flowers are produced in similar pendulous spurs. They are pure ivory-white with yellow spikes, and possess a delicious fragrance. Exhibited by Messrs. Sander & Co., St. Albans.

ODONTOGLOSSUM CRISPUM ROSEUM LILACINUM.—A pretty tinted variety, the whole flower being suffused with a deep lilac-rose. The blossoms are large with overlapping sepals, and, being blotched with cinnamon-red in addition to the lilac tint, are extremely handsome. Exhibited by Mr. H. M. Pollett.

DODECATHEON SPLENDIDUM.—The finest of all the North American Cowslips. It is not, however, so large in growth as the common *D. Meadia*, the whole plant being only about a foot high.

The flowers, which are borne in umbels, are deep carmine-crimson and highly attractive. It is a first-rate border flower, very hardy and of easy culture. Shown by Mr. T. S. Ware, Hale Farm Nurseries, Tottenham.

HYDRANGEA MANDSCHURICA.—Like the common *H. Hortensis*, but with immense heads of flowers of a rose-pink colour suffused with purple, and borne on stems some 2 feet high. A fine addition to the greenhouse. Messrs. Veitch.

LOBELIA SUPERBA.—A bedding variety, remarkable more for its very fine deep blue colour than for dwarf, compact growth. The colour is probably unsurpassed among the multitude of *Lobelias* now grown. Shown by Mr. Weedon, Prospect Nursery, Ealing.

LILAC MARIE LE GRANGE.—A white variety, having massive trusses of flowers about twice the ordinary size. It is a first-rate addition to the already long list of *Lilacs* now in cultivation. Messrs. Veitch.

POLEMONIUM RICHARDSONI.—An old and tolerably well-known hardy perennial from Western North America, and one that should have been certificated long ago. Well grown, it forms a dense tuft of about 18 inches high so profuse with flower as to almost hide the foliage. The colour is a pale lavender and very beautiful, particularly in the open border. Shown by Mr. Ware.

ALLIUM KORATAVIENSE.—A curious plant, having broad glaucous foliage and dense globular heads of greenish flowers, borne on stems a foot or so high. Not worth a first-class certificate, and decidedly a second-rate plant. Messrs. Veitch.

CARNATIONS (TREE) T. W. GIRDLESTONE, COL. COX, AND GOLIATH.—Three first-rate and beautiful varieties. The first is a yellow ground with the petals heavily edged with scarlet; the second is a glowing scarlet self; the third, salmon-pink streaked and splashed with scarlet. All have very large, full flowers, and the growth of each is free and floriferous. Shown by the raiser, Mr. Turner, Royal Nurseries, Slough.

SCHIZOPHRAGMA HYDRANGEOIDES.—A singular Japanese shrub, best described as a climbing *Hydrangea*, which the foliage and general appearance of the plant resemble. The flowers are not showy, but curious. They are of two kinds, sterile and fertile, and are produced in broad flat cymes. The sterile flowers have large petals, while the others are inconspicuous. Exhibited by Messrs. Veitch.

CLEMATIS SIR JOSEPH HOOKER.—A double-flowered variety, having large globose rosette-like blooms of a deep purple, borne profusely on small plants. Shown by the raiser, Mr. C. Noble, Sunningdale.

GLOXINIA FLAMBEAU.—A very finely-coloured variety, though the flowers are not so large and so perfect in form as those of some other varieties which Messrs. Veitch showed along with it on this occasion. The colour of *Flambeau* is a vivid scarlet suffused with carmine.

OLEARIA GUNNI.—A New Zealand composite shrub, which bears a profusion of white Daisy-like flowers on densely-twigged branches. The fact that it is nearly if not quite hardy in this country renders it a most desirable plant. Messrs. Veitch.

SAXIFRAGA MACNABIANA.—One of the encrusted-leaved section allied to *S. longifolia*. It produces a dense panicle about 9 inches high, consisting of small white flowers copiously spotted with purple. It is unquestionably the prettiest of the race to which it belongs, and one admired by all who see it. Shown by Mr. Van der Rees, Exotic Nursery, Tooting.

PHYLLANTHUS CHANTRIERI is an elegant shrubby plant having long pinnate leaves bearing, as is usual with *Phyllanthuses*, tiny flowers on the midrib. The plant, which was exhibited by Messrs. Veitch, though small, was large enough to show that it will grow into a useful decorative plant.

Among other noteworthy plants submitted to the committee were the following, viz.: *Yucca filamentosa variegata*, with a tall flower-spike

bearing numerous large white flowers; this was shown by Mr. James, Castle Nursery, Lower Norwood. Mr. D. S. Williams showed *Odontoglossum prionopetalum*, one of the brown-spotted hybrid forms of *O. crispum* more serrated at the edges than usual; *Lælia purpurata Williamsi*, a very fine variety remarkable for its large flowers with lips of a deep blackish purple tipped with lilac; *Azalea Miss Buist*, a small-flowered white variety; and *Pteris serrulata fastigiata*, a handsome crested variety. Messrs. Sander & Co., of St. Albans, sent an extremely fine variety of *Cattleya Mossii* named *Sanderiana*. Its flowers are of the largest size with broad deep lilac sepals, and a broad and long lip splendidly coloured with amethyst-crimson with a golden tint in the throat—one of the most distinct forms of this *Cattleya* yet introduced. *Aerides Ballantinei*, a new variety, was also exhibited by Messrs. Sander. The flowers are in the way of *A. virens*, and have white-magenta-tipped sepals and lips, and strongly scented. Mr. Crawshaw, Rosefield, Sevenoaks, sent a pretty variety of *C. Mossii* named *rosefeldensis*. The flowers are small, but distinct in colour, the sepals being wholly of a deep lilac and the lip a deep amethyst. He also showed an uncommonly fine white *Odontoglossum crispum* in the way of that called *virginale*. A handsome form of *Pteris cretica* called *albo-lineata alcornoni* was shown by Mr. H. B. May, of Edmonton. It will prove a useful decorative fern. Herr Seidel, of Sriesen, near Dresden, sent two hybrid *Rhododendrons* named *Königin Carola* and *Justizrath Dr. Stein*. The first is a cross between *R. Falconeri* and *hybridum album*. The trusses are large and the flowers quite bell-shaped, wax-like, and bluish white, the other a clear pink. In addition to the plants certificated from Messrs. Veitch, there were *Piper ornatum*, a prettily mottled-leaved climbing plant, reminding one of a *Cissus*; *Pelargonium (zonal) Queen of Whites*, flowers pure white and of good shape; *Grevillea sulphurea*, a dull-looking shrub, but interesting on account of its being almost hardy; *Philadelphus microphyllus*, a neat little Mock Orange, with the leaves and white flowers sweetly scented like ripe Quinces; *Cytisus elongatus*, a hardy shrub, with whitish flowers in long wreaths; and the white-flowered *Wistaria sinensis*. Mr. R. Smith, East Wickham, sent a number of plants of *Pelargonium Madame Sewell*, a zonal variety with salmon-tinted flowers; and Mr. Smee, Wallington, sent a plant of *Cattleya Mossii Smeeana*, with large and handsomely coloured flowers. Messrs. Carter sent plants of their new *Mimuluses*, remarkable for the large size and good shape of their richly-coloured flowers, and the committee commended the strain. Mr. Turner showed a few new sorts of *Azalea indica*, among them being *Furstin Bariatinski*, white streaked with red; *Elise Lieber*, white, carmine striped; *Baron Rothschild*, semi-double, red-purple; and *Mémoire de Louis Van Houtte*. These all had very large and finely-shaped blooms, plentifully produced on the small plants shown. Mr. G. F. Wilson showed sprays of the double variety of the *Morello Cherry*, which were very pretty, the flowers being like small rosettes of pure white. A very fine form of *Cattleya Mendeli*, with flowers having a finely white-frilled lip, came from Mr. Ingram, as well as *Anguloa Ruckeri*, a small plant bearing seven flowers, and *Cattleya nobilior*, a beautiful new dwarf species in the way of *C. Walkeriana*.

THE COMPETITIVE SHOW was not large, but on the whole was composed of first-rate exhibits; Mr. Turner's eighteen pot Roses were the admiration of all. The sorts were much the same as that shown last week at Regent's Park and the Crystal Palace; all were superbly grown and flowered plants. In Messrs. Paul's second collection there were fine plants of some newer sorts, such as *Mdme. Cusin*, a lovely blush pink Tea variety, *Violette Bouyer*, *Isaac Perrière*, and others, which seem to bear forcing admirably. Mr. Rumsey's collection consisted of smaller plants, but well flowered. Among the three collections of Orchids there were scarcely any plants calling for special notice, except the fine

Vanda suavis with four spikes in Mr. Crawshaw's group, and which he showed at the Crystal Palace. It also included a plant of Cattleya Mossiae with a dozen flowers, and one of Odontoglossum vexillarium with eight spikes. It was interesting to observe that all of Mr. Crawshaw's plants were bona-fide single specimens. In Mr. Little's group was a specimen of Aerides Fieldingi with five spikes and a good Cattleya Mendeli; and Mr. James, who showed the only nurseryman's collection, had a fine plant of Brassica verrucosa with fourteen spikes and a good Cattleya lobata with seventeen flowers on four spikes. Mr. Turner's Pelargoniums were marvellous, and attracted more attention than the rest of the show. His group of a dozen show and fancy sorts contained the following sorts: Kingston Beauty, fully 6 feet through; Prince Leopold, almost as large; Amethyst, Ritualist, and Claribel; and of fancy sorts, Lady Carington, Princess Teck, Fanny Gair, Thos. King, and East Lynn, all among the best varieties. These examples bore out the fact that the art of growing specimen Pelargoniums, of which the older school of gardeners speak so much, is not yet lost among us. The groups of smaller plants of the show and decorative varieties from Mr. Turner and Mr. Little were scarcely less remarkable than the monster specimens. Among them we singled out the following sorts as being among the most beautiful: Mad. Albert Decaris, Gold Mine, Norma, Rosetta, Statesman, Grand Lilas, Joe, Mad. Thibaut, Mrs. Ashby, Mad. Keteleer, Mad. Marie Koch, George Shepherd, Thebais, and Vivandière. The Tree Carnations from Mr. Turner won many admirers. They formed a large group and represented some scores of varieties and a good many new ones among them. Besides those certificated, the following we thought first-rate: Andalusia, Ernestine, Firefly, Conqueror, Burgundy, Lord Derby, Miss Jolliffe, Ruby, Vulcan, Warrior, Whipper-in, Fire King, and Huntsman, descriptions of which are catalogued. Of Calceolarias, a remarkably fine display was made by Mr. J. James, of Farnham Royal, and Messrs. Jas. Carter & Co., of High Holborn, both showing 50 plants in competition. Mr. James well maintained in his group the high reputation for these beautiful flowers he has so long enjoyed, his self-coloured crimsons, vermilion reds, chestnuts, &c., giving life and brilliancy to an unwonted degree. His back row plants were large and grand masses of bloom, whilst the rest were in smaller pots, but perfect specimens of culture, dwarf, full of fine, clean foliage, and carrying wondrous clusters of splendid flowers, many 2 inches and 2½ inches across. Messrs. Carter's plants were all even in size, finely grown and superbly bloomed, showing the spotted forms largely, also all of excellent habit. The strain is indeed a fine one, and was only excelled by Mr. James' rich self hues. In the class for 12 plants, the best came from South Croydon, were very well grown and bloomed, but the flowers lacked stoutness and quality.

PANSIES.—A class for sixty blooms of these favourite hardy flowers brought four collections, the best, as awarded, coming from Bath, though the finest form and quality was seen in the flowers brought all the way from Hawick, N.B., by Mr. Forbes. All the blooms shown were of the huge blotched fancy or Belgian section, and were exceedingly showy and beautiful, though lacking the superb finish we have seen sometimes in the flowers from Edinburgh and Dundee. Specially good were John Murray, Silverwing, Miss Berry, Donald Sinclair, Mr. Duncan, G. O. Trevelyan, and Lord Beaconsfield. The first and third lots came from Messrs. H. J. and A. Hooper, of Bath.

CLEMATISES were shown admirably by Messrs. Jackman, of Woking, who took the first prize; and Mr. Noble showed a group of double and single sorts, several of them being new, the best being W. E. Gladstone and Lord Beaconsfield, both purple; Lady Constance Kennedy, white, semi-double; Pirate King, and Countess Gleichen.

The miscellaneous class contributed a good deal to the show. Mr. W. Paul had a fine group of pot Roses, which was awarded a silver-gilt medal.

Mr. B. S. Williams took a silver medal for an extensive miscellaneous group of Orchids and Amaryllises, fine foliated plants in numerous varieties; and Mr. Rumsey, who had fine boxes of cut Roses as well as pot specimens, took a bronze medal. Mr. Ware had a large group of hardy flowers in pots as well as cut, which formed the centre of attraction to the majority of the visitors, as did also the stands of cut hardy flowers from Messrs. Paul, of Cheshunt, who took the first prize for six dozen kinds, including a host of interesting kinds not often seen.

Fruits and vegetables.—Several Melons were shown. A first-class certificate was awarded to Mr. Howe, The Gardens, Benham Park, Newbury, for Melon Benham Beauty, a handsome medium-sized and neatly netted scarlet flesh kind of rich flavour. This was the best of a basket of four seedlings, the others consisting of one other scarlet flesh and two white flesh. Messrs. Sutton and Sons, of Reading, offered special prizes for a brace of Melons, kinds sent out by them, Mr. C. Herrin, of Chalfont Park Gardens, again following up his success of last year by taking the first place with Hero of Lockinge, a handsome kind, well grown and ripened. Other kinds shown were Masterpiece and Invincible by Mr. Howe, and Best of All by Mr. Waite, of Esher.

CUCUMBERS.—The same firm also offered prizes for the best brace of Cucumbers, to include certain named kinds. The prizes were all awarded to Purley Park Hero, but the two first lots were so much like Telegraph and Tender and True, that nothing distinctive could be found. The third prize lot came from Mr. Waite, of Esher, and seemed to be the real Simon Pure, being very handsome, even, smooth, and really perfect, whilst the other showed sutured outlines. Mr. Waite no doubt suffered because his fruits were a little passé, but they were the truest and handomest.

OTHER FRUITS, not for competition, included a basket of superb Sir Charles Napier Strawberries and six plants in fine fruit of the same kind, sent by Mr. Thompson, gardener to Messrs. W. and E. Wells, Hounslow. Mr. Hudson, Gunnersbury House Gardens, had bunches of Lady Downes Grapes of last year admirably preserved and still carrying good bloom, and, to show continuity, a bunch of Black Hamburg Grapes, well coloured, of the present year. Mr. W. Fyfe, Thames Ditton, had some capital new bunches of Foster's Seedling and Black Hamburg Grapes, also showing excellent culture. From Mr. Julius Corderoy, Blewbury, Didcot, came dishes of the Winter Pearmain Apple, rather small but handsome and richly coloured, and also some fair French Crabs. Mr. Lyon, Sundridge Park Gardens, staged a dish of fine Brown Turkey Figs that were exceedingly tempting. Mr. Howe had what was incorrectly termed a "hybrid" Cucumber, but was really only a cross product of two other kinds, and resembled Telegraph.

Scientific committee.—Among the subjects discussed were the following:—

Lilac.—Col. Clarke exhibited a spray from a Lilac which he had cut deeply back, according to a practice adopted in Paris, so that the autumn shoot produced flowering wood for the next season. Dr. Lindley had thought that it could not be done in this climate. The bunch of flowers was not so large, but apparently of finer colour than ordinarily.

Saponaria ocymoides.—Mr. Loder exhibited specimens of varieties of this plant, which appeared to surpass in richness of colour the form known as splendens; he proposed to call it atrococcinea or atro-rubens; another variety he named grandiflora.

Lilium longiflorum, bulbiferous.—Mr. Wilson exhibited a stem which had borne aerial bulbs instead of flowers, and of which the bulbs had grown into shoots a foot or more in length while still upon the parent plant.

Hellebores, hybrids.—Rev. G. Henslow exhibited branches from the same plant of H. albidovirescens, described at the last meeting, and received from Mr. Ellacombe. One bore bright

green foliage and pure white flowers, the serratures of the leaves being rather coarse. The other had purple flowers and foliage of a purplish green, the serratures being finer than in the other. The specimens indicated a separation of the parental elements on distinct branches of the same plant, somewhat similar to the well-known case of Cytisus Adami.

Insectivorous plants in the open.—Fine specimens of Darlingtonia, Dionaea, Sarracenia purpurea, and other species, as well as species of Drosera, were received from Miss Owen, Knockmullen, Gorey, Ireland, all of which were grown out of doors in small bog beds; the first three for one year, but the other for several years.

OBITUARY.

MR. JAMES DREWITT, formerly of The Denbies, died at Kingston-on-Thames on the 14th inst., at the age of eighty-five. For twenty-five years he was in charge of the gardens at The Denbies, near Dorking, retiring from them about eleven years ago. Mr. Drewitt was a good gardener, and a hearty fine type of man. He was the best grower of Grizzly Frontignan Grapes ever known at the great London flower shows, and in all ways managed well a very charming place, and bore himself as a gentleman. Some may remember the three wonderful bunches of the above-named Grape which he showed at St. James's Hall many years ago. None more perfect have ever been exhibited since.

Mr. W. J. EPPS died at Ringwood on the 18th inst., aged 68. He was well known to the old school of gardeners as an excellent Heath grower and a successful raiser of seedlings, not only of Heaths, but also of Fuchsias, one of which bears his name. Latterly he had been engaged in supplying peat and other soils and sand to plant growers.

We have also to record the death of Mr. GEORGE BAKER, of Reigate, a successful Rose grower, and a pleasant and instructive writer on Roses. He was a vice-president of the National Rose Society, and a man much respected by all who knew him.

We learn that the Notts Botanical and Horticultural Society intend to erect a memorial to its late secretary, Mr. JAMES DON, seedsman, of Chapel Bar, Nottingham, who died on the 6th inst.

LATE NOTES.

Narcissus Bulbocodium (W. A.).—Merely an incidental monstrosity not worth description.

Carion in Vine borders (C. J.).—On no account bury carcasses of dead animals in Vine borders. The Vines at Raby Castle were at one time nearly ruined by such practice.

Hardy climbers.—The four hardy climbers most popular in the United States are Ampelopsis quinquefolia, Menispermum canadense, Periploca graeca, and Celastrus scandens, all perfectly hardy.

Diseased Gardenias (p. 471).—A bad and not uncommon disease of Gardenias is caused by the presence of a microscopic worm, named Tylenchus, in the roots and stems. The disease is of the same character as one of the destructive diseases of Cucumbers.—W. G. S.

5347—**Figs.**—According to my experience the fruit which is now the size of a Pea will ripen, and the large fruit which has been on the branches all winter is worthless, and should be picked off. Our trees (black and white Mars-illes) produce good crops every season, but the Figs, which at this time of year look so imposing, never come to anything. In Italy, I am told, the two crops ripen yearly.—W. P., Kent.

Naming plants.—Four kinds of plants or flowers only can be named at one time, and this only when good specimens are sent.

Names of plants and shrubs.—W. H.—Ornithogalum nutans.—Penge—1, Saxifraga granulata fl. pl.; 2, Calceolaria violacea.—Mrs. C. R.—Anemone sylvestris.—A. W. Wils.—Apparently Catasatum atratum, but cannot be certain without fuller material.—G. P. G.—1, Geranium pratense; 2, Valeriana officinalis; 3, Vaccinium Myrtillus; 4, species of Potentilla.—A. K.—Both species of Scirpus; the dark lipped one appears to be S. Lingua.—Colins & Gabriel.—Both white forms of Scilla campanulata.—Mrs. P.—The pretty yellow flowered shrubby plant of good size, which flowers from April till nearly the end of summer in a pot under glass, is Candollea tetrandra.—S. D.—Double variety of Kerria japonica.—W. Payne.—1, Prunus Padus; 2, Selaginella Willdenowii; 3, Ornithogalum umbellatum.—Mrs. L.—Scilla campanulata.—G. Meakin.—Stanhopea oculata.—J. W. K.—Arthropodium cirrhatum.

WOODS & FORESTS.

PRUNING TIMBER TREES.

PRUNING, in its legitimate sense in the culture of forests, denotes only the removal of unsightly excrescences or superfluous parts of trees with the view of making the bole grow straighter, higher, and more regular. This, I know, is still a disputed subject, some strongly advocating its necessity and utility, whilst others deprecate it as useless and injurious. The truth probably lies between the two extremes, for much may no doubt be done in assisting Nature to rectify defects and to correct deformities and in adding to the general health, beauty, and vigour of the tree. On the other side, it is not less true that many trees are irreparably injured and whole plantations rendered useless by unskilful and indiscriminate pruning and wholesale mutilation.

Many authorities agree that pruning is beneficial and essential in promoting the profitable growth of most hardwood trees, but this may be rendered less necessary in certain situations by thick planting and judicious timely thinning. Pruning should commence when the trees are three or four years old, and should be continued if necessary during the after growth of the tree. No general rules can, however, be laid down on this point which shall equally apply to all circumstances and situations. There is no doubt that much of the success of pruning depends on the manner in which it is performed. Branches which are to be amputated should be cut off clean, smooth, and close, making the stroke upward, and with a sharp bill, in order that the bough may not splinter and carry away with it portions of the bark from the bole, which is both dangerous and unsightly. Although it is generally agreed that one leading shoot should be preserved, it is an erroneous practice to cut away all the side branches at once, and the removal of large boughs should be avoided as far as possible. Although hardwood trees generally derive benefit from pruning, coniferous trees do not admit of being pruned at all, unless under special circumstances, and then only with great care and judgment. The pruning of timber trees has had many warm advocates, especially in Scotland, and no one perhaps has explained the real or imaginary advantages of the system better than Mr. Cree. He says: "To manage woods in a proper manner, young trees should be examined well the third year after they are planted, and if more than one leading shoot is found to exist, the best should be selected, and the others shortened to one-half the length of the selected shoot.

"This practice of examining the trees should be continued every year till they are about 15 feet in height. These shortenings, however, must not be confined to superfluous leading shoots, but extend to any branch which is gaining a disproportionate ascendancy over other branches of the same year's growth. At first, and for some time previous to this stage of the growth of the plant, the shortenings should be more carefully performed than is necessary afterwards." The process of examining a tree is a simple one; it is done in a moment by the pruner casting his eye over the whole tree and detecting the branches which require to be shortened. As a general rule, where it is found that any branch has a greater growth upon it than the leading shoot, it should be shortened by cutting to about half the length of the leader. Writers differ much regarding the best way of cutting off the branches. By some it has been recommended to leave snags, that is, to allow a few inches to remain between the stem and the place where the branch is cut off. This is a bad system. Even granting that trees suffer much by bleeding when cut close to the stem, that bleeding will soon be prevented by the wound becoming healed. There are two evils attending the practice of leaving snags. In the Elm and many other trees of considerable size an effort is made by the tree to cover over the snag long before its growth is sufficient to reach the amputated part, and the consequence is that a large knot in the wood is

formed, thus defeating one of the principal objects which it is the business of the pruner to accomplish. But another evil consequent upon this practice, where no effort is made by the tree to cover it until the annual increase of the album circles shall have done so, is that the snag, in resinous trees in particular, is always liable to bleed until it is healed, or when the snag has lost its vitality it soon becomes liable to rot. From this latter circumstance arises the danger of finding large trees, apparently sound when cut down, rotten in the interior. This is frequently the case with snags even in middle-sized trees. When large branches, too, are amputated from old trees before the growth of the tree can cover the part it has become rotted, and by exposure to the atmosphere moisture is carried down the pith of the tree, which commences the work of decomposition, spreading to other parts of the wood. WILTS.

SALEABLE AND UNSALEABLE HOME-GROWN TIMBER.

I HAVE been led to consider this subject in consequence of the many suggestions and recommendations as to the introduction of new timber trees and the utilisation of those already introduced and acclimatised in the country. It must have occurred to many, as well as myself, that numbers which have been in the country for many years and are seemingly well established yet have never found their way into the timber merchant's list; indeed, he knows nothing of them, although recommended time after time by writers on our timber supply, and there the matter seems to end.

The list of trees that attain to good timber growth in this country are many, but the list of saleable ones are few, and in giving a list of them, I do not presume to say but that in some districts local circumstances may alter it slightly, but the following may be taken as those in general demand, namely, Oak, Ash, Elm, Beech, Sweet Chestnut, Alder, and Birch of deciduous hardwood trees. These comprise the list of the timber of commerce. All the rest are unsaleable, or in such fitful demand that they cannot be relied on. To make my meaning more plain, I will state a fact which occurred recently. A piece of land being required for building purposes, it became necessary to remove a Walnut tree. I went to a timber merchant and offered it to him, stating no price. "I can't buy it; there is no demand for Walnut." "Will you look at it, a moderate price will buy it?" "No, sir." I went to another with exactly the same result. Then as to the Fir tribe, the list just comprises Scotch Fir and Larch. It is true you can squeeze in a Pinaster or a Spruce amongst them, and throw a Silver Fir into the bargain. The Douglas Fir, there is little doubt, is of value as timber, but supposing you had a number of trees of it to dispose of, I doubt whether you could sell them.

This is not a very encouraging view for those speculating in such matters, but it is the correct one, and the only way to carry practically into effect the utilisation of such would be for an association of growers to bring prepared timber into the market, not only of recent introductions, but also of trees well known to growers as producing good timber still unknown to the trade, and for utilising those for which there is only a fitful demand. Unless something in this direction be done, years may elapse before they are appreciated, as, for example, how long the Larch was before it found its proper place as timber, even after the Duke of Athole had built a ship with it. J. S. R.

The proposed school of forestry.—One good omen as regards the success of this enquiry is that English, Scotch, and Irish members, both Liberal and Conservative, were in accord as to the importance of the subject; indeed, this is one of the few national questions that must ever be above party quibbles, although I do not look with alarm upon the absorption of our supply of timber, in the sense of having none to use, if preventive

measures are not adopted; yet from other reasons climate not the least, I believe it is high time that steps be taken to place the whole matter on a better footing. It is sincerely to be hoped that a good case will be made out, and that the necessity for the diffusion of a thorough and practical as well as theoretical knowledge of this important and interesting science will be established.—D. J. Y.

THE THEORY OF PRUNING TREES.

THE physiology of pruning forest trees requires looking into. The woodman in pruning cuts the branch clean off near the trunk, leaving the concentric rings which usually form round the base of a branch. As growth progresses, the bark gradually grows over the wound till it is quite covered, and it is then supposed to be healed. The time required for this depends on the size of the branches, but in good sized branches it takes years. Meanwhile, the exposed wound is very apt to collect moisture, and from that and other causes the tissue rots back into the trunk, leaving a hole which may in the end destroy the tree, and always injures it more or less. Paint will prevent decay, but unless it is applied frequently it wears off, the face of the wound cracks, water gets in, and decay follows. I have examined many tree wounds from artificial pruning, and found this to be the result in numerous instances. Nature prunes in another way and with different results. Decaying branches break off sooner or later some distance from the trunk. When this happens, Nature at once begins to work by closing in the bark at the base of the branch, which is finally forced off when the bark meets, if not before. In vigorous trees decay in such a case rarely extends farther than the base of the branch, because the projecting pieces afford protection from moisture until the wound is healed over, as is often very well shown in the buried knots of sawn-up trees.

I had a ramble through a broad belt of woodland the other day, which, I am assured, the "pruning hook" has never entered, and was impressed by the fact that it had never apparently been missed. The trees are rather crowded, having been planted for sheltering purposes, but, with the exception of those at the margin of the belt, are remarkably straight and clean—although they are all deciduous—showing that the shape of timber trees depends more upon thinning than pruning. The wind has little power to do injury to such a plantation, but many of the lower branches decay and fall off naturally before they get strong, and hence leave no mark on the trunk, because the knots soon heal over. If this were not the case, such a thing as a clean Pine or Fir tree would never be seen in plantations, for, as a rule, these are subjected to no other pruning than Nature affords, and which consists in the shedding of so many branches annually. Within the past few years there have been cut here large tracts of as fine Larch, perhaps, as could be seen, every tree bare of branches to near the top, from Nature's pruning. There was not an unsound trunk among them from decayed branches. The same thing happens with deciduous trees under similar conditions. If the trees are judiciously thinned, the lower branches decay and fall off before they grow large, and the marks of them disappear in a short time. YORKSHIREMAN.

Timely thinning of trees.—The importance of this subject cannot be too often impressed upon owners of estates, particularly where ornamental planting has been carried out in new places. It often occurs that a plantation is allowed to grow year after year unmolested until the whole becomes a thicket of growth, quite destroying the effect that the planter probably had in view. I remember some years since, while looking over a plantation several acres in extent, planted about thirty years ago and belonging to a large estate, I was surprised to find the trees all very thick, although their appearance showed that they had been planted originally in a systematic manner, and therefore made inquiry, in order to ascertain if the contractor had left any

written specification regarding their future management. After some trouble the specification was found, when it was evident that it had not been consulted since the period of planting. In consequence of this neglect the trees had got into a mass of confusion. Those planted as avenue trees, to stand at stated distances apart, were crowded up with Poplars and other nurse trees originally intended to be removed. As the trees in the avenue lines had in a great measure been injured by proximity to the nurses and other ornamental hard-wooded trees, the regularity originally intended to be maintained could not be preserved.—OLD FORESTER.

FORMING TIMBER PLANTATIONS.

IN the formation of timber plantations it is important, in order to attain success, that the forester should have a thorough knowledge of the different classes of soil, so as to enable him to plant the different species of trees on such as are found to be most suitable for their requirements. In forming ornamental plantations, whether in groups of different kinds or in masses of one kind only, for landscape effect, no one would grudge a little extra expense in preparing and making the ground to suit the growth and requirements of the species and varieties of trees to be planted, in order to give contrast and variety to the landscape; but in planting trees for utility and profit the case is quite different, as everything in connection with making such a plantation should be carried out as economically as is consistent with efficiency. Under such circumstances, all we can afford to do as a preliminary step in preparing the ground for the trees is to fence and drain the ground where necessary, and in cases where the subsoil consists of hard inorganic matter to break up such with a pick at the places where the trees are to be planted in order to render it loose and friable for the roots of the young trees, and thus give them a favourable start. When the ground has been prepared in this way, the next important step is to make a proper selection of the kinds of trees found by experience and observation to thrive and flourish best on the different classes of soils and exposures, and by acquiring a proper knowledge of such and putting it into practice, rests the whole essence of successful tree culture at the time of the formation.

In order to elucidate this more fully, it may be well to give an illustration of a portion of ground in county Armagh and county Tyrone, in the Lough Neagh district of Ireland, as the geological features are eminently suited for our purpose. In the first place, then, a large tract of land at the south-west end of the lough consists of peat bog, interspersed here and there with islands of ordinary land. Some of these islands, as they are called, are of considerable extent, and a particular feature of their formation is, that, as a general rule, the north side consists of stiff clay, while, on the other hand, the south side consists for the most part of sandy gravel. Under the bog at the north side large Oak trees are found resting upon the clay, while the trees found under the bog at the south side generally consist of Irish Fir resting upon gravel. Here we have a lesson direct from Nature as to the trees that had formerly flourished upon these soils, namely, Oak upon clay and Fir upon gravel. Of course, at the time these giant trees flourished on the spot where they now lie prostrate, such a tree as the European Larch was unknown in these parts; but now that we know the value of that tree, it should be planted in masses on the loose, gravelly soil, where it cannot fail to thrive and give a quicker and better return than any other tree under the same conditions. The bog in the vicinity of these islands should be planted with Larch and Scotch Fir mixed, using a little soil or clay to be mixed with the bog at the places where the trees are planted. The bog in the interior where it would be too expensive an undertaking to draw soil should be thoroughly drained and the surface brought into shape by levelling and burning all heather and herbage, when the ground so prepared should then be sown with Birch and Scotch

Fir seed, as these trees will grow under such conditions, and prepare the bog in due course for a better class of trees, such as the Larch. By following up such a system of tree culture, the barren west of Ireland may be brought at small expense to yield something in the shape of income to the owners, and it is not that I am supposing such to be the case, for I have actually put in practice what I say, and have lived long enough to see the results, and can therefore speak with confidence. The fact is, that the material is all there as deposited by Nature ready for use—the bog and the soil for mixing it in abundance if we only had the energy and enterprise to use it.

J. B. WEBSTER.

HOW TO RECOGNISE GOOD WOOD.

ANENT the paragraph in THE GARDEN under this heading, it may be interesting to your readers to know that the microscope is of great value in testing the qualities of wood. It is stated that if the microscope condemns the sample, further delay in testing is not necessary. The larger the specimens to be tested the greater will be the gain the microscope will effect in avoiding the cost of further proof. Samples and micro-photographs of bridge timbers which have proved faulty, but which a preliminary examination with the microscope would have thrown out, have been exhibited in America. The timber from which these specimens were taken was a fragment from a railway bridge wrecked in 1879. The timber was so excessively poor, that on mounting a specimen on the plate of the microscope, its weak and porous nature was at once apparent. The annular rings appeared about three times as far apart as they would be in good wood of a similar kind. The medullary rays were few in number and short in length, whilst in good wood they are of considerable length and so numerous, that tangential sections present the appearance of a series of tubes seen endwise on a number of parallel chains. After once seeing and comparing samples of good and bad wood, it is easy to recognise the difference with a pocket magnifying glass. The trunks and limbs of exogenous trees, as it is well known, are built up of concentric rings or layers of woody fibre, which are held together by radial plates acting like tree-nails in a boat's side. The rings, representing successive years' growth, are composed of tubes, the interstices of which are filled with cellulose. The slower the growth of the tree, the thinner these yearly rings and the denser and harder the wood, other things being equal. Not only is the closeness of texture an indication of the hardness and strength of the timber, but the size, frequency, and distribution of the radial plates which bind the annular layers together may be taken as a very close illustration or sign of the character of the wood and its ability to resist strains, especially a breaking stress. The micro-photographs of good and bad timber show that in the strong kinds the concentric layers are close in texture and narrow in width and the radial plates numerous, wide, long, and stout, while in poor stuff the opposite characteristics prevail. The practical application consists in having such enlarged photographic sections longitudinal and transverse of standard pieces of timber bearing a certain known maximum or minimum strain, and rejecting any piece which the assisted eye detects to have fewer rings per inch of diameter, fewer fibres, or fewer radial plates per square inch of section, or to use such pieces with a greater factor of safety. The advantage of the method is that it allows all timber for important positions to be tested before being used.

D. J. YEO.

MAIDEN OAK WOOD.

THIS is the wood of trees that have never been polled, *i.e.*, straight-grained wood free from burr. This is the ordinary forest grown, and for every-day purposes the best class of wood. Under exceptional circumstances, this straight Oak will become brown in colour. This is mainly brought about by its becoming hollow at the heart from dead or broken branches, or the action of fungus

at the root. In other cases it will partially go brown, *i.e.*, spotted in the grain, and rank as a very chaste and beautiful wood. In many instances, these trees, becoming old, will throw out excrescences of sapwood or burrs on the trunk; these, in due time, being converted into heartwood, make beautifully figured wood; but as these burrs are detached and erratic, they are far below the value of the pollard Oak. This maiden Oak in a brown state is the ordinary Oak of the cabinet-maker; it answers admirably for all plain and solid work, departments of the trade for which pollard Oak, so highly figured and cross-grained, is unsuitable.

This maiden Oak being straight in the grain and uniform, when brown in colour, can be imitated by fumigation. Oak, to be operated on in this manner, is wrought into its finished state, and the furniture is placed in a fumigating stove or compartment where bicromate of potash or other allied chemicals are burnt. The action of these fumes gives a brown appearance to the Oak; the stain is clearer and more like that produced by Nature than can be obtained by any stain of a saturating character.

It need scarcely be said that the higher and richer class of Oak, known as the pollard variety, is rarely, if ever, treated or coloured in this artificial manner, from the simple fact that in point of quality it cannot be improved upon.

THINNING PLANTATIONS.

I DO not for a moment question the accuracy of "Y.'s" statement respecting the distance apart at which the trees he mentions were found to grow, as I have noticed similar instances myself. But to assume from this that an unlimited number of trees would grow over a large area under the same conditions is a fallacy.

What he says as to the shapes of the trees being influenced by the positions as to light and room to grow in, I cordially endorse, but it does not follow from these circumstances that trees may be made to grow as thick as blades of Grass in a meadow.

When numbers of trees appear to be equal in the race for pre-eminence and long straight timber of moderate size only is wanted, much harm cannot result from leaving them to grow on, but as a rule it will be found that allowing trees to remain so thick will only result in great numbers being dwarfed and spoilt and the others being deprived of their full nourishment, light, and room by the existence of the others. The instances quoted, therefore, can only be of comparatively rare occurrence, and cannot be relied on for general practice.

D. J. Y.

Leafing of the Oak.—For many springs I have noticed the varied tints in an Oak wood, and found on a closer inspection that one tree will be nearly in full leaf with the shoots 2 inches or 3 inches in length, whilst in another close beside it the buds will have hardly begun to swell. I am unable to account for it, and it has often puzzled me. Neither soil nor situation has anything to do with this great difference, and we must enquire whether it is due to different varieties, and if the Acorns from an early tree will produce earlier plants, and whether there is any difference in the timber or in the hardness of the plants. Perhaps some of your correspondents may be able to throw some light on the question.—J. S. R.

The Cork tree (p. 433).—England annually imports an enormous quantity of Cork, and, notwithstanding the introduction of many other kinds of stoppers, the quantity is likely to increase. The French Government has given special encouragement to planters of the Cork Oak in Algeria, but the tree will grow equally well in India, Australia, and the South Sea Islands. The planters in our possessions there might lay the foundation of a profitable industry by introducing some of these trees and starting their systematic cultivation. The tree, besides being valuable and easily cultivated, is of handsome growth, and would form a good addition to any landscape.—D. J. Y.

FOREST MACHINERY.

ARRANGEMENT OF SAWMILL.

THE accompanying sketch is intended to convey an idea of the general arrangement of a portable sawmill. It is obvious that many modifications may be necessary to suit special wants, but for the ordinary work of an estate the plan here given is the best we have seen. The engine marked A is of the type described in a previous paper (p. 251), the rack bench B being driven by a belt from flywheel on the near side of the engine. The large logs of timber are placed on the end of this bench nearest the engine, and gradually advanced towards the saw until they pass off in the shape of planks at the other end. Here they are in readiness to be sawn into smaller dimensions on the small bench C immediately adjoining. The saw of this bench, as will be seen in the sketch, is actuated by a belt from a large pulley on the saw spindle of the rack bench. The other small bench, also marked C, may also be used for reducing the stuff partly sawn on the rack bench, or for small timber brought in independently from the other side of the mill. For an engine of ten-horse power it would scarcely be possible to keep the whole of these saws working at one time. It is a fair test of strength to cut through

cattle must be entirely excluded, as they would otherwise destroy the young trees, but during this period a great improvement is going on in the character of the soil.

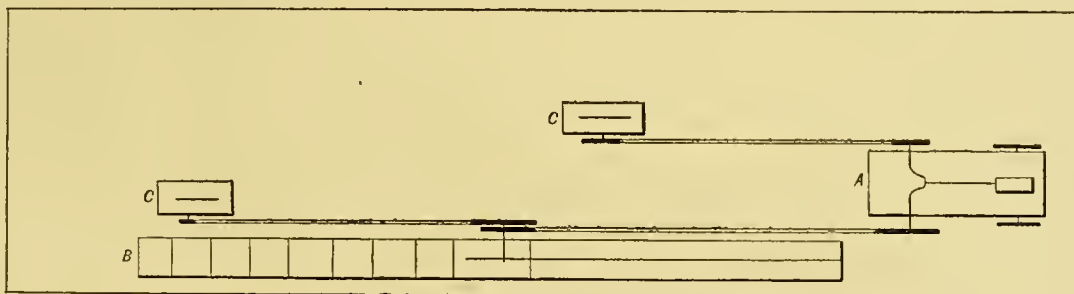
Suppose that our plantation has been established on a piece of heathy land. As the trees grow up, the Heath, which affords but little nourishment, is gradually eradicated, and its place supplied by a tender natural Grass that makes excellent food for cattle. The pasturage thus becomes much more valuable than before, and being so well sheltered, cattle can be turned within it much earlier in the spring and kept much later in the autumn than the cold will permit in the open fields. Planting may even be used as a means of improving uncultivated land. It may seem paradoxical, but it is nevertheless true that, instead of impoverishing the soil, a crop of timber enriches it. There is very little of our waste land that if trenched or ploughed would carry a crop of corn without manure, but after bearing timber the conditions are entirely different. Everyone who has seen old woodlands brought into cultivation must admit this. Indeed, this fact is as firmly established as anything need be, but as an instance the following may be quoted. A piece of rising ground of a dry gravelly nature, on being cleansed of a crop of Scottish Firs, was partially trenched

yond the scope of this paper to enter upon a discussion of all the reasons why this should be so, but one undoubtedly is that trees prevent the too rapid evaporation of moisture from the soil. Land surrounded by trees does not lose, but receives with every fall of rain or dew a tribute from the riches of the cultivated part of the country, as the matter evaporated from these treeless fields from time to time returns a quota to those, although equally ready to receive, do not so readily part with these essentials to vegetation.

J. N. BLUNT.

SUGGESTIONS FOR EXTENDING WOODLANDS.

THE desire to increase our cultivated land has led to the destruction of woodland to a great extent, and hedgerow, coppice, and wood were grubbed so as to turn our small fields into larger ones better adapted for the purposes of a scientific husbandry which was to compete successfully with the foreigner. That this has been carried too far is very evident, and it is therefore for our consideration, to what extent it would be wise to retrace our steps, while at the same time bearing in mind the old adage, "Not to put all your eggs in one basket," for many changes occur from time to time to affect the value of the produce of land,



Plan showing mode of arranging a sawmill and engine.

a tree $2\frac{1}{2}$ feet to 3 feet in diameter. When the large bench, therefore, is in use it will be well to remove the belts from the pulleys of the smaller benches; but when these small benches are working it will in practice be found that there is no detriment in allowing the large saw to revolve freely, which, with the arrangement of driving off its spindle, it would have to do. In the mill, of which this sketch is a modification, the whole of the machines are protected by a shed on eight posts about 60 feet in length, and roofed with corrugated iron. This kind of shed is found to answer admirably, as when the few timbers it requires are properly framed together and the iron fixed with bolts and nuts, the whole structure can be taken down and re-erected in a few hours.

INDIRECT ADVANTAGES OF TREE PLANTING.

ALTHOUGH most of the following remarks on what may be termed the indirect advantages of tree planting have already been given to the public, they contain hints that are worthy of the attention of would-be planters, and are very generally applicable. To many the only returns derivable from plantations of timber are considered to be the actual returns in cash from the sale of wood; this, however, is not the case. It is also a common objection to the cultivation of wood that it lessens the extent of our pastures; this again is a mistake.

There may be some weight in the argument if an indiscriminate planting of good pasture ground was necessary, but as this is not so, and practical planters only advocate the planting of such areas as are unsuited for the plough or for pasturage, nothing can be more erroneous than to assume that judicious tree planting will curtail the available acreage of our grass lands. For twenty or thirty years after a piece of land is planted

and sown with Oats without manure of any kind, with the result that the crop was so luxuriant, that a great part of it lodged; the same experiment was tried a second and a third season without manure, and the result in each instance was a crop considerably above the average. When planted with the Firs this land was covered with Heath and incapable of producing any corn crop. The reason of this becomes apparent when it is considered that trees draw their nourishment from a much greater depth than any of the Grasses, roots, or any crop raised by the agriculturist. The most of the matter necessary for the subsistence of these plants is drawn from the soil lying within a few inches of the surface, but the tree, from its strength and the size of its roots, penetrates much further and extracts food from the very rock that forms the substratum of our soils. This fact is important in itself, but another circumstance which gives soil under a wood crop a great advantage over that in tillage is that the leaves of the trees decay where they fall, and by this means an annual addition is made to the depth of the vegetable mould.

Another feature, and an important one on certain soils, is the use of timber in preventing undue evaporation. Land employed in agriculture is generally exposed at every season of the year to the full action of the atmosphere, but on wooded land comparatively little of this takes place. That evaporation has a very powerful tendency to exhaust land, by drawing off and dissipating the more volatile part of the matter which assists vegetation, is shown by the loss that is occasioned by allowing manure to lie for any length of time exposed to a dry atmosphere. I am aware it would be rank heresy to advocate amongst certain classes tree planting round fields, but in spite of this the unprejudiced mind cannot fail to observe the almost uniformly more productive state of soils when sheltered and protected by trees. It is be-

even in the matter of timber. For example, when iron had established itself to be the best material for the shipbuilder, the Oak ceased to be the "wooden walls" of England; then again some process is invented by which our leather is to be tanned by a chemical process, and Oak bark will not be required. The records of the last thirty years, however, show but little variation in the price of Oak, and the changes have been principally due to variations in the price of bark. Ash timber has varied but little in price for the same period; on the other hand, most of the other descriptions of timber have varied much, being sometimes almost unsaleable, whilst at other times there is a good demand. Of course, it must not be understood that a return to small enclosures is advocated, although I was a little surprised when an old farmer told me that one reason why there was a decrease in the produce of wheat in his late occupation was in consequence of the doing away with small fields, as the hedgerows afforded shelter, and the sun was more powerful and nursed the wheat plant more. Whether this is so or not, the deed is done, and need not be recalled, except as a warning not to proceed further in this direction, and such a warning seems even yet to be necessary, since only a few months ago it was advocated in an agricultural journal to throw the small fields into larger ones for the convenience of the improved system of husbandry. Now, scientific farming has had its course for over a quarter of a century, and has brought ruin to the farming interest.

On the other hand, let us not enter on a course of scientific forestry which may prove equally disastrous, but advocate such an extension of our woodlands as shall interfere as little as possible with the existing arrangements of the land, and at the least expense. All landowners, whether small or great, should have a particular survey made of their estates, taking note of every odd

nook and corner, however small, which is not wanted for agricultural purposes, and fence it off as "reserved for planting." In many cases the mere fencing will be all that is required, as trees will come naturally, especially if near other trees or plantations, but if not, it will furnish places where one can plant trees at any time, but keeping in view the kind of trees suitable to the soil. No other expense than fencing need be incurred. If the ground is wet, plants suitable for the bog should be planted, and so on. Nature has supplied trees for every sort of soil; therefore, follow her arrangements; they are the cheapest, and may be the best in the end. It is well to supplement this desultory planting with seeds of different sorts, such as Acorns, Ash-keys, Beech-mast, Chestnuts, Hazelnuts, &c. As a concession to improved husbandry, the fences may be made straight, not by grubbing them, but by adding to them, so as to increase them into belts, which may not require formal planting, but be left to Nature to reproduce. In many parts of England the hedges consist of different sorts of plants besides the Thorn, such as Oak, Ash, and Elm. In such cases the hedges should be trimmed on the sides only; this gives a chance for the young trees to grow, but if the tenant should object to this plan, an allowance could be made to him for each tiller left when the hedge was trimmed. I have practised trimming of the hedges in this way on a small property for ten years, and the result is that there is now a large quantity of trees coming on, especially Elm and Ash, measuring 4 inches to 6 inches in diameter, and which will soon require thinning. Yet a landowner has complained to me that his tenant was not trimming the hedges on his farm. I pointed out to him that this was no disadvantage to the owner, as it allowed the trees to come on, whereas if trimmed as usual there would be none. I was egotistical enough to suppose that this system of trimming hedges was a new discovery; and so it was, in so far that I had not seen it practised before I adopted it; but in coming along a public road the other day I found a man trimming hedges, when I remarked, "You are going to cut off the top presently?" "No, our master has it trimmed on the sides only." I asked him how long he had been working on this plan. The answer was, "Some five or six years." I took consolation in having practised it for double that time.

Such are some simple and inexpensive suggestions within the reach of all owners of land, and to the lover of trees should be a work of pleasure, apart from the ultimate benefit to be derived from the increased value of an estate where adopted. Many of the trees, not nursed, but merely let alone for ten years, would now be valued at one shilling per stick, and in a few more years will begin to increase in value after the rate of one shilling per tree per annum. J. S. R.

SOWING & TRANSPLANTING.

Now that considerable attention seems to be given to the merits and demerits of the respective methods of sowing the seed of trees where they are intended to remain and that of transplanting seedlings from the nursery, it would be interesting to know if the following plan of rearing Oaks on the spot on which they were to grow (advocated in Scotland some fifty years ago) was ever carried out to any extent, and if so, the result. This system entailed the previous planting of Firs as nurses, or the utilisation of a deep cover of Furze or Broom, the Acorns being sown in patches 2 feet square and trenched a foot deep, the distances being 10 feet from patch to patch as nearly as circumstances would admit. Before planting the Acorns a spadeful of slaked lime was to be dug into each patch, five Acorns being sown—one in the middle, and the remaining four at the sides as nearly as may be a foot apart. It was claimed that when the Acorns had been planted, they would give no trouble for two years, and at the end of that time it would be necessary to go over them and remove all except one tree in each patch, notice being taken that the nurses did not extend their branches to interfere with the young

Oaks. Whether this was a successful plan or not, I do not at present know, but it certainly looks a reasonable method of raising forest trees. "Yorkshireman," in your issue of May 23, rather ridicules the idea of using a Scotch Fir to nurse a British Oak.

It is not often that this practical contributor indulges in sentimentalism, but I think he has done so here, as it is indisputable that, notwithstanding the proverbial hardness of the British Oak, it is a tree that if expected to attain a good size, it must in the earlier stages of its growth be sheltered in some way. The paragraph on the "Peculiarities of the Oak" on the very same page on which "Yorkshireman's" remarks appear proves this. Another thing that is an open question between the advocates of these two methods of timber-growing is that of the tap root.

One class asserts (take, for example, the report of the Dean Forest experiments) that the tap root is of consequence only during the first year's growth of the tree, and, says this writer: "I will venture to assert that not a single instance can be adduced in which anything corresponding with the idea of a tap root now exists under any one tree of twenty years' growth in England."

This is very sweeping, but scarcely conclusive, as if the root does not descend in a perpendicular direction, it is there all the same.

The characteristics of the Oaks grown under the two systems may be summed up as follows, as I do not know a better definition: The transplanted Oaks will be bushy at top, and have their shoots and branches in a horizontal direction; the untransplanted ones will have strong upright leaders, which will grow perpendicularly until they arrive at the height of 20 feet or 30 feet. In conclusion, reverting to the Dean Forest measurements, I have only seen the girths of the trees given. Although the value even of what has been adduced by these experiments has been greatly lessened by the uncertainties of surrounding circumstances, it would be interesting to know the heights and, as nearly as possible, the cubic contents of each of these marked trees, as there is at present no evidence to prove that, although the seedling trees are smaller in circumference, they do not exceed the others in the matter of height.

J. N. BLUNT.

Forest law in Switzerland.—In some cantons in Switzerland there is a law forbidding the destruction of a tree without planting another to take its place. This is an outgrowth of necessity. It has been scientifically demonstrated that the increase in violent storms, inundations, and landslips, scattering death and destruction on all sides, is due to deforesting the mountains. Gradually the timber has disappeared, until little remains except on the high slopes of the mountains, and that little is of inferior size and quality. Unless the process is arrested, the mountains of Switzerland will present as bald an appearance as those Alps that divide France and Italy, and nothing more desolate and drear outside of the steppes of Asia or the deserts of Africa presents itself to the eye of the traveller.

The Turkey Oaks.—Your paper on and illustrations of these trees in THE GARDEN last week is very interesting and instructive, and from an ornamental point of view they deserve well of the planter, but from a commercial standpoint in the way of producing useful timber I would warn your readers against planting them. I remember an instance occurring a few years ago where a number of these trees had grown to a good size on a plantation; when they came to be felled the agent of the estate soon found they were useless for any of his purposes on the estate. He consequently asked the writer to try and find a market for them. He did so, but when sawn into planks they are only about the value of the commonest woods, and entirely unsuited for the purposes for which our English Oaks are used.—D. J. Y.

Drying timber.—Although steam-pipes are largely used in drying timber, hot-air circulation

is being introduced, and several improvements have been made in America in this mode of treatment. Professor Carvalho's method is described as follows: "A continuous volume of heated air is forced over the timber by means of a fan-blower, the temperature of which is gradually increased, until the boiling point of water is reached; then the water in the albumen or other substance is converted into steam. This degree of heat also coagulates the albumen, and the pores of the inner cells of the timber become filled up with the solid coagulum." The hot air is made to enter at the bottom of the room, which is airtight, and, after circulating round the timber and through the wood, is discharged through another pipe at the opposite end of the room. It is asserted that this method of drying does not discolour the wood, and is a preservative against dry rot.

NOTES ON RECENT NUMBERS.

Thinning plantations (p. 483).—One person will see no beauty in a "tall bare stem;" another sees none in a tree which is "all top." The one is considered with regard to its effect, the other with regard to its value as timber. Of course, neither would agree as to the requisite amount of thinning or pruning. For trees on lawns or in parks it is an easier matter to decide; they must have room enough to grow and show themselves; but for trees grown in woods for profit as timber the matter is different. In many cases I am sure that to get good straight stems without large knots, "holding their sides up well," such as the timber merchants love to contemplate, the closer they can be got to grow together when young, the better will be the results; and I could instance several woods of Oak and Larch which would quite corroborate what "Y." says. It is astonishing what fine stems some of these will produce with a very small amount of light and air. In the days when the shipbuilders used a great number of the elbows and crooked turns of the Oak branches, a better value was realised no doubt from trees grown in the open; but now, for marketable purposes, a straight, clean butt with a small girth cuts less to waste than a thicker one which is very likely crooked or has had big limbs attached. The advantage of growing trees close together is seen most clearly in the case of Spanish Chestnuts, which are not celebrated, as a rule, for "taking a direct line."

Bark stripping (p. 483) is an industry which threatened not long ago to be more loss than gain, so low was the price offered for tanning material. This year there are rumours of better value, but the storms of the past fortnight have done sad mischief. Our Sussex practice differs from that of your correspondent, "J. B. W.," in not tying up the bundles of Oak bark as soon as "flawed," but in standing it up, rough side outwards, against a long straight branch resting in a couple of forked sticks 2 feet or 3 feet above the ground, with other pieces laid along the top to form a capping. A free current of air is thus allowed to pass through, and there is no necessity after a deluge of rain "to examine the ranges to see that water is not lodging among the bark." A "load" of bark generally weighs about two tons and a quarter, and is now selling for about £13 a load, if in good condition.

Beech (p. 461) if straight and clean grown is not altogether such an unprofitable tree for timber as is generally supposed. Besides the uses mentioned, the extreme hardness of the wood adapts it for chopping blocks, trays, &c., as well as for that homely, but invaluable, article the kitchen table. For furniture it is not much used now-a-days, especially since wooden beds have gone out of fashion, but its excellence as firewood, both big and small, is known to most people. For general effect in our gardens and woods the Beech stands almost unrivalled among our native trees both in the fresh beauty of its young green and the matured splendour of reds and golds in the decay of autumn. C. R. S. D.

No. 707. SATURDAY, June 6, 1885. Vol. XXVII.

"This is an Art
Which does mend Nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

CARNATIONS BLOOMING IN WINTER.

FROM the various letters on the subject of border Carnations and their behaviour, it is evident, I think, that no plant varies more in its growth and general habit than the Carnation. One cultivator tells us that it is quite impossible for layers taken up in autumn and put into a cold frame to bloom before summer; another tells us that with him he has but to put them under cover and they will bloom long before summer—in each case without artificial heat. It may seem still more contradictory on my part, but I unhesitatingly say I agree with both, but with this limitation, that I understand they are simply speaking from their own, and not from general or extended experience. Speaking from my own observation, I can say that in some seasons it is quite easy to have Carnation blooms of fair quality during the whole winter and spring from a cold frame, and during the last two very favourable winters even from the open garden, but it is in a seaside garden, where conditions are very favourable to their well-doing.

In another garden, inland and in a warmer summer temperature, such autumn and winter blooming propensities have never yet been developed, so at first sight it seems somewhat perplexing. There must, however, be some reason for such differences, which undoubtedly do exist, and I am inclined to think that the secret of autumn and winter blooming layers is a cool and windy summer climate, by which growth is never checked or forced; and, of course, a dry and nearly frostless winter is necessary to allow the half-developed flowering stems to perfect their growth and flowers as soon as any rise in sun power is granted. Ten degrees of frost will prevent the further growth of flowering shoots when well advanced, but a few degrees with a dry atmosphere do but little damage, and it is surprising to see how soon the buds swell and colour when in February and March a burst of sunshine occurs. So far I have not been able positively to fix this perpetual habit of old border favourites, such as the common and fragrant Clove, but one or two plants, now large clumps of five years' growth have sent up a perfect succession of flowering stems both from shoots layered and from those left on the plant, and these, when potted and put in an unbeated house, have one by one flowered during the winter and spring. This has also occurred more abundantly in the useful salmon-pink Clove, so called, which has been grown at Raby and elsewhere in Yorkshire for many years.

Another variety called Beauty of Boston, raised years ago by a nurseryman there, is an equally continuous grower and flowerer with me, and has this last winter never been without a respectable bloom or two throughout the whole winter and spring till now, when the first blooms of seedlings from the Grenadin strain have already opened

their bright, but ragged, flowers at the foot of a south wall in a windy and exposed garden. Clarisse, a variety often mentioned in THE GARDEN, is perhaps most constant and floriferous of all, but its large and delicately coloured petals require shelter from rain to expand properly during winter weather. This much is to be observed, that I never get autumn blooming or growing layers from plants baked on a south border, and most constantly do so from a border where the exposure is west and fully exposed to strong winds during summer, so that they are never roasted and checked during hot weather; and I should never hope to gather late autumn, winter, or early spring blooms, save in gardens where every ray of winter light is caught, and where frost and damp are as moderate as can be expected in an English winter. Under glass of any sort, if thoroughly well ventilated and exposed, I can say from experience that it is most useful to pot up any layers that are making growth for flowers in autumn, and I would strongly advise all who can to make trial of their advantages and judge for themselves. In this way the cultivation of the Carnation will surely be extended.

E. H. WOODALL.

GARDENING UNDER DIFFICULTIES.

A REMARK made by the Rev. Wolley Dod, whose interesting notes I always read with so much pleasure and profit, has tempted me to take up my pen. In speaking of the *Doronicums* in your number of May 23, he says that all *Doronicums* invariably die out if left alone, and that their flowers are invariably spoilt in his climate by late frosts. My experience is otherwise. If there is one maxim more useful than another to the horticulturist, it is *experientia docet*. Sixty years is not looming in the distance, but staring me in the face; and I am beginning to agree with an old farmer friend of mine, who had passed threescore and ten—"To think," said he, "just when I am getting to it, I must leave it." So with me. I have begun to find out what I can do with my soil and climate, and many years seem to have passed in doing nothing but learn. Some fourteen years ago I bought a plant of *Doronicum caucasicum*, attracted by its cheerful spring bloom, but it did not succeed with me until about twelve years ago. I planted it in a sloping, bleak corner of my garden, fully exposed to the north-west wind (a wind which does me more harm than all the east winds), assuming that as it came from the Caucasus, it might like the icy blasts of that quarter. Since transplanting it has flourished like Groundsel, and this is saying a good deal with me. Every year we have to curb its luxuriance. It has withstood many a good frost successfully, two or three fine days bringing back its beauty. This spring it began to flower about a fortnight ago, and it is now one of the most conspicuous objects in my garden. The cold situation it occupies keeps it back until it is safe. So with *Gentiana acaulis*, now its next-door companion in the same exposed spot. The fact is, that soil and climate must be taken into account in every gardening operation. My soil is soft (not sharp) sand lying upon red sandstone rock, and my climate will not allow me to grow *Laurustinus*, or Portugal Laurel, and many other things generally considered hardy. I could not grow Roses, Carnations, or white Madonna Lilies a few years ago; at least, such was the conclusion I

had arrived at. I tried various experiments—first, marling, but this did not answer, sand and marl seeming to have no affinity for mixing purposes. Now I have learned that the addition to my soil of cow manure, a little marl, and leaf mould from a neighbouring wood, and my own carefully saved dead leaves have changed all that. I took up one round bed (about 3 feet in diameter) of white Lilies, when the bloom had gone and the stems were dying down, at the end of last summer, and had a large gardener's basket of bulbs, many of the size of big Potatoes, and no one has finer white Lilies than I now possess in all situations. So with Carnations. Roses, I found, cared little about leaf mould, but, thanks to cow manure and marl, I make a fair show, especially with that queen of Roses, *Gloire de Dijon*. One just now in bud on a south wall, three years old this spring, has at this moment more than 200 buds upon it, thanks to the above treatment and to mulching with dead leaves and cow manure just below the soil, so as to keep the roots moist. Baroness Rothschild and La France are my next best Roses. *Aucubas* will not flourish, nor the old smooth-leaved Laurel, nor the common *Syringa* (Mock Orange), but *Rhododendrons*, *Hollies* (especially *Hodgkin's Holly*), and the large-flowered later variety of *Syringa* do well. Snowdrops, Crocuses, and the white *Narcissus* (single and double) want replanting every year, but the great trumpet-flowered Daffodil, the double yellow Daffodil, and Horsefield's Daffodil multiply exceedingly, especially the last two. Red Raspberries shrivel and come to nothing, but white Raspberries give me a good crop. *Anemones* and *Ranunculus* will never flower, but *Alstroemerias* and Orange Lilies run riot all over the garden. Foxgloves and Wallflowers seed themselves so plentifully, that they are hoed up in the autumn like weeds. *Verbascum pyramidatum*, another plant of which I could not even buy any seed for a friend last year, seeds itself with me, and grows (strong enough to support itself) like a golden, many-armed candelabrum, 8 feet or 10 feet high, in my shrubberies, causing many enquiries from passers-by. Mr. Peter Barr told me that the seed was not asked for, and that, consequently, he discontinued keeping it. It is, however, a truly majestic plant. Some of the numerous neglected good things, *Sedum acre*, Musk, and a little white Saxifrage (now in profuse bloom), would cover the walks if not checked, so I have my compensations. I am this year trying British Queen Strawberry, having in vain tried nearly every sort known, and if a splendid show of buds is to be relied on, this variety will, if watered, succeed, as it does in a neighbour's garden. I tried in vain to grow *Pæonies* until I got the old double red (in my opinion the handsomest of all, except Tree *Pæonies*), and this both blooms and increases rapidly. These facts convince me that it is unsafe to lay down any general rules. Horace tells us that Nature will not be rooted out, even by a gardening fork, and that things will always revert to their original type; and I have found this to be the case in my own limited gardening experiences, the moral being to learn what your garden will grow naturally and what is repugnant in the soil, supplying the deficiency if you can, when you are lucky enough to discover what it is. Just one word as to our spring in this neighbourhood. It wants only four days to May 29, and as yet the Oaks would not hide a thrush, much less a king. I recollect only one spring as backward as this.

NORTH-WEST CHESHIRE.

EARLY LEAF TINTS.

So little has been written concerning the extreme beauty of foliage tints of early summer, that one would suppose that they are of less importance than those of autumn, which each recurring season never fail to win admirers. The landscape in early summer owes its beauty in a great measure to the varied tints of the newly unfolded foliage, and probably in no other garden in the world can such a wealth of beauty of this kind be found than in the Royal Gardens, Kew.

The American Oak groups are in themselves a study, and where the most beautiful of these are mingled with others, either in direct contrast or in harmonious blending, the effect is charming. The most conspicuous American Oaks just now are the Scarlet (*Quercus coccinea*) and the Swamp Oak (*Q. palustris*). Both have young foliage of a delicate yellow-green, almost golden, and both are most elegant in growth; the latter the better of the two, on account of its smaller and more divided leaves. These Oaks at the present moment quite eclipse the so-called golden-leaved trees, though, of course, they will gradually assume a greener hue hereafter. In some parts these two Oaks are associated with sombre-hued Pines, Copper Beeches, fresh green native Oaks, and other trees, the effect of which *en masse* is charming. Another American Oak is more remarkable even than the foregoing kinds. It is *Q. pubescens*, the leafage of which is of a rich bronzy red, quite as striking as the red tinted leaved variety of the common Oak. The uniform richness of hue in this Oak renders it far finer than similarly tinted foliage in autumn, for there is a freshness about it which in autumn, of course, does not exist. These are but three of the many strikingly beautiful deciduous Oaks now in leaf, although the latest have only just expanded their buds. On the first day of June every deciduous tree at Kew was in leaf, except the Catalpa, which even then wore a wintry aspect, still apparently distrusting our treacherous climate. During the week its leaf buds have rapidly unfolded. This tree, the Oaks, and the Ailantus are the latest of all to expand. The Ailantus, at the beginning of the week, was a very beautiful sight; every expanding bud wore a crimson hue, which, seen amidst the greens of various shades, was most conspicuous. Enough has, perhaps, been said to show what beauty there is to be found in early summer among exotic trees, and the fact that landscape gardeners overlook them is much to be regretted.

NOTES OF THE WEEK.

Double Deutzia scabra.—A flowering branch of this handsome shrub has been sent to us during the week from a garden at Gainsborough. It was a yard long, and throughout that length furnished with side twigs, all of which were completely white with blooms. A handsomer shrub than this for the garden could not be imagined, and as it is perfectly hardy and never fails to flower profusely, it is all the more valuable.

The alpine Atragene.—Some wreaths of this beautiful shrub of the Austrian Alps come to us from the Trinity College Botanic Gardens, Dublin, where Mr. Burbidge grows it very successfully. Singular to say, though one of the oldest of garden plants, it is not at the present day found in one garden out of a thousand. It is like a Clematis; in fact, from a garden point of view it is a Clematis. The shoots are long, slender, and trail gracefully over anything that comes in their

way, and at the present time they are adorned with numerous bluish purple flowers some 2 inches or 3 inches across. For trailing over a ledge of rock, a tree stump, or any object over which its shoots can fall gracefully without restraint, it is an excellent plant. It is not commonly grown in nurseries, but we have recollections of some fine old plants of it in the Tooting Nursery in Mr. Parker's time. It was introduced during the latter part of the last century by the Loddiges, of Hackney.

Veronica Hulkeana.—The soft lavender tint of the myriads of flowers which are borne on a well-grown specimen of this New Zealand Veronica renders it a most welcome plant for the greenhouse, where its colour is unique at this or indeed any other season. Mr. Burbidge sends us some excellent sprays of it, which show what a lovely plant it is when well grown. Its stems are about 2 feet high, very twiggy, and the flowers on them are so beautiful as to quite compensate for their smallness. It is without doubt a plant the value of which cannot be overrated, and though not new, it is surprising how little it is known in a general way. Every year about this time it is one of the chief attractions of the conservatory at Kew, where it is the admiration of all who see it.

Leptospermum grandiflorum.—Under this namesome branches of a beautiful Australian shrub have been sent to us by Mr. Woodall from St. Nicholas House, Scarborough. They are completely wreathed with white flowers as large as a sixpenny-piece, and therefore have a charming appearance. It is so hardy, too, that at Scarborough it only requires the protection of a wall. It is an excellent companion for *L. lanigerum*, which is about equally hardy, and which thrives well in North Wales in the open. It was figured some time ago in colour in THE GARDEN. Other Australian shrubs might doubtless be successfully grown under wall treatment in this country if one could experiment a little with them, so as to find out how much cold they can bear.

Phacelia Parryi, now flowering for the first time in the rockery at Kew, is a new Californian annual, belonging to the same set as the now popular *P. campanularia*, to which it will no doubt make a first-rate companion. The leaves are much the same as those of that species; they are oval in outline, minutely hairy all over, of a light yellowish green, and the margins are deeply and sharply, but irregularly serrated. The flowers, which are an inch or more in breadth, are not unlike those of *Eutoca viscida* in shape. They are of a charming deep velvety purple, with small ivory white spots at the base of each petal, and borne on long folded racemes which last a considerable time in beauty—from the opening of the first till the last has expanded. The plant grows about 1½ feet high. Like others, it may be easily raised in the open ground. It seems rather hardier than *P. campanularia*.

Iris sueiana.—Of this wonderful flower, the so-called Widow Iris, some buds ready to burst have been sent to us during the week by Mr. P. Grieve from Bury St. Edmunds. We put them in water, and in a few hours they expanded into a bloom about 8 inches across. There is much to admire in this Iris; though of sombre hue, its large size and peculiarly handsome form render it one of the most remarkable flowers one can grow. It is satisfactory to hear that at Bury St. Edmunds it can be grown so successfully; at Kew and elsewhere it has flowered better this season than usual. Can this be attributable to the heat of last summer, whereby its growth became thoroughly ripened as in its native clime in Palestine? Since writing the foregoing, Mr. Stevens, of Byfleet, has sent us a grand bloom of this Iris grown in the open ground in light, warm soil. It is of enormous size for an Iris, and Mr. Stevens' flower has an unusual breadth in the standard petals, these measuring over 4 inches across.

Sparaxis.—I send herewith a few Sparaxis blossoms from the open border where they, with Ixias and Babianas, are doing well. The border

is elevated and kept up by three or four rows of bricks, in which grow Saxifrages, Sedums, Mesembryanthemums, Sempervivums, and many other things. The Sparaxis and Ixias are just inside the top row of bricks, so are thoroughly drained, and facing the south are well baked; Tea Roses behind them do well. Is it not curious that these lovely things which are so cheap (4s. to 5s. per 100) are so seldom seen?—GREENWOOD PIM, Monkstown, Co. Dublin.

* * Excellent flowers of some of the loveliest of Cape bulbous plants. The rich colours of one of the varieties of Sparaxis grandiflora sent are indescribable, consisting as they do of every gradation of hue between pale pink to blackish crimson, disposed in curious mottlings, while the centre is bright yellow. Other varieties are tyrian purple with pale centre, others whitewashed and pencilled with purple. Such beautiful flowers as these are well worth cultivating wherever there is a chance of their succeeding.—ED.

NOTES ON RECENT NUMBERS.

Plants sold untrue to name (p. 501).—Mr. Frank Miles has made a bold thrust at what is threatening in some quarters to be something more than a nuisance. From whatever cause, whether the great competition in the trade, confusion of names, or the difficulty of keeping up and recognising numerous and slight distinctions, many nurserymen certainly profess to send out special sorts the characteristics of which they could not tell you if asked; consequently they cannot satisfy even themselves that they are true to name! If the Dutch nurserymen are incorrect, it is not to be wondered at that those whom they supply are the same. Plants, for instance, like *Tuberoses* cannot well be grown for market in this country, but with such there should be no serious difficulty in getting what is wanted, and though Mr. Frank Miles lays the blame chiefly on the foreigners, I am afraid one might fill a larger black book with the names of our own countrymen, who are content to purchase from larger dealers and do not take the trouble to verify what they send out. In some cases it is the competition no doubt which does the mischief, but there is of course more than one tribe, to the different members of which a whole string of conferences would not agree on assigning the correct distinctive names. The only thing to be done seems, when possible, to catch our friends tripping and to "let them hear of it!" One should always mark on the label of a new plant the source whence it comes, and it is also a good plan to score a danger signal in the catalogue when a mistake is discovered; it is needless to say that it is kinder to the tradesman to show him where he is wrong than allow him to continue to disgust his customers either from carelessness or ignorance.

Numerous certificates were awarded (p. 505), which included one to "*Odontoglossum crispum roseum punctatissimum*, and also one to *O. crispum roseum lilacinum*." It might be of some interest if one of your readers, who has the leisure and (what I have not) a complete index to the recent volumes of THE GARDEN, would draw up a list of all the *Odontoglossum crispum* which have received first-class certificates during the last five or ten years. They might be divided into groups with two, three, four, or more names, or else into those with positive, comparative, or superlative adjectives and all the numerous combinations of the three. It would perhaps be too much to ask for a detailed description of each variety certificated, but the list might be useful for those seeking to acquire the "distinction" of a certificate for their plants by showing what names to avoid in order to distinguish them from the previously "distinguished" ones.

Sussex.

C. R. S. D.

Calceolarias.—From Messrs. Hayes, of Edmonton, we have received a boxful of beautiful blooms of Calceolarias, representing one of the best strains we have seen both as regards size and form of the flowers, while the colours are extremely rich and varied.

FLOWER GARDEN.

GARDEN COLUMBINES.

COLUMBINES, when well grown, are amongst the most useful of early summer flowering plants, both for mixed borders and flower beds. On dry sandy soils, unless the position be well shaded from the mid-day sun, the cultivator has, with a few exceptions, but a meagre reward for his care, from 1½ feet to 2 feet being the average height to which they grow, and their flowers are correspondingly small and ill coloured. One of the best for poor dry soils is *Aquilegia californica* and its white variety, both of which seem to grow well almost anywhere. *A. chrysantha*, too, although found in swamps and by the margins of streams in Arizona, stands a far greater amount of drought than most of the others, with the further advantage of keeping longer in good flowering condition. *Aquilegias* are in general considered to be true perennials, but it will be found as a rule that for garden purposes at least they give greater satisfaction treated merely as biennials. Even in strong rich soils, to which they are most partial, they generally run themselves out in two years or three at most. In order to keep up a succession therefore fresh sowings will of necessity have to be made annually, and unless grown in widely different parts of the garden, fresh importations of seed will also have to be made yearly, especially where it is of importance that the species or strains should be kept distinct. Columbines, like many more of our popular garden flowers, cross readily one with another, and there is no more interesting occupation than that of watching a sowing of seeds, collected from a bed where a number of kinds had been growing together, progress towards the flowering stage. Some of the well-marked species no doubt come true from seed, even when grown close to others, but the majority of them are not to be depended upon in this respect. No sight can be more pleasing than that of a colony of the common *Aquilegia vulgaris* bordering a woodland walk, and if the ground be kept clear of coarse weeds, it will increase rapidly from self-sown seeds, thus affording endless variety both in form and shade of colour. In wild gardens in which there is a stream it would be interesting work to establish on its banks patches of *A. chrysantha*, *truncata*, *formosa*, and others of the American type, which from their hardy constitutions would doubtless become in time as much at home as our own native kind.

A. CALIFORNICA, represented in the accompanying illustration, is one of the strongest and easiest to grow of all the varieties now in cultivation; although each plant seldom produces more than one flower-stem, this is generally of so robust and free-flowering a character, that it fully compensates

for the want of a greater number. The flowers are very handsome, the spurs long and curved, and the leaves always of an agreeable, soft tint of green; the variety *alba* is also very pretty and well worth attention. Both are best treated as annuals, or as biennials at most. They flower in May and June.

A. CANADENSIS, a North American species, is very suitable from its dwarf habit for planting

which in robust specimens often grow from 2 inches to 3 inches long. It crosses, unfortunately, too readily with other American kinds—*chrysantha* × *formosa*, &c., being plentiful where grown together, but none of the seedlings equal the true *A. chrysantha* in brilliancy. Grown by itself, however, it ripens seeds freely, which may be raised with ease in a cool frame; the seedlings, when large enough to handle, should be pricked out and kept well watered until fairly established.

A. CÆRULEA, another American species, is a fine free-flowering Columbine, and extremely showy in borders or beds, the latter being preferable, as then it can be grown by itself, and its beautiful blue and white flowers seen to the best advantage. The treatment suitable for almost all the others is equally applicable to this. Seeds of it should be sown annually as soon as ripe, and the seedlings transplanted as soon as ready. When well established, they should be supplied liberally with liquid or other manure during the growing season, and thus treated they never fail to produce a good show of flowers. The soil should be deep, rich, and well drained, and the position a good, sunny one. Others, such as *sibirica*, *concolor*, *Skinneri glandulosa*, *Bergeriana fragrans*, *viridiflora*, *leptoceras* and *Haylodgensis*, are also all interesting kinds where variety is desired.

K.

Origin of our Pansies.—Is the garden Pansy a hybrid, or an improved variety of *Viola tricolor*? I have been led to suggest this query as an interesting subject through finding in my garden a plant producing flowers which are an enlarged *Viola tricolor* in every respect even to the set of the petals. Pansies and *Viola tricolor* were growing in the bed in autumn hidden by *Chrysanthemums*, and this plant has come up in the same spot. The flowers resemble in size those of the bedding *Violas*. Both this hybrid and *Viola tricolor* picked from the field have the

true Pansy scent, only much stronger than the cultivated Pansy. *Viola tricolor*, however, has in addition just a trace of the Sweet Violet scent. A wild *Viola* very much like the Pansy in habit grows in the northern parts of Fifeshire, where in some spots it is rather plentiful, especially in high pastures and on waste ground. It greatly resem-

The Red Californian Columbine (*Aquilegia californica*).

on rockeries. Its flowers, though small, are very brilliant; the sepals are intense scarlet, and the spurs contrast well with the clear, bright yellow of the petals. It grows from 1 foot to 2 feet high, and seems partial to a boggy soil somewhat shaded. It hybridises readily, the colours varying very much, as does also the vigour of the seedlings.

THE GOLDEN COLUMBINE (*A. chrysantha*), one of the noblest of American Columbines, is very suitable for rockwork or for isolating in beds. It seems to like damp clayey or boggy situations; in such places it often attains a height of from 4 feet to 5 feet, and gets well furnished with handsome flowers; the most characteristic feature about the latter is their uncommonly long spurs,

bles published drawings of *Viola Munbyana*. I have also seen a drawing of the alpine *Violet* which seemed identical. It is a small plant, not much larger than the common *Dog Violet*, but has the *Pansy* leaf and habit; the flowers are carried well above the leaves on stems 4 inches or 5 inches long. The colour of the flower is what one might call *campanula-blue*, the two upper petals being darker than the lower three.—J. D.

AURICULAS SIXTY YEARS AGO.

THROUGH the kindness of a friend, I have been enabled to have a look into Sweet's "Florist's Guide," a work which I had never seen before, and I was so much interested, that I have thought the information contained in it about *Auriculas* and their management sixty years ago might be acceptable to many readers of *THE GARDEN*. It was published by Ridgway, Piccadilly, between the years 1827 and 1832 in two volumes. Twenty-six portraits of *Auriculas*, with their descriptions, are given, some of which will be sought for in vain in modern catalogues, and there are a few which, I must confess, I never heard of, although particularly interested in this class of plants. Every plant is minutely described, and after the description, cultural directions and general observations are given without any regular connection, but with some reference to the month in which the number appeared. The varieties thought worth figuring I will name in the order in which they occur, and shortly state any remarks connected with them which appear to be of value.

VARIETIES.

The first three are Page's *Duchess of Oldenburgh*, Taylor's *Glory*, and Stretch's *Alexander*. Page's *Champion* is said to be first-rate when well blown, and entitled to appear in all collections. It requires particular care to keep it in good health, not being so free of growth as many other varieties, and this is why it is so scarce at the present day. Hedge's *Britannia* is considered to be one of the best flowers, and at that time cost 20s. Grime's *Privateer* was sold at 5s. Cocup's *Eclipse* is called a pretty distinctly-coloured flower and much esteemed variety; price 5s. Of Pollett's *Highland Boy* there is a good figure, and More's *Navarino*, judging by its portrait, seems to have been a pretty variety. It is well proportioned; the ground colour is a bright purple and the edge light green with a white rim. If, however, it ever got beyond the raiser, it does not seem to have held its ground. Wild's *Black and Clear* sold at 4s. It may yet be found in some collections, and is a white edge, clear in colour, and worth a place on any stage. Redman's *Metropolitan*, a fine kind, seems now to be out of existence. It may, therefore, be worth while to give Sweet's description of it, which is as follows: "Limb spreading, flat, of a bright dark bluish purple generally, divided into seven segments that are imbricated over each other, and all slightly notched at the points; mouth, pale yellow surrounded by a pure white circle that is encircled by a dark purple, becoming lighter and bluish towards the edges." Its price in 1828 was 7s. 6d. Smith's *Waterloo* is called a handsome and very superior variety, and is recommended as a plant to save seed from on account of its large blossoms. Its price was from 15s. to 20s. Lawrie's *Glory*, or *Cheshunt Auricula*, had a bright green edge, and sold for from 15s. to 20s. I never heard of this variety till I met with it here. Is it in existence anywhere now? Booth's *Freedom* sold at from 15s. to 25s. Lawrie's *Hertfordshire Hero* I have never met with in any catalogue, nor, I may say, ever heard of it. It appears from its portrait to have been a very fine flower, having a yellow tube, fine paste, dark velvety purple ground colour and bright green edge. Moore's *Violet* and Page's *Lord Hill* are two others figured. I do not know if the latter variety yet exists, but it was a bold, handsome flower with broad ground colour of dark purple and a fine grey edge. Burnard's *General Quiraga* I never heard of. It appears to be a green-edged kind, with a broad paste and a ground colour of bright purple as broad as the paste. Wood's *Delight*,

Warris's Union (sold in 1827 at 7s. 6d.), and Lee's *Colonel Taylor* are three others. Colonel Taylor was then considered by florists to be the finest variety grown, and was sold at £3 each plant. Oliver's *Lovely Ann* has kept its place to the present day. Sweet says: "Oliver sold it at 20s. each; he grew his plants in loam and decayed horse manure, a mixture in which they succeed very well. I have heard that the raiser of *Lovely Ann* was Oliver, of the firm of Oliver & Boyd, publishers, Edinburgh. Greig's *Wellington* is called a curious variety, different from all others, inasmuch as it has a very blue ring round the centre of the flower. I never heard of *Wellington*, but, except being curious, it seems to have few other qualities to recommend it. *Warris's Blucher* sold in 1830 for 5s. Hogg's *Magnificent*, as figured, is a very fine variety, which sold in 1830 for 7s. 6d. Howe's *Venus* is what sixty years ago was called a "shaded alpine," and very inferior to the alpine now grown. Its price was 1s. These are all the varieties figured.

PLANTS TO SEED FROM.

Hogg's process was to take plants two or three years old, with one stem rising from the side, and good as to colour and symmetry. As one must not expect seed of a green-edged flower to come all green-edged, nor of a white-edged flower to come all white-edged, if the plants have been grown in the company of other sorts, two or three plants of any one fine kind must be removed from the general collection before they come into flower to the distance of a mile at least from any other *Auriculas*; thus there will be a chance of a plant like the parent being produced. Sweet's process was to choose flowers with good colour, and cross them with others possessing good shape, and *vice versa*. As to the seed, Hogg said it should be sown in the beginning of January in pots on finely-sifted compost pressed down with a flat board, and covered with fine mould passed through a sieve to the thickness of a shilling. Sweet said, do not sift the mould fine, but chop it up, fine turf and all together; sprinkle with the hand a little of the fine mould over the seeds, and do not cover the pots with glass. Sweet never sifts the mould for anything, as it always binds. Whenever an *Auricula* throws its top or head on one side, take it up and examine it carefully, wash the roots clean, and cut away every unsound part. Cracks in the side indicate decay, and a purplish hue at the bottom of the leaves and round the neck denotes great danger. When plants begin to look sickly after being re-potted, it is a sign that they dislike their food. Move them again into a simple compost of sweet loam, sand, and leaf-mould, and they will soon recover their verdure. Incautious watering in the heart of the foliage induces rot if the water is not quickly absorbed. As diseases among *Auriculas* are very infectious, sick plants should be removed and set by themselves.

SOIL.

As regards soil, Sweet recommends a mixture of nearly one-half fresh, light loam chopped up small and mixed with fine white sand and rotten manure in equal proportions to form the other part; he advises the manure to be spread out thin in order to allow the air to sweeten it, as its greatest use is to keep the soil light, that the roots may find their way through it with ease, and to keep it from baking hard in the pots. The frames then, as now, were raised on a few bricks to admit a free current of air under them, and thus they remained as long as the weather was open and temperate; but as soon as frosts set in, the bricks were removed and the frames rested on the ground. The plants were set on 4 inches deep of coal ashes, and were kept rather dry till February. They were then watered, but only when the air was mild and the wind southward. As regards spring attention, great care was bestowed upon *Auriculas* during February and March. From the first or second week in February and throughout March, the plants in open weather had the benefit of gentle rains, and were top-dressed with rich and strong compost. In the beginning of March such plants as were thought to require it

were shifted into larger pots, a practice which I am not aware that any grower now follows, and all flowering stems were reduced to one. About March 20 a thick blanket was put next the glass, with a couple of stout mats over it, and this practice was continued for three weeks or a month in order to preserve the opening pips from frost. "It is a curious fact," says Maddock, "that those sorts which are naturally possessed of a fine green on the edge or margin of the flower are often known to lose that property when the stem proceeds from the very heart or centre of the plant; whereas those stems that proceed from the side produce larger pips and preserve their true natural colours in much greater perfection; these last are called the winter stems, because they are usually more forward and produce their flowers rather earlier in the season than those which proceed from the centre of the plant." After flowering the treatment of the plants was very much like that now practised, but more trouble was taken in preparing their summer quarters. The plants were removed to their winter quarters in September or October. Sixty years ago, as now, there was disagreement as to the proper time for re-potting. Some recommended the end of May, others the beginning of August. Hogg considered the latter time the best for such plants as required other pots; in shifting, the ball was only to be partly reduced, as the roots would then be less disturbed and the flowers would be finer in spring. At an earlier period plants which require the mould to be entirely taken from them should be shifted, as more time would in that case be given to make fresh roots. The bad effects of early potting are stated to be the driving of the plants prematurely into a state of active vegetation, causing autumn flowering, and reducing the strength of the compost by frequent waterings during summer.

PROPERTIES OF A FINE AURICULA.

The following are the properties of a fine *Auricula* as laid down by Maddock, and they are upon the whole the properties looked for at the present time. The stem should be strong, erect, and elastic, carrying the truss well above the foliage. The pedicels or foot-stalks of the flowers should also be strong and elastic, and should be of a proportional length to make the bunch of pips, which should not be fewer than seven, round, close, and compact. The component parts of the pip are the tube with its stamens and anthers, the eye or paste, and the outer circle containing the ground colour and the edge. These three will be well proportioned if the diameter of the tube be one part, the eye three, and the whole pip six or nearly so. The pip ought to be round, but as it seldom happens that it is so, we must be content if it is as nearly round as not to be starry. The anthers ought to be large and fill the tube well; the eye should be white, smooth, and round without cracks, and distinct from the ground colour. The ground colour should be rich and equal on every side of the eye, whether it be in one uniform circle or bright patches, and should be only broken at the outer edge. The colours that contrast best with the eye are a fine black, purple, or bright coffee colour; a rich blue or bright pink is pleasing; a glowing scarlet or deep crimson would be most desirable if edged with a bright green, but this is seldom got. The green edge should be to the ground colour in the proportion of one-half of each. J. M.

Dundee.

Iris pumila and *I. olbiensis*.—In *THE GARDEN* (p. 466) "D." writes very familiarly of an *I. pumila alba*, very beautiful and resembling the flowers of *Iris florentina*; if he is not in error, I congratulate him in possessing something unique. I have seen many *Irises*, dwarf and tall, but never saw or heard of the one "D." describes. There is *I. pumila bicolor* with white standards and purple falls, a gem and very scarce. Does "D." mean this? if so, he cannot fairly compare it with *I. florentina*. Further information on this point would be interesting. I am sure, to many of your readers. *Iris olbiensis* is not Caucasian, but

French. *Iris tristis*, as figured by Reichenbach, has small sulphur-yellow standards and tinged purple falls, and is quite a little plant. The *Iris* which "D." describes, I suspect, is a hybrid, possibly from *I. virescens*, and is known under the names *gracilis* and *billora gracilis*. The late Mr. Nelson called this *Iris* "queerfellow;" it is, however, I think, the most fragrant of any *Iris* in cultivation.—ARGUS.

HAWKERS' PANSIES.

"I'll gie ye four shillings a gross for them pansies," said a cockney dealer in cheap plants the other day to a grower. "Shan't let you have 'em for less than five shillings," was the reply; but eventually the difference was split, and thus an amicable bargain was struck by giving nine shillings for two gross of plants. I fear there are few who deal in Pansies and read THE GARDEN who would be willing to sell at such a low price, still less expect to make a profit from such trading. The grower in this instance raises many thousands of Pansies yearly from seed, but, of course, the cheap strain grown specially for the common hawkers is not a particularly choice or fine one. It is a strain which seeds freely and blooms freely; hence a stock is easily obtained; and being planted thickly, some 300 to 400 are taken from a rod of ground, the whole being cleared off by the end of May. The permanent popularity of the Pansy creates a ready sale, and when a plant has but two or three fair blooms expanded, there is little difficulty in finding a purchaser; the usual market strain of the cheaper sort is a hybrid one, the fancy and English forms being somewhat mixed. Of course, the grower saves a rod or so of plants to give seed, as his sowings must be extensive, and the strain remains neither better nor worse. Were it endeavoured to select the finest flowers only, seed would be less abundant; hence it does not do to be too careful in that direction, especially when the interests and requirements of the large class of cheap hawkers are concerned.

Seed is, as a rule, sown in shallow drills in the open ground in the month of June, thus giving strong plants to dibble out early in August, and strong blooming plants for sale in the following spring. Our grower, however, caters for a better class of customers, also growing large quantities of Pansies in colours, such as blue, yellow, white, and plum colour, under various names. Nothing seems yet to have driven Pansy Blue King from its high position as the best market blue. There are others having finer flowers and deeper hues, but none divide so well, or so early to bloom, or make such admirable compact plants. Here the "King" is still grown by thousands for all sorts of customers. Whites are less satisfactory, one of the very best being Mrs. Cannell, but these, as a rule, are not early enough. A fine yellow is New Guinea, and is to some extent a favourite, but these Pansy men find no difficulty in getting hold of some fine seedling forms, and give them their own appellations, such as Cloth of Gold, Orange King, and so on. The most favoured plum-coloured kind here is named Annetta, a fine showy variety, flowers large and freely produced; indeed, it is a *sine qua non* to the popularity of these self-coloured bedding Pansies with the hawkers that they shall have big flowers. The poor have a strong, though by no means singular, penchant for big things, and just as they like big Cabbages, Potatoes, or Onions, so do they prefer big flowers.

Of course, most of these bedding kinds can only be increased by division, and that is done as soon as the ordinary sale is over, that is at the end of May. After that time what are left are lifted, pulled to pieces, and replanted to make stock; and if they thrive well, the lifting and dividing are repeated in the autumn. Hence, these usually sell at about 6d. per dozen, or, if specially selected, at higher prices. Of course, the growers do not make fortunes at this sort of work, but they get a living and pay their way, and that is all they ask. They have some advantages that all cannot possess—that is if they are also producers of vegetables—they can shift their roots from year to year to fresh soil, and hence are not troubled with

that soil sickness sometimes seen where roots are extensively grown; they give their plants heavy dressings of manure, and thus derive free growth and early blooming. Also for the more select customers, who are willing to pay a fair price, our grower has a fine and very showy strain of fancy Pansies. Certainly they do not equal in size and markings the superb flowers sometimes shown in London as grown at Edinburgh, Dundee, or Bath, but the strain is a remarkably good one, none the less, and probably as fine as most fancy seed strains will give. These plants are grown remote from the common forms, and thrive well out in the open field, where, as a matter of course, the culture is rather less costly than is that bestowed upon the florists' plants, from which come the big show flowers before referred to. Large as are the flowers produced by these fancy kinds, and rich the hues and markings, for massing they are much less effective than are fairly good bedding kinds, as the plants generally show a loose habit and are not so floriferous. Still, they have their admirers, and there can be no gainsaying that they are exceedingly beautiful. It is hardly probable that the strain can ever become very cheap, for quality and cheapness cannot always be associated. A. D.

OVER-TRIMNESS IN GARDENS.

MORE fatal to beauty than the introduction of fantastic designs is the production of a general smart, showy, and neat appearance in a garden. This is the bane of the small and moderate-sized garden. I have just noticed a case in point. A plain, unpretentious farmhouse had a small, old-fashioned garden in front of it, with fruit trees and borders filled with Roses and hardy flowers. The garden was separated from the road by a high hedge, draped with a perfect cataract of Virgin's Bower, which sheltered both house and garden from the north-east wind. All this has disappeared; a smart new front has been added to the house, and the place of the old garden is taken by an ugly iron railing crowning a low brick wall and a number of small beds, edged with Box on a ground of staring white gravel, with small Conifers dotted at regular intervals, and so close that they will fill the beds in three years. For the most of these trim horrors which surround small villas, the small nurseryman seems responsible. I have known instances, however, in which cottagers have been driven to adopt the trim style through the judges belonging to cottage garden societies giving the prize for the best kept garden always to some piece of tame formality and ugly arrangement, instead of to the garden in which the plants were the healthiest and most floriferous. A geometric garden is an ugly thing anywhere, but when the house behind it is a piece of false construction and ugly pretence, there is no incongruity between it and a garden to match; but between a picturesque cottage, which has stood the wear and tear of centuries, and a plot cut up into geometric beds filled with carpet and other bedding plants, there is just the same amount of congruity as there is when a country labourer's wife, with sunburnt face and hands hardened and stained with toil, decks herself out in a tawdry imitation of the latest fashion.

There are two main errors into which the uneducated mind falls in matters of art. I use the word "uneducated" advisedly, because a general education no more induces an art education than the weeding of nine-tenths of a garden prevents the weeds from growing in the remaining tenth. The uneducated mind either treats as non-existent what it is unable to see, or either imagines it sees, or pretends to see, what it is unable to see. The first mental state gives birth to all substitutions of geometry, ingenuity, and mechanical accuracy for true beauty.

A more dangerous thing, however, is the counterfeit pretence or affectation of art mis-called and properly ridiculed as æstheticism. Like all counterfeits, this can only be detected by knowing the difference between the real and the sham. The affectation of a thing is sure to have all the mechanical knowledge, all the names right, so we

find this æstheticism likes refined and harmonious colouring, beautiful form, and prefers decorative art founded on the beautiful forms of Nature; but when the things it really prefers are examined, they do not answer to their names. The colouring is harmonious simply because there is so little of it, and that little not of the best. The forms are of the most debased periods of the decadence of art, and the naturalistic decorations have nothing of Nature in them but the pretence. J. D.

ANEMONES AS ANNUALS.

THIS is the only satisfactory way of growing Anemones. Select a warm and sheltered spot for them, as they require all the assistance they can get in the way of heat. As to soil, they are not very particular, provided it is fairly rich and pretty free from stones and hard lumps of earth. For several years I made it a practice to sow broadcast and to cover the seeds with fine soil; but, owing to the difficulty of disintegrating the seeds from each other, I found that the plants came up very irregularly—in some places there were large patches, and in others bare spaces. I now sow in drills 8 inches apart, first treading the surface and drawing the drills about half an inch deep. Before sowing, I turn the seeds into a saucer along with a good handful of silver sand; this and the seeds are then rubbed through the hands, by which means the fluffy matter which makes the seeds cling to each other is disentangled, and a more regular plant is secured. It is important to keep the surface of the bed moist, so as to enable the seeds to vegetate quickly. The stronger the plants get before autumn, the more flowers they will produce; and, as the seeds must not be buried very deeply, they soon get dry in hot weather; therefore, regular attention in the way of watering, so as to get the plants above ground quickly, is essential. However carefully the seeds may be sown, there will be sure to be a few places where they have come up in patches of half a dozen or more together, and in order to secure strong plants it is necessary to thin them out. I have never been successful in transplanting Anemones, but no doubt it may be done with a fair prospect of success where wanted. It will be better to transplant than to throw the plants away. If they are to be transplanted, they must be carefully lifted, and dull or showery weather should be selected for the work. Our beds of Windflowers have been a blaze of colour, those of purple and scarlet shades being very beautiful—so brilliant, in fact, that we could not get on without them. I know of but few hardy plants that furnish so many flowers extending over so long a time as these Anemones; and yet, with a warm border or bed of fairly good soil and a bit of seed, anyone can have them with very little trouble. J. C. C.

RAILWAY GARDENING.

"G. J.'s" pleasant notes on railway gardening suggest the possibility of adding greatly to the beauty of the prosaic railway station which is too often a disfigurement and an eyesore in country villages. Some lines give a small prize for the best kept station, flower gardening being of course included. If this plan was generally adopted, it might prevent such errors of taste as "G. J." deplures. I think the Surrey station described is, however, nearly if not quite the worst that could be found. Gardening is almost the only recreation open to railway men, as their leisure hours are so irregular, and where they are members of cottage garden societies they are often to the fore in the prize list. On some of the older lines Nature has nearly succeeded in covering the scars inflicted by the hand of man. Heather, Gorse, and Broom soon take possession of a sandy slope. Cowslips, Primroses, and Wood Hyacinths have spread to the bottom of many a cutting, and yesterday morning, near Romsey, I noticed a little group of *Orchis mascula* doing their steady goose-step of 1 inch a year down the side of a slight cutting. Wonderful effects of colour may sometimes be seen on railway embankments. I remember

noticing in a cutting in Northumberland such a mass of Ox-eye Laisies at one end of a space between two bridges and such a mass of Poppies at the other end, with gradual mixture between, that, flying along at express speed, the eye literally flashed from white to scarlet.

The railway cuttings sometimes get decorated in an illegitimate way. Some Wallflowers thrown as rubbish over a garden wall at the top of a chalk cutting decorated the ledges of chalk with blood-red seedlings. A broad stripe of blue Forget-me-nots on a bank at Winchester had a similar origin. One of the most creditable railway gardens to be seen anywhere is a London one—a rectangular plot on a level with the platform at Claybury Station, on the North London line. The lines cover a considerable width, so that the bottom of a cutting is not such an unfavourable situation as it might seem to be to those unfamiliar with the place. Here is to be seen a goodly display of hardy flowers. The stock is of the commonest kind, and rightly so to begin with. Plants in London require such a deal of attention in the way of washing, that it would be sheer folly of anyone, even with all possible knowledge of gardening in the country, to do otherwise than begin with common things, and work up to good ones with full knowledge of the time and attention which each plant requires to keep it in health. If anyone has any quick-growing glossy-leaved plants to spare, they might do worse than send them for trial to this town garden. J. D.

WHITE-FLOWERED CLEMATISES.

THE two best white-flowered Clematisses are undoubtedly *lanuginosa nivea* and *candida*; and as regards effectiveness, there is not much to choose between them. If the first is the whitest, the latter has larger and finer flowers, and this is the one considered the best for bedding purposes. Where it does really well it is truly grand; but for one place in which we see it doing well, we find fifty in which it lingers on in a condition the reverse of satisfactory. I have often remarked the behaviour of these white Clematisses in villa and other small gardens, and contrasted their condition with that of Jackmanni, Lady Bovill, rubella, and others of a similar hardy, free, continuous flowering character. Growing under identical conditions with the last-named, they look meagre and unhappy, generally showing out a few spare blooms at a time when the others are loaded with flowers. The fact seems to be that they lack vigour, and that a certain inherent weakness of constitution has to be conquered by special culture. That they will flower quite as freely as the Jackmanni kinds is proved by the magnificent specimens to be seen occasionally. One may see plants 6 feet across during July, August, and September loaded with flowers as white as snow, contrasting effectively with the coloured kinds. Those seen in this condition have been trained to stout young Larch trees about 6 feet high, their spray-like branches forming supports for the Clematisses. One would naturally suppose that if these white-flowered Clematisses can be grown to perfection in one or two places, there ought to be no great difficulty in cultivating them elsewhere, and probably, given attention and suitable position, they will do well. The soil in which they thrive best is a deep fertile loam, and this, in conjunction with high feeding, and probably copious waterings, is the cause of their succeeding so well. The great defect of these white-flowered kinds is that they seem to lack force to develop a second crop of blooms. The buds form and then become abortive, although the foliage remains perfectly healthy. With an extensive root run and a large amount of rich food and moisture, they continue to grow and bloom all the season. This special culture is, however, more than most growers can give; the handsome Jackmanni and Viticella varieties do not require it, and we need a kind similar to them before we can say that we have a good white-flowered outdoor Clematis. If Jackmanni alba, which was last year introduced to public notice, should prove a counterpart of

that popular kind in all but colour, we shall have acquired something of very great value, which may be made to add immensely to the charms of the outdoor garden for three months of the year. J. C. B.

Narcissus biflorus spreading.—It is not impossible that *N. biflorus* may spread in some way which we do not yet understand, but I am not sure that Mr. Tymons does not himself suggest the explanation of the case which he has observed (p. 492). He says the field where the plant has so increased "is used as a pasture and occasionally meadowed." Now for some time past I have been interested in *N. biflorus* and trying to ascertain whether anyone has known it to bear seed. Hearing that it was found in some abundance in meadows in a Wiltshire village, I questioned the vicar of the parish upon this point. He told me that although he knew nothing about its seeding or the contrary, yet he had noticed it spreading. After careful inquiry I have been led to the conclusion that this is owing to the circumstance that in some seasons, perhaps at considerable intervals, the Narcissus is destroyed, or rather crippled, by the scythe or the trampling of cattle, while in the between-times it obtains immunity, and so recovers and reappears. I am sure that the common double yellow Daffodil waxes and wanes in a pasture near here from these same causes, and in a field immediately adjoining my garden the Star of Bethlehem behaves in the same way. Again, when I first came here there were a few double yellow Daffodils and a few *N. poeticus* in the Grass in my churchyard. Both of these have gradually become abundant, the reason being that in the season or seasons before I came the Grass had been cut early enough to destroy the leaves while yet green, and so weaken the plants to the extent of disappearance for some while. In the last few years the Grass has been cut very late, and therefore the Daffodils have reappeared. My experience of *N. biflorus* is that it is easily injured and slow to recover, and it is probable that after one cutting down or trampling down when in green leaf it would take years, perhaps many, to restore itself, and in those years of recovery and reappearance would seem to be spreading over the field. Of course, Mr. Tymons may be able to state that his plants have never suffered in this way, but I have little doubt that this is the explanation of many alleged instances of the multiplication in isolated patches of Daffodils which rarely or never seed. I have examined a very great number of flowers of *N. biflorus*, and have invariably found it to be absolutely devoid of ovules, and therefore of the power of increasing by seed, and I should accordingly be inclined to reason that it has no conceivable means of spreading into scattered clumps in an undisturbed pasture. But we do not yet know everything about Daffodils, and I am not over-sceptical about botanical marvels.—G. H. ENGLEHEART, *Applesham, Andover*.

SHORT NOTES.—FLOWER.

Blue-eyed Mary.—This is a Yorkshire name for *Omphalodes verna*, and as it is a pretty one and not named in Miller's "Dictionary of the English Names of Plants," I give it here. The plant is also known as the Creeping Forget-me-not.—J.

Maiden's Wreath is a pretty English name I heard in a little house in Godalming, where the plant was growing well in a window. I do not find it in Miller's "Dictionary of the English Names of Plants," and therefore I send it to THE GARDEN. The plant was a Franco.—R.

Meconopsis Wallichii.—This has superb foliage, bronze-green in colour, thickly coated with very long golden brown hairs. It throws up a magnificent stem supporting a number of large soft blue flowers with fine yellow stamens. It is quite hardy, but dies after flowering with me. Is it a biennial?—W. T. B., *Portobello*.

Rheum palmatum tanguticum is the most distinct of its family that I am acquainted with. The foliage, which is purple-brown, is much divided and exceedingly striking. I think this must be different from the form named in "The Sub-tropical Garden," or it would receive important distinction.—W. T. B., *Portobello*.

* This plant was introduced several years after the book was published.—ED.

GEOMETRY IN GARDENS.

THE admiration of the artificial in gardens is not by any means confined to working men. There has always been a tendency to disfigure gardens by arrangements and contrivances which have no beauty to recommend them. Ancient gardens seem to have been arranged on the lines of our modern kitchen gardens, and the conditions of the homes of the Middle Ages were too much ruled by military necessities to allow of any freedom in garden design, but the gardens of the 16th, 17th, and 18th centuries were often disfigured by every kind of puerility in arrangement and adjuncts. Milton contrasts his "Paradise" with the artificial designs seen in the flower beds of his own time. Cowper describes disparagingly some monstrosity of his day in Hertfordshire, and a very slight acquaintance with old prints discloses the fact that intricate and foolish elaboration in the outlines of flower beds is not by any means a modern thing. Until the introduction of Capability Brown's style of laying out grounds it never seems to have occurred to anyone that a style of garden founded on Nature must be the only good one. The geometric arrangements which came in with bedding were merely a new form of the old admiration of artificiality which disfigured so many gardens for the three previous centuries. It is a curious coincidence, if it is such, that these unnatural gardens came in just when all feeling for natural beauty disappeared from decorative art, and its place was taken by ingenious lines and forms designed without reference to Nature. Let us hope that the reverse coincidence will take place, and that geometry and formality will disappear from gardens with the spread of feeling for decoration founded on Nature among the cultured classes.

There are four things that sadly want rooting out of our gardens, and also out of our garden designers' heads: Intricate designs in gravel walks, cutting out beds in Grass, edging beds with stiff edgings in Box, turf, or clipped plants of any kind, or with tiles, so that the outlines of the beds are pronounced instead of being hidden, and raising flower beds into mounds and banks. It would greatly improve the appearance of gardens, and do away with a great amount of unnecessary labour, if beds were edged with dwarf and cushion-forming plants, which require no clipping and very little thinning and keeping in order. The stiff and formal outlines of beds are ugly, and hamper the use of plants in any style which would produce really decorative and artistic grouping, but if beds were kept large and had simple and flowing outlines, such sharp edges as were absolutely necessary could be hidden; nothing need be visible but turf and trees, shrubs and flowers, with an occasional gleam of bright gravel, as natural looking and unobjectionable as a winding path through a wood, or a foot-worn track over a chalk down. It does not take a very great stretch of imagination to picture what a lawn would look like with beds and groups of plants growing out of it without the interposition of any stiff and unnatural outlines, or how the fringe of shrubberies would appear with choice plants suitable for the situation growing there instead of our modest, though beautiful, natives. The raising or mounding of beds and borders is not objectionable on the ground of false ideal, but the reverse. Well-clothed banks in Nature are beautiful things, but an artificial mound of loose earth never takes the beautiful form of a natural bank, or even of the sides of a cutting in undisturbed ground. Still, it might be clothed so as to be a better feature than a flat bed if it were not for the difficulty of keeping it moist; that is in most cases fatal. Unless the soil is positively mar-ly, no beds should be raised above the natural level of the ground except for rock plants.

In the London parks and in many gardens on gravelly and chalky soils there are multitudes of beds and borders which are veritable cinder heaps, and which it is next to impossible to keep sufficiently moist in dry seasons. In these light soils, with good drainage underneath, all beds

should be level, and if possible a little under the general level rather than above it, so that they can readily be flooded; so planned, they are easily kept moist, and everything in them thrives.

J. D.

DOUBLE PRIMROSES.

SOME of these appear to be rare; at any rate, one does not often see them, the cause of which probably is, that in the majority of gardens they do not live healthily for any length of time. This is especially the case in the southern counties; in the north of England and in Scotland they seem to do better. It is undoubtedly the periods of parching summer weather which destroy the more delicately constituted of the double Primroses; but, still, want of necessary care is probably the main cause of their dying away as they often do. Skill and attention will do much to counteract the most adverse conditions, and once we know what a plant likes and what it dislikes, we do not generally find any great difficulty in guarding it from evil. These double Primroses, like the single kinds, prefer a cool and moist atmosphere, and I believe that if they were grown in a shady fernery, they would do very well. It is the planting them in open sunny borders, where they are scorched by hot sun and exposed to parching winds, that kills them, or at any rate deprives them of their vigour. In retentive loams they hold out better, but in light soils they are sure to come to grief. When thus exposed, attentive watering will do much to preserve them; but this attention is liable to fail them, and certainly the safest way is to put them where the conditions most favourable to them are naturally obtainable. The north side of a hedge, or in the shelter and partial shade of trees, are positions where they are most likely to live and thrive permanently. Large clumps of the white and mauve kinds, bearing individually two or three dozen blooms, are amongst the most charming of dwarf spring flowers; and, although some say that double Primroses are lacking in beauty of form and cannot compare with the single kinds, I think them extremely effective. They certainly have many admirers, and their effectiveness is often the cause of their decay, owing to the prominent exposed positions accorded them in the flower garden. One way of growing them—and they are worth this trouble—is to plant them for the summer in a cool, shady place near to the water supply, returning them to their proper quarters early in October. They make a brave show thickly planted in beds on the Grass, and they cease flowering soon enough to make room for the summer occupants. They seem to suffer very little, if at all, from removal, and if care is taken to give them a good free compost they will make vigorous growth every year. I have known the white, mauve, and sulphur varieties to give great satisfaction when treated in this way. The double sulphur should be in every garden, on account of its early-flowering character; it comes into bloom a month before the ordinary run of Primroses. Has anyone, I wonder, tried these double Primroses in a moist copse? One would naturally think that they ought to flourish there remarkably well; and probably such kinds as the double crimson would grow with exceptional vigour in such a position. I am not sure that Mr. Wilson does not grow them in this way in his wild garden at Wisley; at any rate, I remember to have seen some very fine plants of the lilac variety in an old hedgerow which borders the Oak wood there. They were in full bloom, and looked remarkably pretty amongst the herbage—quite at home, in fact; much more so than they ever do in open beds and borders.

J. C. B.

Bulbocodiums at Cintra.—"Where is the best place to see Daffodils wild?" I asked of a friend. "Do you want grand scenery at the same time?" was the reply. To my affirmative, he exclaimed, "Then go to Cintra, and you will find what you want at the Moorish castle there." Once at Cintra, there is no mistaking the "Castello dos Mouros." Look up, and you will see frowning down upon you from a terminus of the Serra its lines of teeth-like ramparts. The ascent through breadths of Pine woods, although steep, is not by any means exhausting. As the ruins of this old Moorish hold are included in the grounds of the Pena, Don Fernando's residence, the surrounding grounds bear an orderly, well-cared-for appearance. Once within the span of the ramparts, the Bulbocodiums hold almost undisputed sway. They cover the ground around in every direction. If you ascend the steps leading up to the highest



The Siberian Columbine (*Aquilegia sibirica*). From a photograph by Mr. W. T. Bashford, Portobello, N.B. (See p. 513.)

ramparts, you literally tread on steps of gold all the way. Looking over the top, you see the same bright vision among the loose crags and sharp pinnacles that strew the side of the Serra. Wherever the rain action has hollowed out a cleft or basin in the rock, there also these dainty flowers have ensconced themselves. Finally, when tired of the Daffodils, you can turn and behold the country below as far as Torres Vedras, 30 miles northward, for this fastness of the Daffodil is 1600 feet above the sea, which lies glittering westward. I ought to say that the ramparts and the well are the only remaining portions of the castle.—M. C.

Phacella campanularia.—I am glad to see that Mr. Ewbank thinks well of this new annual. I am growing it for the first time, but for late flowering, as I wish to have it at its best for a flower show late in the year along with several other novelties, of which THE GARDEN shall have notes in due time if they are worth giving.—J. D.

ROSE GARDEN.

THE BEST TEA ROSES.

AT the recent spring exhibition at Bath, Tea Roses, both in pots and in a cut state, were shown in good numbers and in remarkably fine condition. As might be expected in a district where Roses of all kinds are extremely popular, Teas were greatly admired, and not a few visitors were to be seen taking notes of the best represented sorts. I also jotted down the names of the majority of the prize-winning blooms, and, as I happen to be fairly well acquainted with the different varieties, will supplement the list with a few remarks upon the qualities of each. Certainly the premier blooms were of Catherine Mermet, and this grand sort is invaluable alike for exhibition and ordinary purposes. It grows and blooms freely either in pots or when planted out; the majority of the flowers are perfect in shape and of a pleasing flesh colour; the scent is strong and the blooms keep well. It is best on its own roots, and should be encouraged to throw up strong suckers, as it is these that will produce the very best blooms. *Souvenir d'un Ami* is equally robust, blooms freely either under glass or in the open, and the full cup-shaped flowers are good in substance and sweetly scented; colour, salmon and rose. *Niphetos* is scarcely so vigorous as I should like to see it, but is the most perfect white Rose with which I am acquainted. *Madame Lam-bard* is a very distinct sort, very free growing and floriferous. The blooms, which are of a bright coppery red, are good in size and form, but must be cut early, as they quickly become loose and useless. It is a very serviceable sort either for house or open-air culture, and ought to be more generally grown than it is.

SOUVENIR D'ELISE I consider a charming variety and fairly robust in growth; blooms medium in size; colour, white tinted with rose. *Etoile de Lyon* is a strong grower under glass, but when tried in the open air it has proved a failure. With us it produces fairly large, good-shaped pale yellow blooms, but not so freely as was expected. *Perle de Lyon* is also a vigorous grower, and the blooms are of a richer yellow than those of the last named. *Madame Guinoisseau* and *Amazone*, both good growers, are worthy of cultivation where rich yellow buds are in demand. *Perle des Jardins* was well represented at Bath, but I have not yet grown it. It produces a medium-sized bloom, colour pale yellow, and scent good. Of *Comtesse de Nadaillac* I can speak very highly, and it is particularly good for pot culture. The blooms are freely produced, and good in size and perfume; colour, a deep orange and yellow. *Isabella Sprunt* is a general favourite and easily grown; it is very robust and free-flowering, the blooms being of medium size; colour, rich yellow. *Madame Pauline Labonté* proves to be particularly good, either in pots or planted out; the blooms are of fair size; colour, pale salmon. *Madame Berard* resembles *Gloire de Dijon*, and succeeds well under similar treatment. *Reine Marie Henriette*, a "red *Gloire de Dijon*," is scarcely so free-flowering as that good old variety, nor is it scented. Pot plants struck last spring, and encouraged to ramble, have yielded a good supply of blooms, which, in the bud state especially, are serviceable. *Adam* is a vigorous flesh-coloured variety, easily grown, and does well planted out; and *Rubens*, white tinted with rose, is another deservedly popular sort. *Céline Forestier*, pale yellow, is useful alike for pots and for planting against sunny walls; indeed, for the latter purpose, I consider it next in

valne to Gloire de Dijon. Jean Ducher, salmon-yellow, is a favourite variety with exhibitors, and is altogether an attractive and serviceable sort, thriving well either under glass or in the open. Safrano, apricot-yellow, is one of the best I know amongst Teas, and in the bud state is very beautiful.

ANNA OLIVIER, buff or flesh rose, is a neat variety, good in form and size, and may be classed as a useful sort. Devoniensis, creamy white, has long been a favourite; it does well in pots on its own roots. William Allen Richardson, a strong climbing variety, produces some of the most charming buds imaginable; their colour is a deep orange-yellow or a lovely terra-cotta shade, which contrasts beautifully with nearly any other sort grown. Ina Capucine may be said to be a dwarf growing form of the latter, and the bunches of this variety, as shown at Bath, were unanimously voted lovely. Maréchal Niel—which, in common with a few of the above-named sorts, are classed as Noisettes, but shown as Teas—is too well known to need any commendation; but I ought not to omit a word of praise in favour of Marie Van Houtte, white tinted with yellow, and good alike for pots and in the open air.—W. I. M., in *Field*.

TIMELY WORK AMONGST ROSES.

The state of the growth of the young shoots of Roses will convey to the cultivator a pretty accurate idea of the strength of the bush, and his course of treatment must be shaped accordingly. Roses well cared for will be in vigorous condition and may be left to themselves, but plants in poor soil which have been somewhat neglected, and consequently making weakly growth, should be attended to, as anything of a stimulating character applied to the roots now will not only help the plants to produce more and larger blooms this year, but will strengthen and enlarge the growths, so that they will be in a more vigorous condition next year. What stimulant should be used must depend on circumstances, but that in liquid form, if it can be frequently applied, is undoubtedly the best, as its action is quicker than that of solid manure. Liquid manure from the farmyard, properly diluted and applied to the roots twice a week in sufficient quantities to reach the whole of them, is the best. In some cases sewage water is obtainable, and if so, it can be relied upon as being an excellent fertiliser. In the absence of either of these, Peruvian guano is a fairly good substitute; 1 ounce to a gallon of water applied once a week will be found sufficient. In applying these kinds of stimulants, inexperienced people do not, as a rule, cover a sufficient space, and in consequence do not effect all the good they might do. To pour a little of the stimulant just round the stem of the tree is not the way to benefit it to any extent. Every fairly vigorous Rose tree will have sent out roots into the soil some 2 feet or more from the stem, and if the plant is to derive full benefit from any application of manure of any kind, it must extend that much and more over the roots.

Rose growers whose plants may happen to require assistance, but who are not in a position to give them frequent applications of the liquid manures just recommended, may be advised to use one or other of the concentrated manures in a dry state. To use them in the most advantageous manner, the soil over the roots should be removed and laid on one side. If the liquid is to be applied to a single standard, take off the soil 2 feet wide all round the stem; but if the plants are in beds, it is best to take off a portion of the soil all over the surface, beginning at one end, and uncovering the roots as much as possible. The manure should then be sprinkled evenly all over the bed, reckoning one large tablespoonful to every square foot of ground, the first application to be given at once, and another about the middle of July. It is not necessary to water the soil at the same time, unless the ground is very dry. The second application is quite as necessary as the first, and it should not be delayed after the time recommended. At that time the first crop

of flowers will be nearly over, and the plants will require a fresh stimulus to induce them to make new growth for the production of autumn blossoms. It is not a safe plan to apply any of these forcing manures late in summer, as, on account of their tendency to create undue excitement, the plants are likely to make a late growth, which will not have time to get hardened before winter, and then a severe frost will probably injure it, if not kill it outright. As growth advances, it is probable that green fly will attack it. If so, it must be dealt with cautiously, as strong insecticides will injure the tender shoots. Gishurst compound, dissolved in boiling water, at the rate of one ounce to a gallon of water, allowing it to stand until it is nearly cold, and then syringing the branches with it, is the safest and best means to adopt for killing greenfly. Should there be any alive the day after, which is likely if they were numerous, a second application will be necessary.

If the Rose maggot should attack the trees, which it generally does just after the flower-buds are formed, hand-picking must be resorted to, or the loss will be serious. It does not require an experienced eye to detect this maggot. The curled leaf is a sure indication of its presence. Every leaf that shows any symptoms of curling should therefore be examined and the maggot destroyed. As it travels from the leaf to the bud, it is important to destroy it before it reaches that stage in its course of destruction. Mulchings, where practicable, should be applied. All Roses are benefited by having a mulch of half rotten manure laid over their roots, and in the case of plants put in at any time during the winter, it is more necessary than in that of established plants. The roots will not only be stimulated by the manurial matter washed down to them by the rains, but the soil will be kept in a more uniform state as regards moisture, which, in the case of newly-transplanted plants, will materially assist the roots to establish themselves in their new quarters. Roses growing in raised beds or on sloping borders require a mulch on the surface much more than where the surface is level; and if manure cannot be had, or if its presence would be objectionable, a very good substitute may be found in Cocoa-nut fibre or old tan, as anything that will prevent a too rapid evaporation of moisture will be beneficial. J. C. C.

Rose W. A. Richardson.—Mr. Crook sends from Farnborough Grange gardens flowers of this beautiful new Rose, which, since its appearance on this side of the Atlantic, has charmed everyone who has seen its lovely apricot-coloured blossoms. It is not what rosarians call a first-rate sort as regards the shape of the flower, but its colour is different from that of any Rose in cultivation. Mr. Crook also sends flowers of Maréchal Niel Rose gathered from a bush in a 12-inch pot, and which carried at one time this season no fewer than 100 blooms and buds.

Petroleum for cleaning plants.—I have used petroleum for this purpose for many years with satisfactory results; it is cheap and effective, not only for cleaning plants, but also for cleaning the interior of hothouses where it can be used at will. In the case of plants, it is more difficult to recommend the exact quantity to be used, as much depends on the character and condition of the plant when subjected to the operation; for instance, a market gardener in our neighbourhood having a large plant of Stephanotis covered with brown scale, gave it last autumn a good syringing all over every other night, three times, using a quart of petroleum to three gallons of water (instead of four gallons of water, as recommended); the result was, every leaf dropped off. He was, therefore, about to consign it to the rubbish heap as useless, but I prevailed on him to give it a chance. As the season advanced the strong shoots began to break, the weak ones died off and were removed, and at the present time the trusses are so close together all over the plant as to form one sheet of pure white

bloom. The foliage, too, is vigorous and as clean as it possibly can be.—JAMES SMITH, *Waterdale*.

KITCHEN GARDEN.

NOTES ON BROCCOLI.

BROCCOLI during the season of 1881-85 has been unusually plentiful and good, an unbroken supply having been maintained in gardens in which a judicious selection of varieties was planted. Where, however, a few sorts selected or procured by some means or other, no matter what their reputation may be, were grown, an undesirable glut was the consequence, and this more especially during the month of May. Hereabouts very fine heads were recently to be had in unlimited numbers at a penny apiece, and sometimes even cheaper than that—a price at which the crop cannot by any means be termed a profitable one. It is during severe winters market growers succeed in getting good prices for their Broccoli, as at such times it not unfrequently happens that their plants, owing to superior sturdiness, escape destruction, and then they can fix their own prices. Not only do experienced cultivators plant in good, open positions and on firm, though not poor, ground, but they also give their plants more room than many private growers think of giving. The highest price I have known to be offered for Broccoli was at the rate of £60 per acre, and in this case the variety was Cattell's Eclipse, planted a yard apart each way. It was one of the few fields of Broccoli that escaped injury, and the lesson taught by it was not thrown away, as I, for one, have adopted different practices ever since. Some varieties are much harder than others, but all may be made fairly frost-resisting if grown with that end in view. It is not immense stalks and heads that always produce the finest hearts, and it is certain that such plants are far from being so hardy as they should be. Our very best Broccoli this season were grown on undug, fairly rich ground, and the worst on loose, and by no means rich ground. The former succeeded Strawberries, and were very sturdy and hardy; the latter were planted between rows of Potatoes, and though they grew to a great size, the produce was comparatively poor, while I may safely assert that a moderately severe frost would have destroyed the lot.

SOWING.

Early sowing is a mistake too often made by cultivators, as, if we except Veitch's Autumn Protecting, nothing is gained and much harm may be done by it. Here, for instance, we find that all the strong early-planted Broccoli are almost certain to be badly attacked by some kind of mildew or spot, and the consequence is the greater portion of the leaves die off prematurely; this naturally spoils the size of the heart as well as renders the stalks still more liable to injury by frosts. It is the stalks that are usually damaged by severe frosts; and our aim, therefore, should be to keep them as hard and sturdy as possible. If we sow early, say any time in March or early in April, the chances are that the plants will either remain in the seed beds or where pricked out till they have become leggy, or if finally planted out before they are drawn they may yet grow to a too great size and be cut down by a moderately severe frost. The seed is best sown thinly in an open spot early in May, and for the very latest supplies at the end of that month. By the time they are of a size fit to plant the ground most probably will be fit for their reception. Any sown much before May should, if at all crowded, be freely thinned out, the thinnings if required being pricked out in an open spot not less than 4 inches apart each way, and if a dressing of leaf soil is well worked into the surface, the plants will transplant more readily. Veitch's Autumn Protecting, as I have previously remarked, more closely resembles a Cauliflower than any other variety, and is amenable to similar treatment. Plants of it raised in the autumn and wintered with the Cauliflowers and planted out early on good ground will produce extra fine and

early hearts; while if more are raised in frames in March, pricked out, and finally transplanted at the present time, these will also commence to heart before the last of the Autumn Giant Cauliflowers are cut. We also sow seed of this variety in May, and, should the following winter be mild, this batch of plants continues serviceable till March. Snow's Winter White is rather difficult to understand, and is not suitable for all gardens. When sown early, the produce is rarely of any value, monstrosities being in the ascendant; but if sown in April and again late in May, nearly every plant forms a serviceable heart, and the supply lasts for several months. We commenced cutting Snow's early in February, and there were still some fit for use up till the middle of May. Late raised plants of various sorts sometimes do not attain a good size before winter; yet these comparatively small and seemingly worthless plants not unfrequently produce surprisingly good hearts. As a rule, they are also the hardiest, surviving when all or nearly all the other breadths are destroyed by frosts, and one market grower of my acquaintance has frequently made good hits with large breadths of plants raised and planted late in succession to Potatoes, Peas, and other crops. On very poor ground they would prove unremunerative, and it is their having a fairly liberal supply of solid manure under them that has much to do with the success attending the practice.

CROWBAR PLANTING.

Planting with a crowbar is not unfrequently recommended where it is intended to crop solid undug ground with Broccoli, but unless I am mistaken there are not many who adopt this plan of making holes for the plants. If it is difficult to form holes by any other method, then by all means use a crowbar, but I prefer to transplant with a fairly large ball of soil about the roots, and this is not easy to accomplish when the holes are made with a crowbar. We have more than enough clay in our soil; consequently it becomes extra hard during the summer; yet in spite of this we are able to draw drills in solid ground with heavy hoes, and if the drills are filled with water or, better still, liquid manure once or twice, we can easily plant with a trowel. Besides being hard, our ground is also very cold and nothing takes to it readily at first; hence the greater necessity for careful removal and well working the soil about the roots with the trowel. Then, again, newly cleared Strawberry, Pea, Leek, Turnip, Carrot, and other quarters are almost certain to be infested with slugs, especially a small and very troublesome black sort, and unless the plants stand up well from the first they are very liable to be eaten. Even rabbits are more addicted to prey on flagging plants of any kind than on others, and frequently, unless hard pushed for food, will not interfere with them when established. Plants raised thinly in open fields may safely be dibbled out or planted with the aid of a crowbar, as these quickly take possession of the moister and richer soil of a garden. Where put out early on firm undug soil, the rows should be at least 30 inches apart; or if Strawberries previously occupied the ground, it is not advisable to intersect the old rows of these, as they are certain to leave the soil directly under them very much impoverished; the best plan, therefore, is to place the rows of Broccoli midway between the old rows of Strawberries. A distance of 30 inches apart in the rows insures the plants sufficient room without giving them an inch more space than they require and must have if they are to be hardy and profitable. Where it is decided to plant on recently dug or loose rich ground, this should first be heavily trampled; the rows ought not to be less than 3 feet apart and the plants 30 inches asunder in the rows. If planted more thickly, this will further stimulate leggy, weakly growth, which cannot be relied upon either to withstand severe frosts or to produce fine close hearts. When planted between rows of Potatoes, the latter ought not to be coarse-topped sorts; they should be placed not less than 42 inches apart; when closer together than this the haulm is liable to smother the Broccoli, and if they

manage to grow through it, that is a poor preparation for the winter. When the haulm nearly meets on each side, no great harm will be done by trimming it back with a reaping-hook so as to give the Broccoli good breathing room. The haulm ought to be cleared away before the tubers are lifted, and every care should be taken not to damage the plants. It is also a good plan to work the mould up to the stems on each side, as that serves to steady as well as shortens the stems and renders them more frost-resisting. All, it is almost needless to add, must be kept clear of weeds, and those on solid ground especially are greatly benefited by having its surface loosened with hoes occasionally. After being once established we give our Broccoli plants no more water, and we are content to see them growing steadily rather than very vigorously.

SELECT VARIETIES.

Many catalogues which I have seen give descriptions of upwards of thirty varieties, the greater part of which would appear to be almost indispensable, though, as far as I am concerned, the list might safely be reduced to about six, or at most nine sorts. According to my experience, it is much easier to maintain an unbroken supply from a given space with six varieties than with double that number. My advice to all, therefore, is to plant as many plants of a few good sorts as the space will rightly permit, and these, unless destroyed by frosts, will afford constant supplies.

VARIETIES.	Planting to Picking Days			Length of Haulm. Inches			Proportionate Pods to the Plant.			Proportionate weight of Pods			Proportionate weight of Peas.		
	1882	1883	1884	1882	1883	1884	1882	1883	1884	1882	1883	1884	1882	1883	1884
Dwarf Blue Imperial	59	69	70	33	37	37	1	1	1	4	3	3	3	4	3
McLean's Advancer	54	70	53	58	50	21	2	4	4	3	4	4	4	3	4
Culverwell's Telegraph	68	67	69	55	61	60	3	3	3	1	1	1	1	1	1
Champion of England	68	69	68	67	65	66	4	2	2	2	2	2	2	2	2

Veitch's Autumn Protecting we plant extensively (not less than five hundred plants), and, on the whole, they usually prove the most profitable of all. A moderately severe frost proves most injurious to it, as it is not much harder than a Cauliflower, but if lifted directly the hearts commence

Leamington is grown in still greater numbers. This valuable variety is apt to grow rather strongly, but it is fairly hardy, and yields a good succession of fine, close heads during April and May. Wilcox's Improved is a good variety for May, but this again is not required, as Veitch's Model is in season at the same time, and is in every respect a first-class sort. It is of starchy habit, and therefore hardy. It forms close, conical-shaped hearts, which, being closely protected with the leaves, are of excellent colour, and the quality also is all that one could wish for. Ledsham's Latest of All is certainly a very good late sort, and produces extra fine, close hearts of the best quality. It also promises to be pretty hardy. Sutton's Late Queen, however, is quite equal to it as far as habit, size, and quality of hearts are concerned, added to which it is a few days later. On the whole, the last named may be said to be the best late Broccoli in cultivation, and should be grown extensively by all who may have an opportunity of so doing. We shall have it good till the middle of June. W. I. M.

THREE YEARS' PEA TRIALS.

SEASONS: 1882, fair, but growing unfavourably dry towards maturity. 1883, exceptionally favourable. 1884, very favourable. The Telegraph has led for three years in number of Peas per pod, size and weight of Peas and pods, but in pods per plant it is third, and therefore its

productiveness for a given length of row is inferior to that of the Champion and the Imperial. Although in number of Peas to the pod the Blue Imperial is least, it leads in number of pods to the plant, and for three years its average nett produce of edible Peas to 10 feet in the row has been

TRIAL FOR 1884.		Seed from Crop of	Date of Planting.	Date of Vegetation.	Date of first Picking.	Average height of haulm of 10 plants, ft. in.	Average No. of pods per plant, No.	Weight of 200 average pods, Oz	Weight of Peas from 200 average pods, Oz.
VARIETIES.									
Blue Peter	1883	May 13	May 24	July 7	22	47	47½	23	
American Wonder	1883	April 15	May 1	June 23	1 2	73	43	22	
"	1883	"	"	"	1 2	49	40	21	
"	1883	"	"	"	1 1½	39	40	21	
"	1883	"	"	"	1 1½	49	39½	21	
"	1883	May 13	May 24	July 5	11½	58	34½	16	
"	1883	"	"	July 7	1 0½	36	42	19	
"	1883	"	"	July 5	11	40	32	13	
"	1883	"	"	"	1 0	42	32	14	
First and Best	1882	April 15	April 30	June 26	3 6	93	35	16½	
First of All	1882	"	April 29	"	3 10	131	36½	18	
"	1883	"	"	"	3 7½	92	34	17	
"	1883	"	"	"	3 10½	134	24	12	
Carter's first Crop	1883	"	April 30	June 21	3 9½	102	42	20	
Daniel O'Rourke	1883	May 13	May 23	July 5	1 7	45	41	22	
McLean's Advancer	1883	"	May 24	"	1 9	48	43½	22½	
"	1883	"	"	"	1 9½	59	40	20	
"	1883	"	"	"	2 0	48	41	21	
"	1883	"	"	"	3 2	145	39½	20	
Dwarf Blue Imperial	1883	"	"	July 22	3 0	115	50	23	
"	1883	"	"	"	5 0	67	74	29	
Culverwell's Telegraph	1883	"	"	July 21	5 3	70	76	28	
Carter's Telephone	1883	"	"	"	5 11	126	62½	31	
Champion of England	1881	"	May 23	Aug. 4	5 4	122	39	20	
"	1882	"	"	July 18	5 3	83	42½	23	
"	1883	"	"	"	5 6	83	44	22	
"	1883	"	May 24	"	5 10½	73	34	19	
Dwarf Wrinkled Sugar	1882	April 15	May 2	July 12	5 10½	73	34	19	

to form and stored in rich soil, either in the pit of a vinery, in cold pits or open sheds, they grow to a good size and are much prized. Snow's is more hardy, but with us not so good in quality. Veitch's Spring White was particularly good early in March, and will again be planted extensively. Cooling's Matchless has hitherto been grown, but we find we can afford to dispense with it, and

greater than that of the others; add the low growth of this variety and its very fine table quality, and it acquires a front rank in the list. The Blue Imperial is somewhat inclined to mildew, but seldom enough to hurt its Peas, while it withstands drought better than almost any other variety. Planted at the same time, of the four varieties in the above table, Advancer is usually

two weeks earlier in maturing than the others. The general average of the Champion is very high and in quality it is equal to any.

In the experiments last year for height of haulm, instead of taking any number of plants consecutively in a row, ten single plants were selected for measurement of average size and vigour. The same method of selection was pursued in counting the number of pods per plant; well-set blossoms were counted as pods. In obtaining pods for weighing and counting contents, those were taken as if picking for table use, very imperfect pods being rejected. The figures therefore fairly represent the average facts.

The season of 1884 was, as has been stated, exceptionally favourable for Peas, and all varieties made a fine healthy growth. All entered in the annexed table had like exposure and treatment, and were grown in good garden soil. Seed was obtained from different localities and in some cases of different ages, to observe, in the same variety, the effect of these differences. The American Wonder, no matter where grown, was very true to type and good in yield; a comparison of the two plantings shows this variety should be sown early. The Blue Peter was rather more productive than the Wonder. Sibley's First and Best, Henderson's First of All, and Carter's First Crop are so similar in every respect, that they are not entitled to distinct names. They were all earlier than the dwarfs above mentioned and more productive. In earliness, productiveness, and quality, Daniel O'Rourke maintains its good reputation. The four lots of seed of Advancer are shown by the table to have proved remarkably even in growth and produce. The merits of the Blue Imperial are named in connection with the first table; its habit of producing pods in pairs is alone enough to account for its great prolificacy. Telegraph and Carter's Telephone are almost identical in appearance and produce. Champion of England needs no word of commendation, but attention is called to the curious fact that in this instance the older the seed the better the result. The 1881 seed produced more pods per plant, and more and heavier Peas per pod than fresher seed, and the 1882 lot gave better results than the average of the two of 1883. The same holds true in the case of the First of All, where the 1882 seed did much better than that a year younger. The oddity of this list is the last mentioned in the table: a Pea bought as a dwarf grew to 6 feet, was 88 days in maturing, and produced over 70 pods to the plant, in pairs, but the Peas were small and light.—*American Garden.*

WHITE RUNNER BEANS.

I HAVE read with interest the articles that have appeared under this heading in THE GARDEN. "1." (p. 479), is, no doubt, correct in what he states as to the value of the small-podded Scarlet Runners to market gardeners, but his remarks should not deter cultivators from experimenting in the way of improving this most popular class of vegetables. The Pea and the dwarf Bean have received more attention in this respect, and the result has been the introduction of some most valuable sorts. What we require, in my opinion, is a hardy white runner that shall be generally useful, that is, giving abundance of green pods, which, when allowed to ripen, will yield dried Beans suitable for use as Haricots. Having secured such a Bean, we shall, perhaps, cease to hear of the abandonment of the crop to the frost after the tender pods have been gathered, a system practised by professional as well as amateur gardeners throughout the country, causing in the aggregate an annual loss of many tons of nutritious food. Even now we might abandon this unthrifty habit to advantage, for the harvesting of ripe and unripe pods is easily done; the bine and the sticks have merely to be lifted about the middle of October (or before the night frosts commence) and be placed under a tree, wall, or shed, and there left to dry. The dried Scarlet seed, though not suitable for cooking, is excellent food for cattle and sheep, which are also fond of the bine and the shells, so that even these should

not be wasted if it can be avoided. It may interest some to know that experiments are being made with a Runner Bean which seems to possess the desirable qualities mentioned above. It is called the Ivory Inca. Its pods grow in bunches, are soft and velvety to the touch, and very delicate in flavour. The seeds are of medium size, uniform, and of a kidney shape. The White Inca Runner, introduced this season, is an excellent variety, but its pods grow large, and the seeds are hardly sufficiently small and even to serve well as Haricots, though they may be used as such.

V.

Pea failures (p. 344).—Enclosed are Peas from the crop of 1884—one of the finest samples to look at ever sold or bought, but every Pea is blighted in the centre and decaying. This may explain why new Peas will not grow. This blight is a very serious matter when one thinks of 50 quarters of Peas and not a sound Pea amongst them, though externally faultless; if, however, each Pea is broken, the centre will be found wasting away.—A. B. C.

Yours is a bad instance of decay attacking the germ. Cases of decay of this class, though not to the same destructive extent as in the sample you have sent us, are not uncommon. In humid weather mildew may be frequently seen inside the pods of Peas, extending, in some instances, to the outer surface of the seeds themselves. The microscopically fine spawn threads of the mildew in some instances appear to find their way by a minute natural orifice into the interior of the seed, and there invade the germ. Decay of this class is favoured in all stages of its growth by stagnant air and humidity. Seed Peas should be gathered when dry and kept in a dry air.—W. G. S.

Planting Asparagus—It is a fact patent to me that Asparagus should be planted when the young growths are about 2 inches long. Draw wide drills, lay in the plants straight, and cover them with a mixture of light loam and sand. After planting, slightly rake over the surface and sprinkle it with salt; should the weather be dry, water and mulch with good rotten manure. If mulching is not done just now, do not forget it in October. Very fine heads may be cut the second year if good two-year-old plants are planted.—R. GILBERT, *Burghley.*

Large v. small Runner Beans.—Were I not residing in the very midst of market gardens and conversant with the opinions of growers, I should hesitate to reply to the strictures of "J." on the subject of market Runner Beans. I gave reasons previously why the White Dutch is preferred to the Scarlet Runner, viz., that the seed is cheaper and the pods maintain a better colour. As to large strains of runners v. small or old strains, that is essentially a matter of opinion, and not one of fact. But I am guided in my view first by the undoubted fact that growers like to have as fine a sample as they can, though not of old and ugly Beans, as "J." seems to assume large sorts must inevitably produce, but long straight young ones, such as these larger podded sorts do produce in great abundance. The fact is that the pods of the larger kinds are young, clean, and tender, and just the size which the pods of the smaller sorts are when they are old and seedy. Moreover, owing to their greater rapidity of growth, pods are produced more rapidly, whilst as to prolificacy, I am certain that any so-called Champion or exhibition kind is quite as productive as are any of the older sorts. "J." seems to have obtained his notion of what Champion Runners are in size from Girtford Giant. Those are exaggerated Beans, and do not enter into consideration with me. I have grown those larger fruited Champion forms for years, not as gardeners grow them, but as grown in the open field without support, and I can aver that they are wondrously productive and yield fine, long, straight, clean pods, that are more tender and delicious eating when cooked than those of any old small strain.—A. D.

GARDEN FLORA.

PLATE 495.

THE CARDINAL LADY'S SLIPPER.

(CYPRIPEDIUM CARDINALE.*)

THE genus *Cypripedium* is now one of the most important of all the groups into which Orchids naturally divide themselves, ranking as it does to-day with *Dendrobium*, *Odontoglossum*, *Masdevallia*, and *Oncidium* in interest, even if not with the gorgeous *Cattleyas* and *Laelias* in beauty. So robust in growth, so floriferous and long enduring are *Cypripediums*, and so diversified is their evergreen foliage, that one may the more readily be excused for regretting that they are not more generally adopted and grown by collectors as a distinct speciality. *Cypripedium* houses ought to be as common as *Odontoglossum* houses, and the harvest, to a real lover of quiet floral beauty, would be a rich and lasting one. Mr. Philbrick has long grown many species and varieties, and Mr. Fred. Moore, curator of the Glasnevin Botanic Gardens, has a collection of something like a hundred species and varieties. When grown in this comprehensive way, the whole year is encircled by their blossoming.

HYBRID LADY'S SLIPPERS.

HYBRID.	PARENTS.
<i>Cypripedium Dominii</i>	C. Peasei caudatum
<i>Harrisianum</i>	barbatum—villosum
<i>veitchianum</i>	barbatum—Fairrieanum
<i>albo-purpureum</i>	Schlumi—Dominii
<i>ca'anthum</i>	biflorum—Lowi
<i>calurum</i>	longifolium—Sedeni
<i>cardinale</i>	Sedeni—Schlimi album
<i>euryandrum</i>	barbatum—Stonei
<i>grande</i>	Roezli—caucatum
<i>Leeanum superbum</i>	insigne—Maulei—Spicerianum
<i>leucorrhodum</i>	Roezli—Schlimi album
<i>luc dum</i>	villosum—Lowi
<i>macropterum</i>	Lowi—Veitchi
<i>marmorophyllum</i>	Hookeri—barbatum
<i>Marshallianum</i>	venustum pardinum—concolor
<i>microchilum</i>	niveum—Druyi
<i>Morganii</i>	Veitchi—Stonei
<i>nitens</i>	villosum—insigne
<i>œnanthum</i>	Maulei
<i>œ. superbum</i>	Harrisianum—insigne
<i>porphyreum</i>	Maulei
<i>porphyrochlamys</i>	ditto ditto
<i>porphyrospilum</i>	Roezli Schlumi
<i>pyc opterum</i>	lidorum—hirsutissimum
<i>Schroederæ</i>	Lowi—Hookeri
<i>Sedeni</i>	venustum—Lowi
<i>Sedeni</i>	caudatum—Sedeni
<i>Sedeni candidulum</i>	Schlumi—longifolium
<i>selligerum</i> and <i>majus</i>	longifolium—Schlimi
<i>septiciliare</i>	Schlumi album—longifolium
<i>tesellatum</i>	barbatum—laevigatum
<i>t. porphyreum</i>	barbatum—Veitchi
<i>vernixium</i>	barbatum—concolor
<i>Arthurianum</i>	ditto ditto
<i>Ashburtonie</i>	Argus—villosum
<i>Crossianum</i>	Fairrieanum—insigne
<i>hybridum</i>	insigne—barbatum
<i>Leeanum</i>	venustum—insigne
<i>superbium</i>	Stonei—barbatum
<i>Swaniamum</i>	Spicerianum—insigne
<i>superbium</i>	punctatum sinum
<i>Swaniamum</i>	superbium—barbatum
	Dayanum—barbatum

The rapid strides made by Mr. Seden and others in hybridising these plants illustrate for us one of the most remarkable phases of modern horticulture, seeing that these hybrids (see list) now number some forty or fifty kinds at least. To all those amateurs who care to infuse a little scientific amusement into their love for beautiful Orchids, the *Cypripeds* offer a royal road, since in no other group are the conditions of success so easily practicable, nor the results so prompt and sure. Those who are interested in the hybridism of these plants will find some curious facts in Mr. Veitch's paper which he read at the Orchid conference, and I hope some day ere long he will ask Mr. Seden to rear us some seedling plants of

* Drawn in Messrs. Veitch's nursery, Chelsea, January 23, 1885.



CYPRIPEDIUM CARDINALE.

that graceful little plant, *C. Fairrieanum*, which all orchidists admire, but which so few can at the present time obtain.

I sometimes wonder that our good friend Mr. Dominy, in his well-earned retirement, does not cultivate a few Orchids just to keep his hand in by hybridising them, seeing that he was the god-father of the first hybrid Orchids and *Nepenthes* ever raised; and yet at our Orchid conference he was practically an outsider, his life's work being simply ignored. But the man who raised *Cattleya exoniensis* and *Calanthe Veitchi*, and who had the training of a hybridist like Mr. Seden, can afford to forget that the conference people did not honour him.

The plant we now illustrate in colour is, as the plate testifies, a very beautiful plant, elegant in form and refined in colouring. Its parents are *C. Sedeni* (itself a hybrid) and *C. Schlumi album*. To my mind not the least attractive feature is the small shapely flower of *C. cardinale*. There are several of the *C. Roezli* and *C. longifolium* hybrids much more majestic in port and far larger in blossom, but then "comparisons are odious," and, as the poet has it,

To grow in size just like a tree,
Does not make things better be.

Mr. Seden is to be complimented on having originated a plant of such real merit as this one actually is. Really, after all, hybridism is the romance of gardening, and will be so long as the spirit of the great Micawber exists in us, ever anxious as we all are to see what will turn up. The hybridist's art commences where Nature leaves off, and will remain to us when every square mile of our globe shall have been ransacked, and the last wild species torn away from its hiding-place. Of its potentialities and possibilities, not even the wisest can form an idea. Of all arts to-day, it seems to us the most indefinitely extensible, and the question to be decided in the future will be whether the best botanist will not after all be the hybridist in the garden.

F. W. BURBIDGE.

WORK DONE IN WEEK ENDING JUNE 2.

MAY 27.

THE long-desired change in the weather arrived to-day, sunshine and summer's warmth in such rich abundance, that our main thought has been, may it last, and certainly the barometrical indications seem to point in that direction. Planted out more bedding plants; succulent beds we have finished, and one or two of the subtropicals, *Tibaccos*, *Abutilons*, *Acacias*, and *Solanums*, being of the number. As a rule these plants grow so large as to completely hide the soil, but by way of furnishing the beds at once, we plant as temporary undergrowths the commoner and easily raised plants, such as *Perilla*, *Salvia argentea*, *Gold Feather Pyrethrum*, *Centaurea candidissima*, *Gnaphalium lanatum*, and variegated *Mesembryanthemum*. Planted small vases; *Pelargoniums* are our favourite plants for the purpose, and the best kinds are *Waltham Seedling*, *Bonfire*, *Mrs. John Gibbons*, and *Henri Jacoby*; as drooping plants for the edgings of such vases, all the varieties of *Ivy-leaved* and the variegated *Mangles's Pelargoniums* are amongst the best for the purpose. *Lobelias*, *Calceolarias*, *Heliotropes*, and *Petunias* do not relish the inevitable drought of vase culture, and therefore we never use them in that way. Planted out our first lot of *Celery*. Our trenches are 27 inches wide and take a double row of plants, and are 10 inches apart in the line. The plants are carefully lifted with good balls of earth adhering, and are planted with trowels, a good watering being given the moment they are planted, and thus they hardly feel the moving. Indoors, Grape thinning is again the order of the day, *Lady Downes*, *Alicante*, *Alwrick Seedling*, and *Muscats of Alexandria* being the varieties now in hand. Early Grapes, now nearly fully ripe, are aired freely as in an ordinary greenhouse, and the front opening sashes being close to the ground, a close meshed netting is suspended over the lights to exclude birds, mice, rats, &c. Peaches

are looked over daily, and fruit nearly dead ripe is gathered and taken to the fruit room for two or three days before using—a plan that brings out the flavour of the fruit to perfection, and rarely indeed is there a complaint about the fruit being mealy, as there used to be when it was left to ripen on the tree.

MAY 28.

Again very fine, but cold for the season, but planting out must be finished as soon as possible, and we have therefore been busy at the same kind of work as yesterday, and now all that remains to be planted are the tender subtropicals, *Alternantheras* and *Coleus*. Began to peg into form the lines and groundwork plants; *Gnaphalium*, *Mesembryanthemum*, and *Leucophyton* are the kinds now being pegged. Perennials have grown away most vigorously the last few days, and tying up has again been commenced. *Pæonies*, *Anemones*, *Ranunculus*, *Aquilegias*, *Pansies*, and *Pyrethrums* are now in grand flower, and for the time being make the bedded-out garden look mean indeed. Earthed up more *Potatoes*, *Cauliflowers*, and *Coleworts*. Lifted and heeled in in a cool spot late *Broccoli*, the ground being required to be got ready for other sowings of *Peas*. *Sutton's Late Queen Broccoli* is now the best kind we have in use, and, I think, the best kind in commerce; we have them quite 15 inches across, solid, and white as the finest spring *Cauliflower*. Early *Cauliflowers* are now turning in, so that with this variety of *Broccoli* there need be no break in the supply, provided due forethought in respect of sowing and planting is exercised. Grape thinning has again been our principal indoor work. Potted double *Petunias* for flowering in pots and placed them in cold frames. Gave the final shift to *Tree Carnations* and plunged them in coalashes, to be grown on in the open air; *Bouvardias* have also been given their final shift, and for the present have the shelter of frames. Tuberous *Begonias* for autumn flowering are now being given more root space; at present they are being grown on in the *Peach houses*, but they will have better quarters in the *Strawberry house* as soon as the forcing of these is ended.

MAY 29.

Another summer's day, with a thunder shower added. Planted out *Iresine Lindenii* and *acuminata*; they are used as surrounding lines to pink flowering *Pelargoniums*, with which is intermixed dwarf blue *Ageratum* and white *Viola Mrs. Grey*, a mixture of colouring which last season we thought so perfect as to consider its repetition desirable; the standard plants of the bed are *Abutilon Darwinii variegatum*. The heavy rains having washed the soil of the flower beds so hard that this drier weather causes it to crack, we are having it stirred over between the plants with pointed sticks—work that as soon as planting is finished will not again be required, as the mulching of *Cocoa fibre* refuse that will then be applied, will prevent this and hasten on the growth of the plants. Began to trench late *Broccoli* ground for *Peas*, finished planting the first batch of *Celery*, and planted *Lettuce* on the tops of the ridges. Gathered first *Gooseberries*; we might have gathered sooner, but they are our only scarce fruit crop (birds must be credited with this), that we did not wish to begin too soon. Pinched out sub-laterals of *Peaches* on open walls, and nailed in the principal shoots. The growth has not been so clean and healthy for several years, and the crop of fruit is immense and will require another thinning shortly. *Apricots* are so heavy a crop, that the fruit hinders the growth of young wood. Abundance of clear manure water has been given them, and a day or two hence the trees will be given a washing with the garden hose, also *Peaches* and *Morello Cherries*. These last are infested with black fly and to-day have had a dressing with soap-suds and tobacco water. The crops of *Pears* are enormous, and we intend to try to dislodge all weakly fruit with the hose, and afterwards start a man to thin out the fruit, for by no possibility can a tithe of it swell to a respectable size if thinning be not done. If

Apples could have the same attention, the fruit would be much finer than with the present profusion it is likely to be. Only the daily necessary work in the houses can be done till Grape thinning is ended, which happily will be the case in about three days more.

MAY 30.

Magnificent weather, and therefore after the usual weekly clean up, which just now is not of a formidable description, planted out a few *Coleus*, *Ricinus*, *Solanums*, and *Wigandias*, and continued the pegging down of plants as well as the stirring of the soil that had got surface-bound. Tied *Dahlias* to small sticks till time can be afforded to fix permanent supports. In kitchen garden continued the preparation of ground for late *Peas*. Planted out *Tomatoes* against parts of fruit walls where there was space sufficient for a plant without encroaching on the fruit trees. The soil being good, no preparation was needed other than forking up the soil deeply where the plants were to be put, and afterwards mulching them with good manure. They will be kept well supplied with water and confined to one stem, the same as those that are planted in the open border, and supported with stout stakes. Other pressing work compelled the respite from Grape thinning to-day. *Strawberry* forcing still gives us an immense amount of labour. President is the variety we have now in, and as it grows very large, the fruit is proportionately thinned; from six to eight fruits to a pot is the average allowed to ripen, the remainder being picked off soon as set, and a quantity have had that attention to-day. Watered *Pines* and tidied up beds; also watered *Fig house* and second *Peach house* border, both of which will not require more till the fruit is ripe and gathered. *Melons* and *Cucumbers* have also had a due share of attention, both as to watering, stopping, and tying. Wishing to retard *Pines* that are ripening, they have been taken out of the strong heat of the *Pine pit* and stood on the floor of a *vinery*—a much better way of preserving the fruit than the usual one of cutting it and keeping it in the fruit room. Cut off the spare bunches of latest *Muscats*, and the remainder are quite ready for thinning out of the berries, and must be done within the next few days. Stopped strongest shoots of *Lady Downes* and *Alicante*. We make it a rule to discontinue pinching as soon as they begin to flower till the *Grapes* are set and partially thinned, and these varieties at this stage make such a large amount of growth, that if removed all at once the check must be injurious, hence our reason for stopping part of the shoots only, the stopping of the remainder being deferred for three or four days.

JUNE 1.

Summer at last; 74° in the shade, and unclouded sunshine the day long. Mowing in the early morning and weed destruction by surface hoeing afterwards, the crops operated on being the main plots of *Potatoes*, *Cabbages*, *Rhubarb*, *Artichokes*, *Seakale*, *winter Onions*, seedling *Brussels Sprouts*, *Parsnips*, and *Carrots*; gave *Morello Cherries* a wash with the garden hose; they are fearfully attacked with black fly. Query, why are *Cherries* so much more liable to attacks of this insect than other fruit trees? As yet *Roses* have given us no trouble in respect of parasites, but to-day I noted a few leaves curled up with the leaf-rolling caterpillar, and with all haste set a boy to look over all our stock, his directions being to first squeeze every affected leaf so as to make sure of killing the insect, and afterwards to pick off the leaves. There has been no time for bedding out, much as we desire to get the work out of hand now that the weather is suitable. Indoors, Grape thinning is still the trouble, the late *Muscats* having been begun to-day, and *Lady Downes*, *Alicante*, *Gros Colman*, and *Alwrick* completed. Fearing that we may be short of *Alternantheras*, preparations for putting in another frameful of cuttings have been made to-day. Some years ago cuttings that we inserted on the 12th of June turned out better and filled up as quickly as any we had got; therefore we have no fear that the outtings now to be inserted will not prove equally

satisfactory. The lights of the frames containing *Alternantheras* are now left open night and day, and most of the stock is already so hardy that we hope to start planting them in a day or so.

JUNE 2.

The weather to-day has been as perfect as yesterday, and it may now be considered safe to plant out the tenderest bedding plants, that is, if they are ready by having been well hardened to bear the exposure, as ours are except part of the *Alternantheras*. A few *Cannas*, *Ricinus*, *Sunflowers*, and *Solanums* have to-day been planted, and as undergrowth, *Coleus*, *Perilla*, *Centaureas*, and *Mesembryanthemum*. Watering of those planted since the rain has been done, as we never like to see them flag down, as the sunshine of yesterday and to-day caused them to do. It has been the perfection of weather for hoeing, to prevent the growth of weeds, and therefore this has been continued and for the present completed. Wall trees have again had some attention, and large, horizontal-trained Pear trees on walls have been relieved of part of their fruit, and the leading shoots of young cordons have been tacked in. Cherries are so frightfully blighted, that the washing has been repeated. Airing of houses, syringing, watering of plants, tying up and pinching out the shoots of Melons and Cucumbers is about all that we have been able to do indoors, the remainder of Grape thinning being left to be done early in the morning, and in the evening when the temperature is not oppressive. Stopped another portion of the shoots of late Vines, and tied down such as required that attention, as much space as possible being allowed them, and each one kept clear of the other.

HANTS.

FRUITS HARDY AND UNDER GLASS.

A BEAUTIFUL rain of twelve hours' duration has greatly changed the atmosphere, improved the temperature, and, we may hope, put an end to the morning frosts which have troubled us throughout the month of May. These morning frosts, it is true, with two exceptions have not been very severe, but on those two occasions we had 6° and 8°—rather too much for tender blossoms in low damp situations. Plums, Cherries, and early Pears in our limestone valleys have suffered to some extent, and it is not unlikely the Plums in the great Plum valley of the Avon have been more or less injured. But, judging from the favourable reports from all parts of the kingdom, there can be but little doubt that the fruit crop this year will be exceptionally good. Although Pears in orchards show the effect of the low temperature, they are very clean, free, and appear to have set plenty of fruit. Apples, also clean, healthy, and free from grub, are unusually late, but the blossoms are fine, and after the steady and continuous washing they received the fruit will most likely escape the ravages of the grub. Should this be so, Apples will be very plentiful, cheap, and, as is usual in this country, neglected and allowed to deteriorate in quality before all are converted into cider. Many large growers who make the most of their fruit look well after the different kinds, keep them separate instead of mixing early and late sorts together, and convert them when in suitable condition. They also select the finest and brightest fruit for potting purposes, and realise good prices in the northern towns where appearance often attracts the retail purchaser. Orchards under this kind of management pay, and it is to be regretted that more of the smaller holders are not taught to market their best fruit instead of grinding it into cider worth 3d. to 6d. per gallon. Owners of estates and their gardeners in this and the adjoining counties might do much for cottagers by holding out a helping hand and advising them to send their finest produce to populous towns where thousands of people rarely see an Apple tree bearing fruit.

PEARS ON WALLS

have set more abundantly in this district than we have noticed for some years past. Notwithstanding the cold nights, being sheltered from the prevailing north winds, the trees are already making

rapid growth, and many of them, notably the cordons, already require attention. We do not, however, approve of very early pinching, as it is best to let the young growths get moderately hard and fibry before they are stopped at the fourth or fifth leaf. Some kinds throw out foreright shoots 4 inches to 6 inches in length with blossom-buds at the end. These we leave intact at the winter pruning by way of giving them a chance to set. When looking over the trees about this time these shoots should be shortened back where they have not set their fruit, otherwise they will look unsightly throughout the season. If not already done, the trees should be well washed out with the hose or garden engine to free them from the remains of the flowers and sterile fruits. Thinning in many places will, no doubt, be necessary, but this must be deferred until the fruit gets well advanced and the best shaped Pears can be selected. Large kinds, like *Pitmaston Duchess*, should be severely thinned, as it is no uncommon occurrence for fine fruit of this profitable variety to weigh upwards of 18 ounces each. Intermediate and small sorts will also pay for thinning, the number left being regulated by the size they attain and the condition of the trees. The thinning of fruit is not so vigorously followed up as it ought to be, and where this important operation is admitted to be a part of a skilful grower's duty, owners often restrain him from following the dictates of his judgment. If fruit worth eating is expected, it must be well thinned, otherwise disappointment will follow, and the trees will suffer into the bargain.

APRICOTS.

Where thickly set, these may now be thinned, otherwise if in bunches they will push each other off. Old trees on old walls are often badly attacked by the grub. When this happens, hand-picking perseveringly followed up is the only remedy. After the trees have been picked and the young growths pinched, they should be well hosed several times to cleanse the foliage and walls, and at the same time to benefit the roots. Heavily cropped trees will derive great benefit from occasional dressings of old lime rubble or hair plaster, and finally a mulch of half rotted or fresh stable manure.

PEACHES.

Disbudding and thinning, little and often, must still be followed up until sufficient for the crop and a fair percentage for dropping or accident remain evenly distributed over the trees. In ordinary seasons years ago it used to be the practice to ply the trees with clean water from the garden engine on fine evenings; but a series of seven cold years has pretty well stamped this operation out of our calendar of operations, and we are now obliged to pay extra attention to root-pruning to prevent the growths from becoming gross and the leaves blistered and gouty. So far, fortunately, the trees have been very clean and free from insects, and unless we are overtaken by a violent check, they will most likely remain so, but it is always well to be on the alert, as aphids increase rapidly, and the first fly should be the signal for action. The disbudding of Peach trees should always be commenced at the top of the wall and continued downwards towards the stems. Heeling in with neat ties, to keep the young growths in the way they should go, will be the next operation, and in order to give them free exposure to light and air throughout the summer, all shoots, not leaders, that will be removed after the fruit is gathered may be pinched back to within a few inches of the old wood.

VINES.

Where Grapes are extensively grown this department will now keep all hands fully occupied, as the Vines are making rapid growth and require frequent attention. Lady Downes, Mrs. Pince's Muscat, the old Muscat, and all the finest kinds of late Grapes, intended to hang well into or through the winter, if not already thinned, will shortly be ready for the scissors, but as some of these, particularly where they cannot be kept up to Muscat treatment, do not always set every berry, they should have all the small stoneless

berries removed first and the shoulders well supported with strips of matting, preparatory to the final thinning, when they get further advanced. If well watered before they came into flower, and the houses have been kept at temperatures ranging from 70° at night to 85° by day, with a moderate supply of atmospheric moisture to prevent the delicate organs of the flowers from suffering, Lady Downes and that shy variety Black Morocco should set as freely as Hamburgs. If allowed to range much below 70°, the setting of these two fine Grapes cannot be depended upon, and imperfectly fertilised berries never keep well. When all the Grapes have been thinned the borders should be well mulched with good rotten manure preparatory to another watering, and then covered over with fresh long litter from the stables; the latter, properly prepared by turning over in the open air, plays a very important part in Grape culture, especially when renewed or added to at short intervals during the time the fruit is swelling.

Late Hamburgs will now require attention, although this year they are much later than usual, but this is an advantage, as we do not wish to have the Grapes ready before October; then, when fully ripe, by cutting and bottling they can be kept well through December in a dry Grape room or Lady Downes house. When hanging in suitable houses this bottling may not be necessary, but in our own case it is, as the Vines are a long way from the pipes, and suffer from mould when the leaves begin to hold condensed moisture through the long nights. Moreover, after bottling, strong fire heat is applied to ripen up the wood, and this could not be done when ripe Grapes are hanging and have to be kept as cool as possible. Small or medium sized bunches are the most suitable for keeping, and they should be thinned with a very liberal hand, otherwise mould may get into them before they are ripe.

The work in houses in which Grapes are swelling will simply include the weekly stopping and regulating to keep the foliage evenly distributed over every part of the trellis, good syringing about the stems and other parts where a syringe-ful can be put in without casting spray on the berries, and plentiful supplies of water to the internal roots. If Gros Colman and the increasing favourite Gros Maroc are grown amongst other varieties in the mid-season houses, they should be extra well thinned, and both of them being strong growers they should have an abundance of room for extension, that is to say, one, two, or more rods should be laid in each year to become permanent fruit-bearers in the future, and as this, the true mode of reducing the original term "extension" to practice, can only be carried out by cutting away supernumeraries, those kinds which do best should be encouraged, until eventually the whole of the house is given up to one, or perhaps two, of the finest Vines. When gross Vines, whose roots are beyond control, as was the case at Longleat, do not submit to restrictive treatment, they can often be grown into a most satisfactory fruitful condition by the steady removal of their nearest neighbours, until immense trees, worthy of the term, yield enormous bunches of the finest quality.

Early rineries, from which the Grapes are cut before the end of June, require very careful management, particularly where they are grown under fixed roofs, otherwise an attack of spider or dryness about the internal roots which will hasten the ripening of the main leaves may lead to their breaking again into growth under the influence of a hot autumn. Attention should, therefore, be paid to syringing twice a day, to induce the formation of plenty of fresh laterals, which may be allowed to grow freely provided they do not interfere with the main leaves. These also must be kept clean and free from spider until the wood is thoroughly ripe, and they gradually assume that soft nankeen colour—the best of all indicators of healthy root action. Ventilation, it is needless to say, must be abundant both by night and day, until we get thoroughly into summer weather, when all movable lights may be taken off to let in as much air as possible.

Houses in which the Grapes are now ripe or approaching that stage will now only require moderate firing to keep up the night temperature and to prevent the condensation of moisture on the berries. Hamburgs like plenty of shade from the direct rays of the sun, but not complete isolation from the influence of light and solar heat which find their way through a well regulated canopy of healthy leaves, kept in constant motion by liberal, but judicious ventilation. Unlike autumn-ripened Grapes, which require a dry atmosphere, the fruit in early and mid-season houses, when quite ripe, even requires a liberal supply of atmospheric moisture, provided it is not stagnant. The houses should, therefore, be regularly damped down through the day, but not at night, and all bare stems and breadths of foliage clear of fruit carefully syringed to keep spider in check and the sap in activity. Where fermenting material has been used for covering early external borders, it should be reduced in bulk by the removal of layers at short intervals as the weather becomes warmer. If roots have found their way upwards, they must not be disturbed, but plenty for a heavy mulch must be allowed to remain throughout the summer.

W. COLEMAN.

Eastnor Castle, Ledbury.

GARDEN DESTROYERS.

SPRINGTAILS.

(PODURIDÆ.)

THERE are a number of common little insects which are generally quite overlooked, but which at times do a great deal of mischief; they are commonly known by the name of springtails, from their habit of jumping away when they are alarmed. These jumps are made by means of an apparatus with which they are provided near their tails, which acts much in the same way as the spring in a toy jumping frog; of this I shall, however, give a more detailed description. The springtails are abundant almost everywhere in moist situations; some kinds even appear to live on the surface of standing water, but most of them may be found among dead leaves, in fungi, Moss, and wherever there is decaying vegetable matter; in garden frames and hotbeds they are sometimes present in great numbers. They do much mischief at times in Mushroom beds, Cucumber frames, and among the succulent roots of plants; in the former they sometimes destroy the Mushrooms as soon as they attain the size of the top of one's finger. Cucumbers they also attack when quite young, injuring them by goawing off their outer skin, which causes them to shrivel.

In the open ground they attack the roots of Cabbages and plants of that kind, Carrots, Potatoes, and other roots; if plants are not very healthy they are particularly liable to their attacks. Curtis, in his work on "Farm Insects," mentions that one of the springtails (belonging to the genus *Sminthurus*) in Nova Scotia at times destroys the crops of Turnips and Cabbages by attacking them when in the seed leaf, and says, "they may be expelled by sprinkling salt on the land after the seed is sown and well rolled down." I cannot hear of any experiments having been made in England to destroy them, but if any of the readers of THE GARDEN have been more fortunate, or have found out any means for getting rid of them, I hope they will record their experiences in THE GARDEN.

Fumigation with tobacco smoke would probably kill them, but in Mushroom beds where they would be so nearly on a level with the ground the smoke would scarcely touch them; watering the beds with some insecticide which would not hurt the Mushrooms would most likely destroy them. In some cases of attack it might be useful to sprinkle the ground round the plants with salt or nitrate of soda, and then wash the springtails off by syringing the plants; they would then fall on the insecticide, which would be wet from the syringing, and would be killed before they were able to escape. As these pests jump away as soon as disturbed, it is of no use syringing the plants with an insecticide unless there is something of the same nature for

them to fall into. I have species which live on the roots of plants, which are even more difficult to deal with, but watering with lime water, a strong solution of salt, or nitrate of soda, or 4 parts of carbolic acid to 100 parts of water would be useful, particularly if the surface of the soil was slightly stirred first. If the ground is badly infested, allow it to remain fallow for some time, taking care that there are no weeds permitted to grow on which they might feed, and give a good dressing of gaslime and quicklime afterwards.

It has been a matter of much difference of opinion among entomologists whether these springtails should be considered as true insects or not. I think it is generally admitted now that they are not, although very nearly allied. True, insects with some exceptions, as is generally known, undergo certain transformations. The Poduridæ and the whole class of the Collembola do not go through these metamorphoses. The young ones even when only just hatched very much resemble their parents in shape and general appearance, and attain maturity without any marked changes;

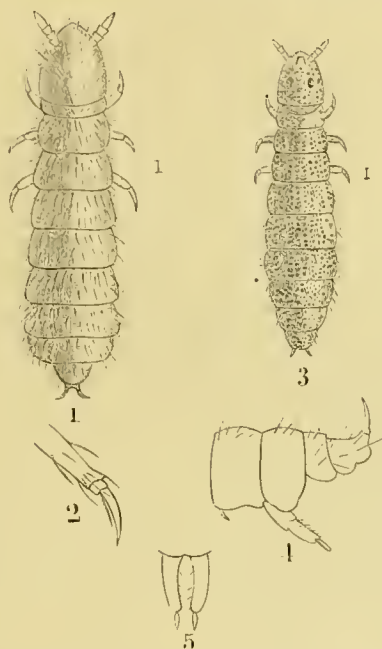


Fig. 1, *Lipura ambulans* (magnified); 2, foot of *L. ambulans* (magnified); 3, *Achorutes* species; 4, ditto side view of spring (extended); 5, ditto, from underneath.

no species in this class has wings or even the rudiments of them. The parts of the mouth are different from those of any true insect, and their jumping apparatus is quite unlike any of the means used by insects for springing into the air. The grasshopper, Turnip flea beetles, fleas, and many other jumping insects use their hind legs for making their spring; the skip-jack beetles have a spine at the base of their thorax, underneath which fits into a groove in the body; by suddenly liberating this spine the insect is thrown into the air.

But these springtails have an organ (figs. 4 and 5) which is composed of a basal joint and two arms, which in some genera are each formed of a single, and in others of two joints. This organ or spring is attached to the last joint but one of the body or to the one before that, and when at rest lies close to the body with the free end towards the head. On the next joint is the catch, a small bifid appendage, which, passing between the two arms of the spring and under its basal joint holds the spring in its place. When a jump is made, the catch releases the spring, which flies back by its own elasticity, striking the ground and throwing the creature into the air; the spring is then returned into its place by the aid of some strong muscles which are provided for that purpose. All the genera are not furnished with this jumping apparatus. The springtails are

all small creatures, varying from half-an-inch to one-thirtieth of an inch in length, and are mostly long and narrow in shape (though some species are short with rounded bodies), and are formed apparently of nine joints or divisions. The first is the head, the next three form the thorax, and the remaining six compose the body. The head is furnished with a pair of antennæ with from 4 to 8 joints in each; in some species they are quite short, in others they are as long as the body. The eyes in most species are easily distinguished, but in others it is very questionable whether these organs exist at all. The mouth is furnished with a pair of mandibles, or jaws, with which the creature is able to gnaw the substances on which it feeds. The first three joints of what appears to be the body really form the thorax, and each bears a pair of legs; the feet terminate in a double claw (fig. 2), one of which is, however, very much smaller than the other. The body is clothed more or less with hairs and sometimes with scales as well, and in some cases terminate in a pair of upturned hooks; beneath is the spring, &c., already described.

The figures are of two species belonging to the Poduridæ. Fig. 1, *Lipura ambulans*, a small white species which has been found doing much damage to the roots of Cabbages, &c.; it is about one-fourteenth of an inch in length, of a milky white colour, and sparingly covered with fine hairs. It probably has no eyes; its antennæ are composed of four joints; its body terminates in two curved hooks. There are several species belonging to this genus, none of which, however, are provided with any jumping apparatus. Fig. 3, an *Achorutes*, probably *A. purpureus*, which I drew from some specimens which were doing much mischief in a Mushroom bed. Its length is one-seventeenth of an inch, and it is of a brown colour with darker mottlings. The eyes are very distinct; the antennæ are four-jointed. The body terminates in two recurved hooks. The jumping organ in this genus is attached to the last joint but two of the body.

G. S. S.

BULB MITES.

IN my article on these Acari in THE GARDEN of March 28 I mentioned that dipping the infested bulbs in water of a temperature of 130° or 140° Fahr. would probably kill the mites; since then I have had an opportunity of testing the effect of hot water on these mites. I placed small pieces of infested bulbs in hot water of from 110° or 115° Fahr. for five minutes, which killed every mite and a small worm which was among them. Now, if *Eucharis* and other bulbs which are attacked by this pest would stand a few minutes' immersion in water of the temperature just mentioned, I think we have a very simple remedy for the attacks of these mites. I have no opportunity of making experiments on a larger scale than I have done, which was only "a laboratory experiment." But if entire bulbs were immersed in water at 115° Fahr., say for ten minutes, to allow the heat to reach the mites which may be some little way from the surface, I think no mites would be left alive in such bulbs. If some one who has unfortunately a number of infested bulbs would try this plan and report the result, they would do a great service to many horticulturalists, as this pest seems to be spreading. If a number of bulbs be put into a comparatively small quantity of water, care must be taken to prevent it becoming too cool, through being chilled by the bulbs. It would be interesting to know if hot air of the same temperature would kill the mites.

G. S. S.

Insecticides.—As a slight addition to Mr. Baines' excellent article on insecticides in a recent number of THE GARDEN, I may call attention to the following recipe, the groundwork of a capital wash for in and outdoor Peaches, Plums, Cherries, &c. Care must be taken to use the proportions given, as a stronger dose will prove fatal to the foliage. Place half a pound of soft soap in a pail and pour on it one pint of hot water; work this well until the soap is quite dissolved, adding

gradually one pint of paraffin oil, and when this is well mixed add another pint of hot water and the same quantities of soft soap and paraffin as in the first mixing. When this is worked to the consistency of a thick cream, add two quarts of water and keep the mixture in a well-corked jar or bottle. One pint of this to five gallons of water will be found necessary for all outdoor work; indoors it should hardly be so strong. I can thoroughly recommend the above as certain death to all forms of aphids, and also red spider in a young state.—E. B.

INDOOR GARDEN.

SEEDLING AMARYLLISES.

HAVING been successful in raising and flowering Amaryllises from seeds, I may be allowed to differ a little from "S. D." (p. 494). I am not sure whether or not his advice is good as regards beginners when he recommends purchasing seedlings in preference to named varieties. I have tried both ways, and I find that the best named varieties are dear, but the best seedlings are certainly dearer. Inferior varieties of any class of flowers do not, as a rule, cost much money, but it does not follow that they are cheap, and it must not be forgotten that it costs as much to grow bad varieties as it does good ones. I do not say that spring is not a good time to sow the seeds, but that it is the best time is open to question. I have just sown mine, and those who intend to sow had better do so at once. Why wait until spring? By doing so, precious time would be lost. These seeds I have now sown, about fifty in a 6-inch pot, will vegetate in a fortnight, and in three weeks more the young plants will be ready to pot off. I pot a dozen in a 5-inch or 6-inch pot and plunge the pots in a little bottom heat. The plants will keep on growing until Christmas, and by that time some of the bulbs will be as large as small Filberts. The leaves will not decay in winter and the young plants must not be dried off like old-established bulbs; but during the months of November and December they do not require, nor should they receive, much water. Early in January they are again shaken out of the pots and re-potted, three in a 5-inch or 6-inch pot. If the pots are plunged in a gentle bottom heat, the plants will be strong, healthy, and in full growth by the end of February. By the end of the season the produce will be good thumping bulbs, some of which will flower the following season. A good compost in which to grow them is one formed of two parts good loam, one of turfy peat, and a liberal proportion of decayed manure. I save my own seeds, but those who intend to purchase seeds ought to do so now; they can be obtained new and good from those who make the Amaryllis a speciality. "S. D." advises that the plants be heavily syringed daily before shutting the house up in the afternoon. I never have our plants syringed, and they are never injured by red spider. I admit that thrips are troublesome, but we destroy them by fumigating. Syringing the plants daily does much injury to weak bulbs, and sometimes kills them. The water runs into the heart of the plants and down the sides of the bulbs, settling at their base. In very hot weather in summer we may, in the course of the day, lightly syringe them overhead, but the water evaporates before the house is shut up. So far as the present season has gone, we have not once used the syringe; the plants are open to inspection, and not a trace of thrips, red spider, or any other insect pests has been seen upon them. I dread the use of the syringe amongst delicate plants. They are frequently rendered unsightly by its use, even if the plants are not in flower; the delicate markings and the beautiful natural gloss on fresh green leaves is marred and oftentimes destroyed by the use of even clear rain water. To all I would say, never use a syringe on choice plants if it can be avoided. "S. D." further says, "7-inch pots will be large enough for Amaryllises." Has the young beginner to use 7-inch pots indiscriminately? The largest number of our flowering bulbs are grown in 5-inch and 6-inch pots, very few in 7-inch ones,

and sometimes an 8-inch pot may be used; but that is for very large bulbs, such as those of Empress of India. I have just measured round a bulb of this variety and find its circumference to be exactly 15 inches. Such a bulb planted in the centre of an 8-inch pot would fill it well up, leaving a space of 1½ inches only between the bulb and the rim. These large bulbs are exceptional, and not less than from five to ten years old. We are growing bulbs now that we have had for twenty years. One variety I have grown for ten years; it has liberal treatment; sometimes we pot it in small pots and sometimes in larger ones, but it has never yet made an offset. It continues in vigorous health, and never was stronger than it is this year. The way in which we treat offsets is this: Three of the smallest size, two large ones or one of the largest size, are placed in a 3-inch pot. They continue in these until the end of the season, and are potted next year in sizes a very little larger. It takes almost as long to grow a plant up from an offset to the flowering size as it does to grow a flowering plant from a seed. They usually flower well the third year.

J. DOUGLAS.
Great Gearies, Ilford.

Carnations in frames.—The statement made by "J. S. W." (p. 320) was undoubtedly misleading. There he says not a word about heated pits, but advises your readers to grow Carnations in cold frames during winter, and says that if they were layered in July previous, they would expand their blooms in April and May, a statement which I deny. He says on the same page that Phloxes lifted from the open border so late as March will flower in April and May, an assertion at which I am surprised. "J. S. W." now says he meant heated pits. He cannot give the names of the varieties which he grew, but I can give the names of 150 varieties which, though layered in July and grown in cold frames till the 1st of May, did not flower until the end of July, and that near London. Anyone experienced in growing Pinks and Carnations knows that isolated plants may run up to flower before their time, but they would not think of quoting such a case for general application. Cuttings of Pinks put in during September would make but poor specimens for flowering the following season. The proper month in which to propagate Pinks is June or early in July. Cuttings of forcing Pinks ought to be put in during April and May.—JAS. DOUGLAS.

FRUIT GARDEN.

RENOVATING APRICOT TREES.

If it were possible to obtain a return as to the number of fruit trees under cultivation now and fifty years ago, I fancy the Apricot would stand alone as regards numbers compared with the enormous increase in other fruits; indeed, it is possible that more Apricots were grown by the past generation than we can show to-day. I think this may be inferred from the fact that in many gardens attached to farm homesteads in the south of England there may still be found one or more stunted Apricot trees, and if they were planted in such places, it is feasible to suppose that they were more extensively planted in large gardens, only, as regards the latter, they were removed as the trees became unsightly, and their places filled by other trees that more readily answered to the labour of the cultivator, until in these days, even in many places where other fruit is good and plentiful, the Apricot is represented by one or two unhealthy-looking trees with large gaps on the wall, telling of the sudden failure of particular branches. Nor has a practical remedy applicable to all soils ever been found for this branch-failure, or Apricots would certainly be more extensively planted than they now are. Doubtless the rules laid down for cultural guidance are good, namely, a stiff, good loam, somewhat retentive of moisture, and a cool sub-soil, but as a matter of fact these conditions are seldom found now near a south-west, west, or south-east wall, against which Apri-

cots are generally planted, for whatever the character of the soil may have been originally, it is sure to become light, warm, and at times dry from the constant working indispensable on such an aspect where early vegetables are a consideration. If, then, we take it for granted that certain conditions of soil are necessary to the well-being of Apricots, how can they be obtained without a great amount of trouble and expense when the border in which the trees are growing is not naturally well adapted for them? Some two dozen trees came under my care a few seasons back that had been planted under these conditions. Large gaps interfered with the symmetry of the trees, individual branches were gummy and bad, and it was a question whether they should not come away. Still, there was something in the look of the trees that was promising, and an experiment was tried which has proved so successful, that I submit it to the consideration of any who may be troubled in a similar manner. In the first place, the alley was formed and maintained at 3 feet from the wall to give as much solid ground to the root action as possible. All the soil in a semi-circle of 3 feet from each stem was removed from each tree until the fibres were laid bare, and replaced with a mixture of stiff loam and cow manure in equal proportions. The stiffer soil, coupled with the moisture-retaining properties of the manure, caused a marked change for the better in the trees during the next summer, and they were also helped with a thoroughly good mulching of rotten manure on the first sign of dry weather. They have gradually improved from that time, and are now in full health and vigour and carrying a very good crop of fruit. E. B.

Perforated Peach leaves (J. G. C.).—The holes in the leaves you forwarded have been evidently eaten out by some insect, probably a weevil. If you cannot find the culprits during the day, search for them at night with a light, having previously spread a sheet under the plants, as night-feeding weevils frequently fall when a light suddenly shines on them. If you catch any of the insects, I will gladly name them.—G. S. S.

Extension-grown Vines.—Perhaps I was not explicit enough in reference to this matter. By extension I meant allowing established Vines (as many are now in the habit of doing) to grow six and eight leaves beyond the bunch, or, as I have seen in some cases, twice as many as that. Under such conditions does it take longer to ripen a crop than by the old way of two leaves beyond the bunch? Will "J. S. W." kindly furnish some information on this point?—L.

Diseased Peach leaves (D. M.).—The leaves sent are badly affected by one form of Peach blister, in your instance caused by a fungus named *Ascomyces deformans*. Some forms of blister in certain cases (not very dissimilar in appearance from yours) are caused by aphides, mites, or cold winds. The fungus lives inside the leaf, and at maturity bursts through its epidermal cells or skin. The parasite within the leaf causes the swollen appearance. As the fungus reproduces itself by spores or seeds, the only plan for its extirpation is to carefully cut off and burn every affected leaf. Pears, Walnuts, Plums, &c., are sometimes attacked by allied species of *Ascomyces*.—W. G. S.

Grapes from Central Asia.—Some ten years ago I had a collection of twelve of the best growing Grape Vines in my garden. They were selected from many more varieties at Tashkend and Samarcand by General Korolkow; the ends were put in Potatoes to keep the cuttings alive during their forty-two days' journey. The plants, when young, are strong growers and shy bearers, but the Grapes are delicious, very sweet, and in warm seasons ripen well. They are scarcely fit for wine making, except, perhaps, in Portugal or Spain for sherry and port wine, but they are very fine table Grapes, amber-yellow, red, and blue. I was obliged to uproot them in order to conform to the requirements of the Phylloxera law.—MAX LEICHTLIN, *Baden-Baden*.

TREES AND SHRUBS.

SPIRÆAS AT EASTER DÜDDINGSTON.

FOR the beautiful photograph of Spiræas, of which the annexed illustration is a reproduction, we are indebted to Mr. Bashford, of Portobello, who has also kindly sent us the following remarks respecting them:—

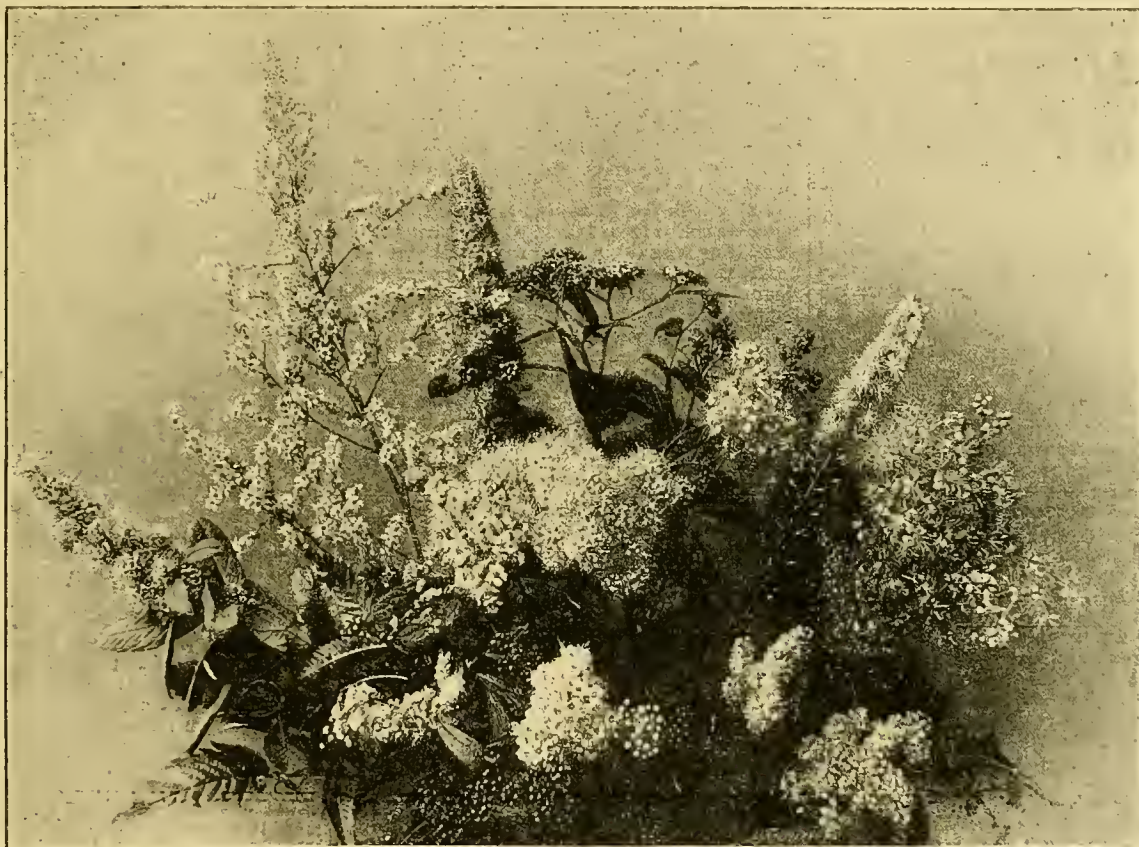
It is fortunate for us that there is so much variety amongst both foliage and flowers, as in that much of the charm of a garden consists. Even in a single genus may be found most striking diversity in size, form, and colour. Take, for example, the Spiræas. Amongst these we have *S. Filipendula* fl.-pl., the Fern-like rosettes of which lie on the ground, and from their centre slender 18-inch stems crowned with creamy plumes of great beauty are thrown up. It is a herbaceous plant, as easily grown as a Nettle, yet, perhaps,

look like the inflorescence of some umbelliferous plant, while others again may be likened to some remarkable form of *Celosia*. When on a visit one afternoon last summer to Easter Duddingston, I received sprays of most of the Spiræas then in flower, but unfortunately some of the most beautiful did not withstand the carriage home; hence only about sixteen varieties were of use in forming the accompanying group. The tallest is *S. Lindleyana*, a fine shrub with handsome foliage and large erect panicles of white flowers; that immediately beneath (like *S. Filipendula* fl.-pl.) is *S. prunifolia* fl.-pl. *S. Fortunei*, with its rich bronzy green and chocolate foliage and deep blood-red blooms, is separated from *S. Lindleyana* by a spirally arranged spike quite distinct from either. That over-hanging at the extreme left is the light and elegant *S. callosa* *superba*, which is rosy red in colour. Among those remaining may be mentioned the white panicle

fully ripe is usually of a very agreeable flavour, and is sometimes sold in the American markets. The Beech Plum is much used for preserving along the New England coast.—W.

TRAINING PYRUS JAPONICA.

MR. J. CORNHILL says of a plant of this that he has seen: "I used to think it impossible to keep a large specimen clothed with flowering wood right down to the base, and that the only way to flower it well was to grow it on the extension principle. I now see, however, that a tree may be confined to a small space and may yet be made to cover the same with blossoms every year if kept well pinched through the summer." I fear Mr. Cornhill has not had the whole facts before him respecting the tree at Byfleet. It happens that I have subjected this shrub to the extension system more than almost any others of its class



Shrubby Spiræas, from Easter Duddingston Lodge, Midlothian. Photographed by Mr. W. T. Bashford, Portobello, N.B.

there is scarcely anything that could take its place if lost to cultivation; *S. Aruncus* especially, a variety found in some Scotch gardens, with huge masses of nodding plumes boldly over-arching very handsome foliage, and *S. palmata*, with its crimson spikes and striking leaves, are among the best appreciated of the hardy herbaceous section. Amongst shrubby varieties, the form and colour of the inflorescence is specially remarkable. By the woodland walks at Easter Duddingston Lodge, the residence of Mr. Charles Jenner, shrubby Spiræas are well represented, and fully hold their own, though in juxtaposition with other shrubs and flowers of a choice character collected from all parts of the world. The masses of bloom range from white to the darkest blood-crimson, and the foliage from chocolate through all shades of green to a golden yellow, as in *S. opulifolia aurea*, which much resembles a golden Ribes. Some closely packed spikes of blossom standing rigidly on their slender stems remind one of those of a *Monarda*; others with delicate plumes, drooping from thread-like stalks,

of *S. arifolia*, the red spikes of the dwarf *S. californica*, the pure white flowers of *S. callosa* *alba* (a free-flowering, very dwarf, symmetrical bush), and some as yet unnamed varieties imported direct from Japan. Among the latter may be noted a dwarf, compact, elegant bush covered with closely matted leaves about half an inch long, above which solid masses of white bloom are thrown up in isolated bunches like Hawthorn. This would make a striking object in the rock garden.

***Prunus maritima* (Beech Plum, Sand Plum).**

—This species is found along the coast from Massachusetts to Virginia, and often extends inland for more than 20 miles. When growing at a distance from the sea, its leaves are smoother and thinner and the fruit smaller, forms which have been considered by some botanists distinct varieties, and even species. It is a low straggling shrub, from 2 feet to 5 feet high, growing in little thickets, and in exposed situations it is nearly prostrate. The fruit varies in quality, but when

and we have now four of the youngest, largest, and finest specimens in the country, and I am quite certain that small plants of it cannot be made to bloom freely by two totally opposite methods of treatment. That your correspondent saw a small plant freely bloom I do not doubt, and the *Pyrus* deserves all he says in its favour, but it must have been root-pruned, recently planted, or starved in some way as well as pinched, for pinching will not make it bloom unless the branches are allowed to extend at the same time. The plant is a Pear in habit, and when the extremities of the shoots are allowed to grow without stopping, the sideshoots develop flower-buds freely without pinching. As the rush of sap is to the extremities, a little pinching is needed, although when the foreright shoots do push too strongly pinching is necessary, and that is all the pruning the plant requires. But pinch the leading shoots and then your trouble begins, for the front of the shrub becomes crowded with strong flowerless shoots. As to the *Pyrus* getting bare at the bottom, as is suggested, only the most care-

less treatment can cause that, because the plant produces shoots so freely from its base that every inch of the stem may be covered right down to the ground. It is a good plan to remove some of these suckers, but most gardeners remove them all and then complain of bare specimens. We retain them as successive limbs wherever needed, tying them on to the older limbs to replace them in time, and I might defy anyone to find a bare spot on any of our specimens, although the plants are about 20 feet in diameter and 12 feet high.

J. S. W.

A pruned Horse Chestnut.—Beside the carriage drive here there is a fine old Horse Chestnut which, owing to its branches encroaching on the road, has been regularly pruned back in a way not to disfigure the tree or prevent growth. The result has been that, whereas the whole of the other portion of the tree is annually covered with blossom, there is never a bloom on the pruned side. At present the pruned branches are densely clothed with young growth, but have no flowers.—J. S. W.

The double Brambles.—There are two well-marked double-flowering Brambles in nurseries, which, as a rule, are cultivated under wrong names. The pink or rose-coloured variety, which is grown under a series of names, of which *Rubus bellidiflorus* and *R. pomponius flore-pleno* may be mentioned here as examples, is a double-flowered form of our widely-distributed native, *R. discolor*. The double white-flowered Bramble, on the other hand—at any rate, all the specimens I have seen—belongs to *R. tomentosus*, a species having a rather wide European distribution, but not being found in a wild state in Britain. Both are highly ornamental and valuable garden plants of the easiest requirements with regard to cultivation.

The Weeping Beeches.—It may not be generally known that there are two thoroughly distinct varieties of the common Beech, very different in size and habit, and yet both very desirable trees. One forms a most picturesque tree, generally of very bold, irregular outlines. There is a very noble specimen of this form in the Knap Hill Nursery of Mr. Anthony Waterer. In many places on the Continent, notably in some of the old gardens in Holland and Belgium, very fine examples exist. One of the most noteworthy trees is in the Botanic Gardens at Leyden. At 5 feet from the ground the trunk is of such a thickness, that a man with outstretched arms can barely clasp it. At Meynell Langley, near Derby, there is a still finer tree; the trunk at 4 feet from the ground was about 9 feet in circumference some seven years ago; the diameter of the branches 90 feet north and south, 74 feet east and west, thus giving a circumference of about 240 feet. The second form of the Weeping Beech to which we have alluded is more fitted for covering arbours, rustic seats, &c.; it grows somewhat like an umbrella in shape, and neither attains nor the size assumes the boldly picturesque and irregular aspect of the other.

The Shell-bark Hickory.—Apart from its value as one of the most distinct and handsome of hardy deciduous trees, the Shell-bark Hickory (*Carya alba*) is of considerable importance from a purely economic standpoint. It is a large and handsome tree, furnishing most valuable wood and the principal Hickory nuts of the North American markets. In a wild state it is found, according to Professor C. S. Sargent's "Catalogue of the Forest Trees of the Northern United States," in Canada, York County, Maine, to the upper districts of Georgia and Northern Alabama, west to Eastern Nebraska, Kansas and Arkansas. The wood is very heavy, strong, tenacious, elastic; furnishing the most valuable firewood of the Atlantic forests; extensively employed in the manufacture of agricultural implements, carriages, baskets, &c.; its specific gravity .838. It attains a height of from 50 feet to 70 feet, with a trunk 2 feet to 5 feet in diameter. As a striking object in the park or pleasure ground, the

Shell-bark Hickory—or as it is sometimes called the Shag-bark, on account of the shaggy bark of the trunk, which exfoliates in rough plates or strips—is well worth the attention of the landscape gardener; whilst, with a view to planting for profit, it would be well for foresters to obtain seeds or young plants.

ORCHIDS.

MODERN ORCHID CULTURE.

THE influx of new Orchids has been such for a good many years as to probably exceed that of all other new plants put together. Gardening would, however, have sustained little or no loss had some of them been left undisturbed in their native wilds. Tastes differ no doubt, and it may be had taste on my part to say so much, but I never could see sufficient beauty in Orchids that are muddy coloured, such as *Odontoglossums*, with a washed-out dirty yellow ground, to make them deserving of cultivation. There are many old species that now would seem to be too old-fashioned to gain a place amongst rarities, to which they are in reality infinitely superior. Take, for instance, a well-grown, well-flowered example of *Oncidium flexuosum*, a kind which, for the beautiful decided yellow of its flowers and the elegance of its branching spikes, is scarcely equalled by any Orchid in cultivation. Yet it is a plant that you may look for in vain in most of the representative collections of Orchids now existent. For associating with other flowers in a cut state it is unsurpassed, and on the exhibition stage a thoroughly well-managed example is a decided improvement to the general effect produced by the best collection of Orchids ever put into competition. The *Stanhopeas*, again, are now rarely met with. What Orchid combines such size and singularity in the construction of the flowers, with the wonderful association of colour of *S. tigrina*, a big, well-grown specimen of which will give a succession of flower-spikes that will keep up a display for a month? Yet this and other desirable species of the genus are now all but discarded by cultivators. There is, however, one feature connected with Orchids at the present day, and that is the great improvement that has taken place in their cultivation. Growers who had to deal with these plants five-and-twenty or thirty years ago know the state in which some of the most extensive collections then in existence were. The dreaded spot, through the effects of which as often as not there was ultimately nothing left, except the pots that had contained the plants which it attacked, was then the terror of Orchid growers, so much so that some large collections which had been bought at prices eight or ten times the amount of those which similar plants would now cost, and in which the disease appeared, were sold off under the impression that it was catching. Yet there was never any good grounds for such a supposition. A good many plants from a collection so sold off came into my hands. Careful treatment brought them round, but it is slow work, occupying a long time, to get plants that have suffered much with this disease into a slightly condition, particularly *Aerides* and *Saccolabiums*; in fact, it may be said that until all the affected parts have disappeared and a new healthy growth has taken their place, Orchids that have suffered much from spot are anything but satisfactory. The disease was simply the outcome of excessive coddling and over-excitement, that admitted of insufficient natural rest, combined with dark, unsuitable houses, made vastly worse in this respect by over-shading. That the complaint, now generally admitted to have arisen through the above causes, was in reality brought about by them, I had an early opportunity of seeing, through having occasion to move a considerable number of warm species from a light, suitable house, where the plants were near enough to the glass, to another in every way opposite to this, where, in addition to standing in a position so as to be darkened by buildings and trees near it, the roof

was so high as to necessitate the plants being much too far from it unless they had been elevated so that as much of the pots as the plants would have been seen. Being, like most of the growers, then anxious to get them on, I kept up as much heat and moisture as the plants had been subjected to in the lighter house, with the less amount of air and more shade, at that time generally supposed to be necessary for the growth of Orchids. Before the second summer under such treatment was over spot made its appearance amongst *Aerides*, *Saccolabiums*, *Phalenopsis*, and a good many other kinds. The plants were then moved to a lighter house with more air and thinner shading material, and the result was that the next year the growth made was all but free from the complaint, although as much heat was given the plants during the growing season as they had had before. The

CAUSE OF FAILURE

in Orchid culture in not a few instances is traceable to a uniform system of treatment in the matters of heat, moisture, air, and shade, not taking into account the character of the house in which they are to be grown. When Orchids have to be grown in houses that are darker than they should be, the plants, if to be kept in health, require to be subjected to somewhat less heat and less shade, with less moisture in the atmosphere or more air, which amounts to the same thing, than they would bear in suitable light houses. I feel satisfied that sufficient consideration has not been given to this. As a matter of course, when, through Orchids being located in a house that does not afford them enough light, the temperature through the growing season is kept lower, the growth of such plants as *Aerides*, *Saccolabiums*, *Vandas*, and others of a similar character will be proportionately less; but it is better to be contented with slower progress and a healthy condition of the plants than, through an attempt to push them on, have them worse in other ways. The amount of leaves made through the growing season by Orchids of this description is by no means evidence of successful management. If the treatment is such as to suit *Vandas*, *Aerides*, and *Saccolabiums*, they will give a bloom-spike for every leaf they make; consequently the quantity of flowers produced is a better test than the number of leaves. Orchids, whether they belong to the warm or the intermediate section, where more heat is kept up through the growing season than is absolutely necessary, require to have proportionately more light given them than if barely as much warmth was maintained as is needful. In this they are like all other cultivated plants. They will also bear more atmospheric moisture when under conditions of a maximum amount of light than in darker places. This I have proved over and over again, and when speaking of Orchids have always urged the need for giving them much more light than used to be considered good for them, though most cultivators now see the necessity for this, and act on the principle. The oldest and most successful growers now not only keep their plants nearer the roof than they did, but in addition use much thinner shading, the result of which is a vastly improved condition of the plants, which make shorter leaves with much more substance in them, and that retain their vitality so long, that bare naked stems are all but things of the past. The important matter of whether

MANURE

in any form can with advantage be used to all or any of the family of Orchids is still in a state of doubt. Some who expressed their opinions at the late conference were in favour of its use; whilst, on the other hand, others condemned any application of the kind. Neither is there much to wonder at in this, for it is only what occurs in relation to any practice connected with plant culture that has not become fully understood and accepted. But, although in all probability comparatively few cultivators have tried the use of manure for Orchids, there are others who have used it in some or other of the various ways in which it may be applied. The practice is not by any means new, for mature in different ways has been

used for these plants many years back, and its merits, applied in several ways, proved. The best grown Orchids I ever met with were those at Hurst House, near Liverpool, and I have heard many others who were acquainted with the wonderful plants at this place express their belief that their equals have not since been seen. The material in which all were grown, excepting Phalenopsis and some kinds of Dendrobies which were in hanging baskets, was of a character that would startle most Orchid growers of the present time who look upon Sphagnum either wholly or with a mixture of peat as about the only material that will do for all but a few sorts. The Hurst House plants, including Vandas, Aerides, Saccolabiums, Cattleyas, Oncidiums, Epidendrums, and numbers of others, were grown in a mixture of finely sifted peat with none of the earthy matter taken out of it, manure from old Mushroom beds, also finely sifted and pounded charcoal, equal parts of each, and in this the plants rooted in the broad shallow pots in which they were grown in a way that I never saw any other Orchids do either before or since. The roots evidently retained their vitality longer than they usually do in the case of cultivated Orchids. Not the least remarkable thing was that even thick-rooted species, such as Aerides and Saccolabiums, produced few roots up the stem compared with what are usually met with. A plant of Aerides crispum from 5 feet to 6 feet high, with every leaf perfect down to the pot, had scarcely made a single root more than 6 inches above the base. A specimen of Saccolabium guttatum, consisting of a number of growths, the strongest of which was just upon 3 feet above the pot, was a dense mass of healthy leaves and carrying close on thirty bloom-spikes, showed a like disinclination to produce roots in the usual number at any considerable distance from the bottom. In others of the thickly rooted species there was a similar absence of a disposition to root up the stem. The plants were evidently satisfied with the material that they had to sustain them within the pots. For most of the kinds of Orchids that grow naturally on the ground, such as Calanthe Masuca, var. rufifolia, and the bulbous species, Phaius Wallichii, P. grandifolius, Peristeria elata, Cyrtopodiums, and others of like character, I used to mix manure with the peat or loam in which they were potted, being careful that before using it it had been reduced to a dry decomposed condition, a state in which the plants showed by their strength of growth, the colour of their foliage, and the amount of flower which they made, that they were benefited thereby. I have seen bulbous Calanthes grown in old Mushroom manure alone without a particle of loam or peat added, potsherds only being mixed with it. The experiment was made by one of the most successful growers of these Calanthes in order to see what effect would be produced compared with others grown in loam or peat with some manure added. The growth made by the plants in the manure alone was as good, but no better than that of the others—a result which showed that the roots did not dislike manure.

AMMONIATING THE ATMOSPHERE.

In a house in which I once had a mixed lot of intermediate and warm species there was a small brick pit, in which after a time through the growing season I kept three or four barrowfuls of stable manure with not much litter in it; this fermented slightly, giving off ammonia, the effect of which was seen in the improved condition of the leaves produced under its influence as compared with those made before it was used. The manure was cleared out and replaced by new material once a fortnight. I have also supplied the atmosphere of an Orchid house with ammonia by keeping a pailful of strong manure water standing on the hot pipes during the season of growth, renewing it every other day, by which means any more objectionable smell than that of ammonia was avoided: its effects on the plants was similar to that of the fermenting solid matter. All this goes to prove that Orchids, like other plants, derive benefit from manure. Many in their native countries cannot

fail to get more or less assistance in this way through the rapid decomposition of dead vegetable matter which takes place under high temperatures, and with which matter the roots are fed by actual contact, or absorb it from the atmosphere which contains it. No doubt Orchids, as well as other plants, differ as regards the food best adapted to supply their wants. I am convinced from my own experiments and those of others that they like ammonia. Anyone attempting, however, to give manurial stimulants to these plants will do well to act with caution, and to bear in mind that the power of any plant to assimilate food is proportionate to the growth which it makes. Orchids, being plants of comparatively slow as well as small growth, naturally can only take a limited amount of sustenance, and any attempt to give them stronger or larger quantities than they are able to bear is all but certain to end in disaster. T. BAINES.

PRUNED DENDROBES.

SOME Orchid growers having expressed a desire that I would give a detailed account of the manner in which I treated the plants of *D. nobile* which I lately showed at South Kensington, I have much pleasure in complying with their wishes. About seven years ago I had two old plants of *D. nobile* which were very unsightly. These I split up and made a dozen small plants of them. They were potted in 6-inch pots, which were well drained. After potting they were placed in an ordinary stove to make new growths; here they remained till the following autumn, when some of the young growths were as much as 18 inches long. During the time when they were in the stove they were kept shaded from the sun and liberally supplied with water. The house during the summer was often allowed to run up as high as 110° Fahr. As I found this treatment suited them, the following spring, after flowering, they were again placed in the stove; this time some of the plants made remarkable growths, one I measured being 2 feet 11 inches long. When they had finished their growth, which was about the end of August (having been placed in heat in April) they were taken into a vinery from which the Grapes had been cut; there they remained till I wanted them to bloom, when they were again put into heat. They have only been potted twice since; four years ago they were placed in 9-inch pots, and last year into the pots in which they now are. In order to get them to make good stout growths they must be liberally supplied with water during the time when they are growing, and the house must be kept well moistened two or three times each fine day. I give but little air during the time when they are growing, but when at rest they have all the light and air possible. I require all my flowers to send away; therefore I cut the growths with the flowers on them. The plants which I had at South Kensington have had their flowering growths cut off. It is seldom that I am able to get any side growths, for most of them bloom from every node if well ripened. In order to get young side growths for increasing the stock, I keep one or two plants in heat during the winter; this causes them to make growths instead of bloom. On one of the plants which I took to South Kensington there was a growth that had forty-five flowers on it, but three of them were broken off before they expanded; therefore there were but forty-two on it when I exhibited it. Some of the racemes had as many as four blossoms, most of them three, and no single ones. I have tried several other kinds of Dendrobies with equally good results.

H. C. PRINSEP.

Cattleyas at Amer House, Olonmel.—Here may be found a bank of 100 or more Cattleya blooms, well worth going some distance to see. The plants producing them are comparatively small, but the blooms are magnificent. Some of Mossia measured across the sepals from tip to tip 9 inches, those of Mendeli are quite as large, while the pseudo-bulbs and the dark green foliage indicated luxuriant health. Mr. Clibborn is the owner of the collection, and one secret of his

success is he looks after his plants himself when at home; the second is the watering, and a third the potting. The first point requires no comment. As to the water and watering, an experienced grower once told me that these two points are vital in the case of Cattleyas. If the water is hard or not of the same temperature as that of the house, failure is only a question of time. Lastly, I am indebted to the same authority for the hint that Cattleyas never do so well on blocks as potted. One of the reasons of this I have never seen stated, but believe it to be that the most experienced have found dipping the plants and blocks in the tank or syringing not so advantageous as watering the pots without wetting the foliage. These points have all been attended to here, and may account for Mr. Clibborn's success. Mr. Clibborn had blooms of several *Odontoglossums*, notably *O. vexillarium*, flowering a second time this year, interspersed here and there through the Cattleyas, which added much to the effect.—W. J. MURPHY.

FERNS.

NORTH AMERICAN FERNS.

THESE are mostly valued for their hardiness and usefulness, producing as they do in the out-of-doors fernery a contrast which could not be obtained by planting British species and varieties alone. Some of them, too, are individually interesting. Such is the case with *Adiantum pedatum*, the principal figure in the annexed illustration. North America, even with all its numerous Ferns, produces only three *Adiantums*—viz., *A. Capillus-Veneris*, *A. emarginatum*, and *A. pedatum*. The first two are not hardy, but *A. pedatum* in its native country will stand over 30° of frost, protected, however, by a thick layer of leaves, which naturally cover its crowns when at rest, and annually also by a thick coating of snow. It is quite distinct in habit and general appearance from any other *Adiantum*. It is extensively distributed, being met with in abundance from New Brunswick and Canada to Alabama, and it is also found in Utah, Oregon, California, British Columbia, Wisconsin, Arkansas, &c. It is very plentiful in rich moist woods, especially among rocks. In such places it forms patches under trees, often covering several acres at a stretch. In growth it is very peculiar; its singularly pedate fronds, which are pea-green in colour and which are very fragile, are borne on dark purplish shining stalks, and are produced from the extremity of long underground rhizomes, which, through the annual fall of leaves and their accumulation, often lie buried under 6 inches deep and even more of decaying vegetable matter which the fronds have to get through before they can reach the surface of the soil. According to eye-witnesses, such masses of *A. pedatum* are a grand sight. If in some places in England failure has attended the attempt to cultivate it outside, the failure is due to the fact that the underground rhizomes are generally too close to the surface, and that they are neither protected in winter by leaves nor snow, and thus feel more keenly the effects of cold, though less severe than that of its own country. Another North American Fern of great beauty and possessing characters strikingly different from any of our own is the *Oncoclea sensibilis*, of which an excellent illustration is given in THE GARDEN (Vol. XXVI., p. 323). It occurs in a wild state in meadows from New Brunswick to Saskatchewan, and southwards through Kansas and Arkansas to Louisiana, and eastward to Florida. It is particularly interesting owing to its mode of fruiting being essentially different in that respect from all other known Ferns. Its fertile fronds, which are only a few inches high, are produced very sparingly, and are totally distinct from the barren ones. They are perfectly erect, very rigid, and remain on the plants for a couple of seasons; whereas the barren ones, which, on account of their soft, pale, pea-green colour, may be considered as the most attractive part of the plant, are quite deciduous and triangular, with the edges

of pinnae beautifully undulated. They measure, when the plant is well established, as much as from 18 inches to 20 inches in height. Then there are the *Osmundas*, which, although met with in all parts of the world, have their most distinct, as well as most decorative, representatives in North America. From Java and from Hong Kong we have in *O. javanica* and *O. bipinnata* two evergreen species; from Brazil comes *O. palustris*, also an evergreen kind; but all other known species or varieties partake of the deciduous character peculiar to the British Royal Fern figured in THE GARDEN (Vol. XXVI., p. 405). The three North American kinds already in cultivation are all well worthy of special attention, for they are essentially distinct from all other *Osmundas*, and all of them are of a highly decorative character.

O. cinnamomca is the strongest grower of the three, and it is also the one whose fronds are endowed with the greatest resisting powers. It is found in great abundance in low grounds and moist copes in Newfoundland, Louisiana, and Florida, &c. Although very ornamental in its barren state, it is when fertile that it cannot possibly be mistaken, as the fertile fronds, which are erect and of a cinnamon colour, are produced only after the barren ones are perfectly unfolded. They rise from the centre of the plant and form its principal attraction. *O. Claytoniana*, better known in Europe under the name of *O. interrupta*, is a species as curious as it is ornamental. Its fertile fronds do not bear the fructification throughout, but only in parts of its length, hence the name *interrupta*. The outer fronds, which are first produced, are exclusively sterile; the fertile ones, which are produced later on, rise from the centre of the plant, and are of a much more erect habit than those perfectly barren. The lower part of their leafy portion is barren; then about eight to ten pairs of fertile pinnae are situated towards the middle of them; and finally their extremity for about from twelve to fifteen pairs of pinnae are barren again, an arrangement which renders this one of the most conspicuous and curious kinds known in cultivation. It is also distinguished from all other *Osmundas* by having a little tuft of woolly hairs clinging to the axil of each pinna of the barren fronds. It is very common from Newfoundland to Lake Superior, and its natural habitat extends to the mountain regions of Arkansas, Kentucky, and North Carolina, if not even further. *O. spectabilis*, also from the same regions, is totally different from either of the two above described species. It is of a dwarfer habit, rarely exceeding 15 inches in height, and its fronds are

much finer cut and of a beautiful purple hue when young, gradually changing to a metallic colour and then to a pale green, just as some of the Maiden-hair Ferns do. The fronds are erect, or nearly so, close together, and bear their fertile portion on their summits. There are no exclusively fertile fronds in this species; all mature fronds bear more or less fructification, which is ripe before the frond on which it occurs is perfectly developed and hardened. There are also in North America several kinds of *Nephrodium*, which are found extremely useful in this country. *N. floridanum* is one of the most striking of all

fronds is copiously dotted all over with minute shining globules of a resinous character, producing a most peculiar effect. Its habitat is very local, being the Sierra Nevada and Northern California. *N. novaboracense* is particularly attractive owing to the fragrance of its fronds, especially when not fully developed. It is a species of medium growth only, found in moist meadows in New Brunswick and Canada to Virginia; also in Ohio, Kentucky, and North Carolina. Its fronds, which are rather brittle, are of a pale pea-green, a colour which is retained throughout the season, and their fragrance is such that a few of them dried in the open air perfume a room deliciously for a long time. *Polystichum munim* is another striking North American Fern which can be grown successfully in this country without any shelter. Its fronds, which are hard, are of a beautiful dark green, peculiarly serrated on the edges of their pinnae, and may be counted by scores. It is very abundant in San Diego, California, northwards to Columbia and Southern Oregon, where it grows from 4 feet to 5 feet high, and is highly ornamental

on account of the dark hue of its hard and lasting foliage, and of its stalks which are very chaffy. *Aspidium Goldianum* has no resemblance whatever to any European Fern, and is therefore valuable, forming, as it does, by its broad and somewhat loose foliage, a very good contrast with other kinds which one generally sees in out-of-door ferneries. It is a strong grower, its fronds reaching, when in a good situation, as much as 3 feet in length. It grows abundantly in rocky woods from Canada and Maine to Indiana, Virginia, and Kentucky. *Struthiopteris pennsylvanica*, though in many respects resembling the European *S. germanica*, is a Fern of more noble aspect and much larger dimensions. It is met with in abundance from the Saskatchewan and Lake Winnipeg to New Brunswick, and southward to Pennsylvania and Illinois. In all these parts the Ostrich Fern is considered one of the finest of the North American Ferns. The outline of the whole plant possesses the same peculiar vase-like shape noticeable in the European species. *Lygodium palmatum*, one



The North American Maiden hair Fern (*Adiantum pedatum*).

Ferns from that part which stretches from Florida to Louisiana, where it is found growing mostly in wet woods where there is a good depth of vegetable matter. *N. nevadense* is a Fern which, were it not for its peculiar characters, would not have received much attention at the hands of our home growers on account of its general aspect bearing a certain resemblance to that of some of our own Ferns; but a most important feature to be observed in its fertile fronds, and one which has not been found in any other Fern either from the New World or the Old, consists in the divisions or leaflets being folded together early in the day and opening only late in the afternoon. Another constant character also peculiar to this curious species is that the entire surface of its

of the most distinct as well as one of the most charming of all known species, is a lovely climbing Fern, of which an excellent illustration appeared in THE GARDEN for 1878 (Vol. XIII., p. 149). Many more interesting species just as hardy as any of our own native kinds belong to North America, but the above selection will give a fair idea of their value as regards the ornamentation of out-of-door ferneries in this country. S.

The Washington Thorn.—This is the English name given by Dr. Asa Gray in his "Manual of the Botany of the Northern United States" for *Crataegus cordata*, and it is used here in preference to Loudon's one, "the heart-shaped-leaved Thorn." It is one of the most distinct and handsome of

Thorns, and is, besides, perhaps the latest of all to bloom. At the present time, after nearly all the other species are past, good sized trees are now in full flower at Kew. The broadly ovate or triangular somewhat heart-shaped leaves are of a deep shining green colour; the small scarlet fruits ripen in October. It is a native of Virginia, Kentucky, &c., and the trunk attains a height of from 15 feet to 25 feet. Although long ago introduced to British gardens (Loudon gives the date of its introduction to this country as 1738), it is far too seldom met with in cultivation. The attention of planters only requires to be called to this handsome little hardy tree to ensure a due recognition of its merits.

EXHIBITION OF ORCHIDS.

THE special exhibitions of particular classes of plants, now becoming a custom among the principal nurserymen, are commendable in many respects, as an effort is generally made to render such displays as representative as possible. Such an exhibition is now made by Mr. B. S. Williams in his nursery at Upper Holloway, the special feature of which is Orchids. These are arranged for the occasion in the capacious house which during the rest of the year is occupied by huge specimens of Palms, Tree Ferns, Cycads, and other noble leaved plants. Of these, many have been retained for the purpose of forming a background to the groups of Orchids displayed on either side of the pathway, and we need hardly say that they contribute greatly to make the whole show effective. The very character of Orchid growth demands some such assistance where picturesque effect is aimed at, and particularly with regard to such Orchids as *Cattleyas* and *Lælias*. By thus blending elegant foliaged plants with gay flowers, a most captivating exhibition is the result, finer in all respects than has ever been seen before at this nursery. From amongst the crowds of seasonable Orchids of which this gathering is composed we have selected the following as being of special interest, and we need only add that the bulk of the exhibition consists of the remarkable specimen plants for which Mr. Williams' nursery has so long been celebrated.

LÆLIA PURPURATA and its varieties are without question the glory of the show, and we were fortunate enough to find half-a-dozen of them flowering side by side, all regarded as the cream of the varieties that have flowered this season. Foremost among them was Williamsi, well known to be matchless with respect to its large-lipped flowers, which are a third larger than usual and finely shaped. The lips measured between 2 inches and 3 inches across, and are of a deep purplish crimson with a pale tip. There were some fine specimens of this grand variety which arrested everyone's attention. Taking Williamsi as the finest of the series, we have next to it *atro-purpurea*, remarkable for intensity of colour on the lip, the richness of which is increased by the unusual brilliancy of the yellow throat—true yellow, not yellowish white, as is usually the case in varieties of *purpurata*. Both Williamsi and *atro-purpurea* have lilac-tinged sepals, but in the third called Londesborough's form of *L. purpurata alba* the sepals are of the purest white, and the lip almost of a black-purple, so intensely deep is it. There is also a rich yellow throat in these flowers, which sets off the other colours. Of this variety there was a plant with two spikes, one carrying six, the other five flowers. Two other extraordinary varieties deserve notice. These are *Russelliana* and *Nelisi*. The first is in the way of the rare and much-prized *Schroederi*. The flowers are of medium size, the sepals white, the lip of a pleasing rose-purple, pencilled with deeper hues. It is the distinct rosy tint that renders this so beautiful and so different from all the rest. There was a plant of it with ten flowers—a charming sight. *Nelisi* is somewhat in the same way, but not so fine, the flowers being smaller, but the lips possess the same rosy lilac tint so unusual in varieties of *purpurata*. It is, we believe, of Continental origin and seldom seen in flower. Another form in bloom was *Brysi-ana*, also distinct in having a pale lilac-tinted lip

and dark not white sepals; hence it is not so beautiful as either of the other two. It was a rare sight to see no fewer than six distinct varieties flowering in one collection; indeed, such an occurrence has never been experienced before in this nursery. The ordinary forms of *L. purpurata* were numerous, now being the height of the *purpurata* season, although they will continue for some time to come. If an amateur requires only a choice selection of Orchids, say a dozen sorts, *L. purpurata* should be one of the dozen, for in our estimation no Orchid is so beautiful as a white variety of this *Lælia*. Of other *Lælias* the most remarkable was a new one, named *Measuresiana*, a kind midway between *purpurata* and *elegans*, and probably a hybrid. The flowers are intermediate in size, the sepals white and the lip prettily mottled with amethyst and pale markings.

CATTLEYAS, such as *Mossiae*, *Mendeli*, *Warneri*, and *gigas*, now in the height of their flowering season, are grandly shown, some of Mr. Williams' noted specimen plants which he used to exhibit being in full beauty. Two specimen *Cattleyas*, *bona-fide* single plants, are especially remarkable. Both belong to *C. Mossiae*, and one bears thirty flowers, the other twenty-six. A more beautiful sight in the way of Orchids could not be imagined than these specimens present, all the flowers being turned one way, and this is always the case with specimen single plants, whereas in the case of made-up specimens the flowers are turned in all directions. There are several named forms of *C. Mossiae*, but it is a difficult matter to describe their subtle distinctions intelligibly; a form of *Mendeli* called *superba* is, however, so far superior to its compeers, that it deserves special mention. It is like the choice *selbornensis* shown at the conference, and not at all inferior to it.

ODONTOGLOSSUMS figure prominently in the show, and none fascinate the ordinary visitor so much as varieties of *O. crispum*, the flowers of which are large and the sepals pure white. Of such as these there are crowds, whose graceful spikes tossing about in all directions give stiffer growing kinds an air of lightness. The connoisseur, however, wants more than these; he seeks for rare hybrids, some of which are beautifully spotted. One in this collection the other day would have fascinated any Orchid fancier. It was named *O. cupidatum xanthoglossum*, a long name for a really handsome variety, apparently one belonging to the debatable hybrid section. It had a yellow ground colour heavily blotched with chocolate brown all over the sepals and lip. It had only just opened, and it was expected that it would soon be secured for enriching some connoisseur's collection. Another hybrid in a similar way, but not so handsome, was *O. prionopetalum*, remarkable for the sepals being distinctly spotted at the edges. The true *O. navium majus* of Lindley was in beautiful condition, and thus seen there is surely no prettier member in the genus. It has short erect spikes of smallish flowers, with narrow twisted sepals pure white, profusely spotted with a deep chocolate red, whereas the *navium majus* of Reichenbach is only a form of *O. gloriosum*, and not nearly so beautiful. A specimen plant of *O. vexillarium* was worthy of special note, reminding us as it did of the famous Gunnersbury plants of ten years ago. This plant bore twenty spikes, which hung on the sides of the pot in the most graceful way imaginable, and a finer example of good culture could not be desired.

THE *MASSEVALLIAS* include a new variety of *M. Harryana*, the nearest approach to a yellow that has yet been seen, the colour being apricot yellow, flushed with pink and with pink veins. It is so distinct from all the rest of the varieties grown here that it may be singled out at a glance. It has been appropriately named *armenaica*. The flower is large, and the sepals fit together so as to form a compact flower. The usual fine varieties of *M. Harryana*, some represented by huge plants a couple of feet through, may also be seen here.

Amongst other interesting kinds may be mentioned *Cypripedium Druryi*, a rare Lady's Slipper, not very showy, but different from all others in

having yellow-tinted flowers in the way of *C. insignis*; *Anguloa Ruckeri sanguinea*, a noble Orchid, the flowers of which remind one of those of a Tulip, and possess an odour like that of *Fiar's Balsam*; *Dendrobium moschatum cupreum*, with spikes of deep orange-yellow, flowers borne on stems from 4 feet to 5 feet high; *Scuticaria Steeli*; *Acinetia Humboldtii*; *Aerides difforme*, quite a "botanical Orchid," but singularly interesting as being a striking contrast to the large-flowered kinds, such, for example, as *A. crassifolium*, also finely in bloom here, as is likewise the Fox-brush Orchid (*A. Fieldiogi*), a specimen of which with half a dozen long drooping spikes rank among the best plants in the show. The old and very beautiful *Oncidium flexuosum* will form quite a feature in the display during the next few weeks, as quantities of plants of it have produced quite a thicket of spikes. This is one of the best Orchids one can grow for cutting, as the spikes are so graceful and they bear such numbers of clear yellow blossoms resembling golden insects. *Vanda teres* is successfully flowered here, when grown in an unshaded house, kept constantly watered and syringed, and not dried off, as is usually done. Some small plants, only about 18 inches high, are even flowering. The other *Vandas*, such as *suavis* and *tricolor*, are almost over for the season, but the little blue *cœrulescens*, which is a favourite with everyone, is just in season. From now onwards to the close of the exhibition at the end of June continual interest will be maintained, as crowds of plants now in the bud state clearly indicate.

Cattleya Sanderiana—A magnificent bloom of this variety has been sent to us by Mr. Hardy, of Pickering Lodge, Timperley. It is the largest we have measured, being fully 10½ inches across the outspread sepals, which are broad and of a deep lilac. The lip is proportionately large and extremely rich in colour, and altogether we have no hesitation in asserting this to be the finest *Cattleya Sanderiana* we have yet seen. It is one of Messrs. Sander's best introductions. Our Orchid-growing readers would, we know, appreciate any hints which Mr. Hardy's gardener could send us with regard to the treatment which he finds best for this *Cattleya* and others of its class.

PARKS & PUBLIC GARDENS.

HARDY PLANTS IN THE PARKS.

THE absence of the finer kinds of hardy perennial flowers in the London parks has long been a mystery to many. It has been accounted for in two ways, either that they are not planted or that they are mismanaged. That the last surmise is the right one we have little doubt. Large sums of money are annually spent in embellishing the parks with plants, but what is the result? We have been enlightened during the week as regards the mode of treating hardy perennials in St. James's Park. The plants were Oriental Poppies (fancy planting such plants in June when they ought to be in flower), brought apparently from some nursery in pots, and, though large growing plants, they were destined to embellish a ribbon border in company with *Calceolarias*, *Pelargoniums*, and similar material. It is scarcely credible, but, nevertheless, it is a fact that these Poppies, which ought at least to be a yard apart, were placed three together triangular fashion, with only about 9 inches of space between them. The way in which they are planted is instructive. A hole in the hard soil is dug out hardly big enough to receive the ball of the plant; the plant is then wedged into the hole without even removing the drainage or separating the roots in any way, though the latter had filled the pots. These Poppies were planted at intervals of about 10 feet with mathematical precision in, as has been said, clumps of three, and in front not 6 inches away were the lines of *Calceolarias* and other plants. This is the way in which hardy perennials

are planted in at least one of the chief London parks. Can it therefore be matter for surprise that such flowers do not thrive. If the Oriental Poppies in question had been properly planted, they would have had a specially prepared space in an open spot, where their brilliant flowers this month would have had a telling effect. They should have been planted in rich free soil, and in planting them need it be said that the roots should have been separated and loose fine soil carefully placed round them. This treated, striking effects might have been produced, but mismanaged, as just described, a mere struggle for existence is all that need be looked for. It will be interesting to watch their behaviour under such circumstances. It is to be regretted that the efforts of the Commissioners to render the parks attractive should be thus frustrated by those who have the immediate superintendence of them. The way in which the tall purple German Irises, now in great beauty in this park, are admired shows how much the public appreciate handsome flowers; and were others of the less common kinds of hardy perennials encouraged, they would make the parks attractive before the ordinary bedding plants came into bloom.

IN ST. JAMES'S PARK one of the most beautiful features is a group of large beds of *Violas* near the Horse Guards. These are planted in bold masses of one sort. There are several sorts of a particularly rich purple colour, one in the way of *Hollyhock* being much admired, but the finest effect is derived from a large circular bed of the sort named *Countess of Kintore*, which is an improved form of *Magpie*. It has the petals half purple and half mauve. It is decidedly one of the best of its class.

IN SOUTHWARK PARK the chief attraction just now is the German Irises, than which we have never seen finer even in the country, which is saying a great deal for the German Iris as a town plant, this park being in the midst of a most populous neighbourhood. These Irises give a glow of purple to the whole park; one sees them at every turn, and the paucity of other hardy flowers which would thrive equally well and would be quite as attractive, makes them the more conspicuous. Some of the masses are as much as 4 feet through, and they are planted at equally spaced intervals around every shrubby group about every part of the park. It seems as if the keeper had discovered that it was a good plant, and that he could not plant too much of it.

A COSTLY DUCKPOND.

SOUTHWARK PARK, small as it is, is to have a duckpond—lake it cannot be called. It is half finished, the masons being busy cementing it. This little bit of water is to cost the ratepayers something like £2500. The questions are, was such a pond wanted? and will it add to the beauty and interest of the park? In our opinion water was not required in so small a place, and that it will add in no way to the interest of the park. One scarcely expects to find water on rising ground; and though in this case the pond is not placed on the highest part of the park, the earth which has been excavated is so piled up around the sides, or made into humps in the middle and cailed islands, that the effect is most unnatural. Why did not the designer step across to Battersea and see how the beautiful piece of ornamental water there is treated? The islets in it are natural looking; they are flat, not raised; and there is an apparent reason for their existence. The space that could be spared in a little park like that of Southwark for such a purpose was necessarily small; therefore the more reason for dealing with it skillfully. A rivulet embellished by a waterfall over rocks, as at Battersea, and the whole tastefully planted would have been far more pleasing and quite as easily made, and not nearly so expensive as the pond in question. What makes matters worse in this case is the cement with which the pond is plastered, and which destroys all attempts to make it natural looking. Not only is it bottomed with cement, but it forms a thick layer up to the water-

line, thus obtruding its ugliness. Surely cemented ponds are no more necessary here than in Battersea Park, where the ornamental water looks as natural as in many of the reaches of the Upper Thames. It will be useless to attempt to improve the bare appearance of the Southwark Park pond by planting aquatics in it and around the margin, for what would grow in contact with cement? An instance of this may be seen in St. James's Park, where repeated attempts have been made to grow water plants by the margin of the lake, but they refuse to thrive, owing to its sides being cemented. If the £2000 odd expended in Southwark Park had been devoted to enriching the tree, shrub, and hardy plant collection, more credit would have been due to the authorities, for anyone may see how miserably represented is the vegetation there compared with that in the other London parks.

NEW GARDEN AT BATTERSEA.

THE COUNTESS CADOGAN formally opened the other day, as a public garden, some ground attached to Christ Church, Battersea. Lord Brabazon, chairman of the Metropolitan Public Gardens Association, by whom the garden in question has been prettily laid out, in opening the proceedings explained that this little garden was not intended to be a playground. As far as possible the association endeavoured to keep playgrounds and gardens entirely distinct. They thought it a mistake to allow children to disturb the quiet and rest which public gardens should afford to adults. At the same time they were perfectly aware that children required places in which they could obtain healthy exercise. Such grounds the association also endeavoured to obtain, and to fit them out with gymnastic apparatus. The gardens they wished, in the well-chosen phrase of Miss Octavia Hill, to be out-door drawing-rooms for the poor. The public were beginning to understand that the question of open spaces was not one of ornamental philanthropy, but was very closely connected with the national and vital question of how to preserve the health of the people. The late Dr. Farr had shown that the death-rate in large towns was in exact proportion to the density of the population, and as the population of the kingdom increased, and especially in large towns, the necessity of providing open spaces became more and more pressing. Pointing to the example in this matter set by governments and municipalities on the Continent and in the United States, he referred to the action taken by the Corporation of the City of London in securing Epping Forest, and expressed regret that the Metropolitan Board of Works had not shown the public spirit in regard to open spaces which they ought to have done. This little garden would, at all events for the present, be kept in proper condition, and a caretaker would be maintained by the contributions of the Public Garden Association. Lady Cadogan having declared the garden open, Earl Cadogan, in acknowledging a vote of thanks to the countess, expressed his warm approval of the objects of the association, of which one of the most valuable had been the attempt to dedicate to public use the enclosures in squares and crescents hitherto kept locked up for the enjoyment of the inhabitants of the surrounding houses. The need for gardens and playgrounds for the children of the very poor had been shown in the evidence laid before the Royal Commission on the Housing of the Working Classes, and Lord Brabazon and the members of the association had his sincere sympathy in the work they had taken in hand.

The London parks are now in a sort of transition stage as regards floral adornment; the spring bulbs and plants are being lifted to make room for the summer plants. This wholesale destruction of valuable bulbs (for it is nothing short of destruction when bulbs are lifted while in green leaf) is one of the mysteries of park management and a waste of public money. Why could not special beds be set apart for bulbous plants so as not to interfere with the summer display, and

where the bulbs could remain to perfect their growth, and afterwards be used for embellishing other borders about the parks which sadly need them? Of course, trimness is the ruling feature in park gardening, and it is considered no doubt that as soon as *Hyacinths* and *Tulips* have flowered they are nothing but an eyesore, and the sooner they are out of the way and *Pelargoniums* put in the better. A sensible plan is carried out at the Crystal Palace in this respect. Instead of lifting the bulbs while in green leaf, the *Pelargoniums* and other plants are planted between them, and by the time the bulb foliage has ripened, the bedding plants are ready to cover the ground. This annual slaughter of the bulbs must add greatly to the cost of maintenance of the parks, while at the same time it puts money into the pockets of Dutch bulb growers.

New park at Dumbarton.—The inhabitants of Dumbarton have been presented with a public park by Mr. Peter Denny, of Helenslie, and Mr. John McMillan, of College Park, at a cost of about £20,000. The opening day last week was observed as a general holiday, and a demonstration of the trades and societies of the vicinity took place.

The waste piece of land adjoining the south-east corner of St. Thomas's Hospital, near the Thames Embankment, is being laid out as an ornamental garden by the Lambeth Vestry. The ground, which belongs to the hospital authorities, has, by them, been handed over to the Vestry for the purpose of being laid out as pleasure grounds.

Royal National Tulp Society.—The annual exhibition of this society took place in the Botanic Gardens, Old Trafford, Manchester, on the 30th ult., and, notwithstanding the backward character of the season, a very good exhibition was the result. The best flowers in the three divisions into which *Tulips* are classed were all found in the stands exhibited by the Rev. T. D. Horner; the premier feathered flower was *Bybloemen* Mr. Cooper, the premier flamed flower Sir Joseph Paxton, and the premier breeder Glory of Stakehill. Among the newer flowers staged on this occasion one was selected for a first-class certificate, namely, John Hart, a feathered *Bybloemen*, raised by Mr. Walker, of Winton, from seed of *Adonis*. It promises to make a very useful exhibition flower.

LATE NOTES.

Pansy or Viola (Amateur).—The flower you send is a Pansy.

Monstrous Dandelion (J. M.).—We have not observed a similar occurrence in *Dandelion* before.

Pansy (V. C. & Co.).—We do not know the name of the sort sent. It is pretty and well worth a name if a seedling.

Twin-flowered Narcissus (R. H. W.).—Twin-flowered forms of *Narcissus poeticus* are not uncommon. It is regarded by some to be a constant character, and the variety has been named *biflorus*.

Naming plants.—Four kinds of plants or flowers, only can be named at one time, and this only when good specimens are sent.

Names of plants and shrubs.—*G. Sage*.—1, *Narcissus poeticus recurvus*; 2, *Diphys Fioniana*; 3, *Chieranthus alpinus*.—*Edw. Ford*.—*Eranthem pulchellum*.—*J. Smith*. Common Silver Fir (*Abies pectinata*).—*W. T. Blatney*.—1, *Ilbrothamnus corymbosus*, *Phlox* *bifida*.—*J. C. O.*.—1, *Sorbaria macrostachya*; 2, *Deidrobium moschatum cuneatum*.—*G. F. G.*.—1, *Polygatum verticillatum*; 2, *P. officinale*; 3, *P. multiflorum*; 4, *Centaurea montana*.—*E. J. H.*.—1, variegated *Hedychog-leaved Holly* (*Ilex Aquifolium lerox viriegatum*); 2, *Saxatolina incana*; 3, send better specimen; 4, *Veratrum nigrum*.—*R. E. D. A.*.—*Vanda cœrulescens* (p. variety).—*F. R. S.*.—Apparently *Coleogyne elata* and *Oncidium altissimum*. Both poor specimens.—*F. W.*.—*Magnolia glauca*.—*K.*.—1, *Spiraea hypericifolia*; 2, *Prunus Padus*.—*A. K.*. *Serapias cordigera* (with large dark lip); other is *Orchis papilionacea*.—*W. Cash*.—1, *Orchis maculata*; 2 and 3, varieties of *O. Morio*; others: next week.—*A. M. P.*.—1, *Impatiens Lawsouiana*; 2, *Thunja occidentalis*. 3, *Amelanchier canadensis*; 4, apparently a *Lonicera*, send in flower.—*E. D. K.*.—*Succolabium guttatum*.—*G. F.*.—1, *Fritillaria recurva*; 2, *Tropæolum polyphyllum*; and in a box 1, *Chionodoxa teraota*; 2, *Agave americana variegata*; 3, species of *Stapelia*; 4, a *Salicella*, specimen too small to name; 5, *Phyllocactus multiflorus*.—*E. F. C.*.—1, species of *Leucopis*; 2, *Berberis vulgaris*; 3, *Santula europæa*.—*D. J. Y.*.—*Ribes aureum*.—*C. Woodburn*.—Common Cuckoo Pint (*Arum maculatum*), native plant.

WOODS & FORESTS.

THE PROPOSED SCHOOL OF FORESTRY.

THAT this is a step in the right direction I think few will deny, and as Sir John Lubbock's motion was seconded in the House of Commons by a speech full of useful information on the subject by Dr. Lyons, it is to be hoped that their praiseworthy efforts will bear fruit, and before long be crowned with success. It seems to be admitted on all sides that the area of ground under timber in this country is infinitely less than it ought to be, and, when such is the case, it is quite natural that interest should be taken in inquiring as to the best means of extending our woods and forests, so that they, in order to meet the demand for timber and add wealth to the nation. In order to advance this desirable end, I think the Government should encourage the planting of waste land either by advancing money on easy terms to proprietors who wished to improve their properties, or by acquiring land to be improved by planting for the good of the State. A great many estates in these islands are of such a size and the area under wood so small, that they cannot afford to keep a permanent forester, and yet, from personal observation, a great many of these properties contain considerable tracts of barren ground incapable of improvement for tillage, and yet capable of producing excellent timber under a proper system of management.

To meet this state of things would it not be for our common interest that Government appointed experienced foresters in different districts of the country to give advice as to planting and the management of woods generally? At present any planting that is done on such estates is generally done by contract, and, when the work is finished, the young plantations in nine cases out of ten are allowed to grow up into mere thickets without any attention as to timely and judicious thinning and pruning, and until the trees are drawn up like fishing-rods for want of space, and thus their prospective value for utility ruined at the outset. Timber, unlike garden and farm crops, cannot be brought to maturity in a season or two. Trees require an average lifetime to reach maturity, and in view of this remarkable circumstance as well as the probable collapse to a great extent of foreign supplies within a short period of time, I think great vigilance, sound legislation, and provident foresight ought to be brought to bear upon a subject of such great importance to the nation at large. With regard to a school of forestry, one great drawback in this country is the want of a sufficient area of woodlands to be placed in connection with such. At the same time I may remark that a large extent of woodlands under a forester's charge is not a proper criterion to judge of his ability; on the contrary, I have found that young men trained under the eye and immediate supervision of an intelligent working forester upon a property of medium size, where the culture of deciduous and coniferous trees is carried out, as well as the art of cutting up timber at a saw-mill into different sizes of scantlings with as little waste of timber as possible, acquire a better knowledge of forestry generally than such as have been trained on large properties where there is a set of men kept for each department. With such a training and a knowledge of soils, diseases and insects injurious to trees, I have no doubt that they can be properly cared for, root and stem, branch and foliage.

J. B. WEBSTER.

Small v. large enclosures.—"J. S. R." in his article on extending woodlands (p. 509) thinks that a return to small enclosures must not be advocated, but I am not so sure of this, as personally I have very strong views on this subject. I do not remember ever having heard a farmer remark that "one reason why there was a decrease in the produce of wheat was in consequence of the doing away with small fields, as the hedgerows afforded shelter," but I firmly believe there is more in this than many imagine.

Daring late years it has been the fashion to look upon every vestige of shelter round a cornfield as an enemy to the agriculturist, but notwithstanding this the sequel shows that our progenitors who erected these shelters were not so devoid of common sense as we are apt to think. So far as my observations have gone, the indiscriminate destruction of shelter means a corresponding decrease of fertility. I shall be glad to see the subject taken up and thoroughly sifted.—D. J. Y.

NOTES.

Mr. Gladstone on forestry.—In your report of Mr. Gladstone's speech on forestry schools last week it is stated that "a great deal of difficulty in the way of studying forestry in this country arises from the limited scale of operations which can be conducted here in consequence of our woods being broken up into such small areas." With all respect to Mr. Gladstone's opinion on such subjects, it occurs to me that the above cannot be a very valid objection to the study of forestry in a country where forestry can never be conducted on any other than a limited scale of operations. Forestry under these conditions is precisely what the British woodman has to learn, and this necessity is likely to be greater in the future than it has been in the past if the views of some radical theorists are ever put into practice. Moreover, we fail to see why forestry cannot be studied successfully under a limited scale of operations. What is it that the forester has to learn? We apprehend it is the culture of trees on a remunerative principle, and to this end he needs to find out what kinds of trees are likely to pay best, how and where to plant them, care for them, and in the end to sell them. It would be interesting to learn in what way the planting and culture of large areas are necessary to the learning of any one of these things. The idea (with reverence be it said) is absurd. To test the capabilities of any tree, it is not necessary to do more than plant a few of it in the right way and place; afterwards as large areas may be planted as anyone desires. The fault of some woods is that too large areas have been thoroughly planted. Those who entertain the subject of forestry schools should get rid of this idea. We must learn forestry under existing circumstances, and which are not likely to be greatly altered. For example, a person buys an estate, and finding portions of it unsuitable for farming, he decides to plant it, and the question arises, What is he to plant it with, and how is it to be managed? Multitudes of small plantations on small and great estates have been established in this way all over the land, and while some have made a good hit by planting the right kind of trees in the right place, others have erred in the contrary direction. It is not a school of forestry that is needed so much as a change of system in our planting. Any timber merchant will tell you which kind of trees fetch most money, making allowance for existing industries, and the forester is the man to plant and grow the trees. When Mr. Gladstone said, further on in his speech, that "one great difficulty in the way of proper culture of woods in this country arises from the fact, that of their being kept, not for purposes of profit, but of landscape beauty or pleasure or sport," he was right. It is but justice to the woodman to remember that many of the plantations under his charge are the creation of the landscape gardener or the sportsman or his gamekeeper. The trees that produce the finest effect in the landscape and those which provide the best shelter for foxes, pheasants, and other vermin or game, are not by any means always the best to grow for timber. The subject is one on which the landowner wants to be educated upon as much as anyone else. It is not too much to say that on many estates the woods are prostituted to purposes of sport, and the woodman made a mere gamekeeper. I could name some of the most extensive estates both in England and Scotland where this is the case, and until such things are altered schools will be of very little service. I was told the other day by a timber merchant that one

nobleman sold annually about £6000 worth of timber, chiefly Larch, which, thanks to the foresight of his forefathers, had been planted very extensively and was now coming in when income from such a source was very welcome; while, on the other hand, there are other estates extensively planted with trees like the Spruce that will never pay the cost of culture. There is not half so much mystery about woodcraft as some suppose, although there are, no doubt, many ignorant woodmen. Speaking as one familiar with his own locality, I venture to say that there is not an acre of land anywhere within miles that I could not at once say what kind of trees it could grow best and which would pay best, and most foresters could do the same who have paid the least attention to their business, and noticed the character of the land and the trees that grew on it.

M.P.'s and forestry.—Whatever happens, gentlemen ought to be implored not to allow themselves to be carried away by the talk indulged in by Members of Parliament on such subjects. There is much reason to fear that their information is derived second hand, and from sources not always reliable. Mr. Acker's speech furnishes a good example of this kind. According to him, the art of forestry is "absolutely unknown" in this country, and more to the same effect. It would be interesting to know those parts of the midlands, too, where, according to the Premier, the "art of wood cutting is practically unknown." Whatever may be of foresters, the woodmen are usually proficient in their several capacities, and I think there are no estates either in the midlands or elsewhere without men expert in felling trees by the axe, which is the method Mr. Gladstone evidently means.

Selecting Oak timber.—Your correspondent "D." and others who have lately written in THE GARDEN fell into a mistake in supposing that Oak that is grown fast in good soil "is deficient in strength in consequence of rapid growth." The contrary is the case. Slowly grown Oak is hard is brittle, and it has been found by the tests employed at the Admiralty that fast-grown timber—Oak especially—resists the greatest amount of tension and impact. Dr. Lindley exploded the slow-growth superstition long ago, and anyone who cares to refer to his tables on this subject in his "Theory and Practice of Horticulture" will find that the idea propounded by "D.," though old and common, to be quite erroneous. That soil may make a difference to the quality of timber is probable enough, but the rate of growth is another thing. I lately saw Larch from Lincolnshire that had been rejected for colliery purposes, in which strength is important, while other samples of the same age and size apparently were chosen. The only apparent difference between the two was that the selected examples were redder and contained more resin than the other. The rate of growth in both cases, as shown by the annual rings, seemed to be about equal. This is one of those questions, however, on which more information is needed than the mere *ipse dixit* of a carpenter or joiner or any other empiric. It is quite true that under the plane and axe very great differences of quality are detected, some samples of Ash and Oak especially being almost as hard and as tough again as others, but these signs are not to be always depended upon as determining the general quality of the wood. There can be no doubt about fast-grown Ash being the toughest and strongest, and if you give a dealer in that wood his choice, he will pick every clean, fast-grown tree out of the wood. One manufacturer who has got all his Ash from us for forty years is always willing to pay a higher price for clean, quick-grown examples of his own choosing, will take large and small trees together, and does not care at what season the trees are felled. He uses it for a great number of purposes, but principally for shafts of different kinds.

Driving nails into trees.—The note of caution on this subject is needed. The greatest offenders are the farm tenants and their men, as

in mending their fences they nail the rails to the hedgerow trees, and unless watched constantly, it is not easy preventing them. For these reasons timber merchants are very careful about buying hedgerow timber. The nails get grown over in time and are only discovered at the saw mill, where they sometimes cause much mischief to the machinery as well as injury to the workmen. The only way to stop the practice is to hold the tenants responsible for all damage done to trees in this way.

Nursing Oaks.—Mr. J. N. Blunt, I perceive, maintains that the Oak must be nursed in the early stages of its growth. I ask what proof has he of this save words. The Oak needs no nurse, as young plantations from seed in nurseries and elsewhere testify. The very largest and oldest Oaks on this estate have grown up in isolated positions, and in some cases in the most exposed situations. What has nursing done for these? You cannot go anywhere in the fields without seeing such examples. I will venture to say that there is not one forester who can prove satisfactorily that nurses are necessary. There would not be so much objection to the practice of planting nurseries if these could be disposed of to pay the cost of buying and planting, but of what value are Scotch Fir rails and stakes anywhere in England?

Bark setting.—Timber buyers would grin if they read "J. B. W.'s" elaborate instructions for the care of the bark. Paying the owner of the trees in the first instance, from 35s. to 38s. per ton to the peelers for stripping, and the cost of delivery by road or rail and other risks does not leave a very broad margin of profit at £3 per ton, which is the price offered hereabouts lately, and £3 10s. for the best quality. Shedding, stacking, and "examining the ranges" to see they are wet are out of the question, and the very simplest contrivances for drying and preparing are necessarily resorted to, and the bark turned over to the buyer at the first chance. The way some of your correspondents write on such subjects almost leads one to think that they are sometimes behind the times.

Spruce Fir timber.—"J. S. R." is right in saying that Spruce is not of much value, but wrong in saying it cannot be sold. It does very well for making the sides of corve boxes at collieries, being rather loog in the fibre and tough enough for such temporary purposes. I know one timber merchant alone who has latterly transported about 20,000 feet of Spruce from Dumfriesshire to Yorkshire for such purposes—wind-fallen trees bought cheap. Still, I would not plant common Spruces for timber where any other timber tree would grow fairly well.

Pruning timber trees.—Does it pay to prune timber trees in the laborious way suggested by Mr. Cree (p. 507)? I know the Scotch forester is very fond of trimming and pruning—far too much so—but what about the cost and the benefits? Does it pay to prune? Not much, I fear. It pays to thin judiciously, and if this be attended to, timber trees will take care of themselves till fit for the axe. They may not be all as shapely as the pruner can make them, but they will all be saleable at about just as good prices as if the pruning knife had never touched them.

YORKSHIREMAN.

Wooden bolts in buildings.—The following remarks on the use of wooden bolts instead of iron for almost every purpose, as is the fashion now, deserve to be placed on record. Why do you make so lavish a use of nails in the carpenter's work of our houses to the exclusion of the honest old oaken pin, asks the writer? Pull down any building, if it be merely a barn of more than two hundred years old, and you will not find a single nail in the original work; rafters and joists were all bolted together so stoutly as almost to defy the tools of the destroyer. Many an old manor barn, when pulled down of late years—as unfortunately only too many of them have been—has shown itself to be better built than most

palaces are now. There are arguments in the way of economy of time and so on in favour of the use of nails in house-building, but they are nothing compared with the solid advantages of using wooden bolts. The iron nails in time canker and rot rafters and floors, but bolts hold them together like grim death, and render a house practically indestructible.—D. J. Y.

NURSES IN YOUNG PLANTATIONS.

IN reading how "Yorkshireman" questions the utility of nurse trees in plantations one is inclined to doubt whether he has given the same careful consideration to this particular question that he generally does to most others which he is sometimes pleased to try by the test of criticism; for he asks in his recent paper, "What are nurses in young plantations, and what purpose are they intended to serve?" "Who invented them, and what good do they do?" . . . "What I want to know is what good the nurses do?" Now, it is strange to see a man of "Yorkshireman's" ability and judgment put such a series of questions as these; and it is something hard to comprehend what it is indeed he wants to know, because he denies and admits the use of nurses at the same time, seeing that, he adds, "I would nurse Oaks with Oaks, Firs with Firs, and in no other way." There is something tangible in that proposition, and it resolves the question into one of economy, combined with the method of arrangement, rather than that nurses are useless appendages added to plantations without purpose or beneficial good. Whether Oak should nurse Oak will depend in some sort on the first cost, and the intermediate demand and value of such trees when ready to cut out. "In what way is an Oak better nourished by a Scotch Fir than by one of its own species?" An Oak is in no material way better nursed by Scotch Fir than by Oak, provided all the while that Oaks are sufficiently close planted to shelter and elongate each other. Only Scotch Firs are much cheaper than Oak, and fewer of them are required as nurses to accomplish the desired purpose, and that is a consideration in their favour, the more so where economy is a matter of importance. But Larches are the best and most valuable nurse trees when and where the soil and other conditions are agreeable to their growth. "I believe I am within the mark in asserting that there is nothing analogous to 'nursing' in plantations as understood by the forester to be found in Nature, and she produces the best timber when left to herself, as the timber trade amply proves." That is a very sweeping assertion without any material to substantiate it. For there is much resemblance between Nature's manner and man's formal manner of supplying protection for young tender trees, as all trees are more or less tender in their infantine years.

The term "nurses or nursing" in forest phraseology is, I think, borrowed from and in imitation of Nature. Nature, as it were, anticipates the hardships young trees must endure, and provides for their proper security by close planting. Man does the same thing, only he chooses to use certain kinds of trees as nurses which he deems as well adequate to achieve a like result. The question which the last abstruse proposition in the above quotation rises is extraneous to the subject under consideration, and is too large and complicated to discuss within the limits allowed; but the struggle for supremacy between Nature and Nature is very severe. Certain it is, that the strong in Nature crush the weak, but in doing so they exhaust and enervate their own vitality. Unless "Yorkshireman" advocates a system of planting trees at distances apart that they will never come in contact, nor require any other work until they are finally exploited, it is not easy to understand what he is aiming at.

GLENDYE.

The ascent of the sap in trees.—More than once I have pointed out in THE GARDEN the practicability of arresting the bleeding of Vine, early in the season by keeping them cool, and so arresting the circulation. I have done this in order

to get the wounds dry; afterwards I have applied patent knotting as a alyptic, as the latter will not stick on a wet surface, a fact which the inexperienced should know. This, however, is by the way; my object now is to direct attention to the effect that a slight difference of temperature makes to the ascent of the sap in trees at this season. Here we began peeling Oak bark on standing timber about the beginning of May, when a favourable spell of mild weather for a few days set the sap in motion, as it is only when the sap is "on the run" that the trees will strip; but presently one of the coldest spells we have known at this season for twenty years set in, and the circulation of the sap was so completely arrested, that barking had to be discontinued until a few days ago, when a change of the wind set the currents in motion again, and now the progress of the trees is so rapid, that we fear the work will have to be discontinued from the opposite cause, as bark cannot be well removed after the trees come into leaf, and it never runs so well after a check.—S. W.

VARIETIES OF THE SCOTCH FIR.

ACCORDING to arboriculturists, there are good and bad varieties of the Scotch Fir, and it is long since it was written that "many plantations in Britain have unfortunately been made of inferior kinds." The Braemar Pine is supposed to produce by far the most excellent timber, and it is this variety which is said to form the best of the Scottish forests. A characteristic of this variety is its disposition to produce large horizontal limbs, while other sorts grow more in the true Fir shape. There are numerous fine examples of the horizontal branched variety in the "Dukeries" in Nottinghamshire, as I have frequently noticed when there, and at first attributed this habit to the trees having more room than usual, consequently retaining their earlier branches, several of the Pines, among others, the Austrian Fir, being rather addicted to the production of strong side limbs, which push out horizontally for a certain distance and then turn upwards. James Farquharson, in the notes to Hunter's Evelyn's "Sylvia," over a hundred years ago, says that in his time there was supposed to be two varieties—"the produce of Scotland, viz., the red or resinous, large trees of fine grain and hard solid wood; the other, a white wooded Fir, with a much smaller proportion of resin in it, of a coarser grain and a moist spongy nature, never coming to such size, and much more liable to decay." The latter are exactly the characteristics of the Scotch Fir grown in the richer lands and more favourable climate of England, and probably Farquharson was right in concluding that the Scotch Firs were all of the same variety, and "that the difference in the size of the trees and quality of the wood was entirely owing to circumstances, such as the climate, situation, and soil they grow in." Northern nurserymen, however, still profess to distinguish varieties, and are rather particular as to where their seed comes from. Farquharson's description of a natural Pine forest in the Highlands is instructive also, as bearing upon thinning, and coincides exactly with the description of a friend of my own, writing to me not long since from Deeside. He, Farquharson, says, "the seedling Scotch Firs rise exceedingly close together, which makes them grow straight, and free from side-branches of any size, to the height of 50 feet or 60 feet before they acquire the diameter of a foot." In his description of what takes place after this period, the same writer has anticipated Darwin's description of the "struggle for existence" among plants, and his language very closely resembles the great "evolutionist's" on that point. "The poorness of the soil on a small surface," he writes, "makes them in a constant state of war for their scanty nourishment. In such a state of hostility they continue struggling until the master trees acquire some space around them; then they begin to shoot out in a more bushy manner at the top, gradually losing their spiral form, increasing afterwards more in size of body than height, some acquiring 4 feet in diameter, and about 60 feet of height to the

branches, fit for the finest deal board." Farquharson says he planted several million Scotch Firs in his time, always, as far as possible, in "northerly hanging situations," as these, even in the Highlands, produced the best timber.

YORKSHIREMAN.

SEASONABLE WORK.

Now is the time to prune deciduous forest and ornamental trees by cutting off all rival leader shoots at the top. Also cut back or point all straggling side branches, in order to form a well-balanced uniform head to the tree. In cutting back and pointing side branches, cut clean with a sharp knife and always close to the base of a lateral twig. When branches of any considerable size are to be removed, the pruning saw or chisel may be used with advantage, and in using the former, make a cut with the saw about 1 inch deep in an upward direction at the base of the branch to be removed, which will prevent the bark from being torn from the stem when the branch is cut through, as this sometimes does happen when this precaution is neglected. As the wound made by the saw has a rough surface, this should be neatly pared and smoothed with a sharp knife in order to prevent the lodgment of water, and wounds of a large size had better be coated over with paint of a similar colour as the bark of the tree. In a great many cases the pruning chisel might be used with advantage, and in doing so it is best to have a set of chisels, the handles of which should be of different lengths, so that the operator may always have a chisel at hand, the shaft of which will be the proper length to reach the branch to be cut off, by which means the work can be carried out to better advantage. In using the instrument, one person adjusts the edge of the chisel to the base of the branch to be removed, while a second person gives it a sharp stroke or two with a wooden mallet made for the purpose, by which means the branch is severed from the bole in an expeditious manner. Care should be taken not to force the chisel too far upwards, otherwise it might cut the bark on the stem and cause an unnecessary wound.

In this way a couple of hands accustomed to the work will go through a great many trees of medium size in one day, and when the chisel has a keen edge—which it always should have—it makes a clean slanting cut, which retains no water and is easily healed. The make of the chisel used varies considerably in form in different parts of the country; but be this as it may, all should be provided with a shaft of well-seasoned tough Ash wood, the lower end of which should be provided with an iron ring to keep it from being splintered by the strokes of the mallet.

Look over all plantations of young Oaks; and such trees as have been cut over by hares, and are thereby producing several leaders at the top, should have their number reduced by cutting them all off with a sharp knife, with the exception of the strongest and most central, which should be left for the permanent leader. Cut back and point side-branches where necessary, and any sickly, unhealthy trees, and such as have had the bark destroyed by rabbits, had better be cut neatly over at the surface of the ground, when they will then produce several young suckers from the root, the strongest of which can be retained for the future tree, and the others cut off the following season. Other deciduous trees may be treated in a similar manner, with the exception of the Maple, Birch, Sycamore, &c., as these are apt to bleed when pruned at this season, so that any pruning, as well as the removal of double leaders at the top, had better be deferred until August and September, when the work can be executed to better advantage, as the descending sap at that season soon heals over the wound.

Where Larch and Fir have been planted among the hardwoods as nurses, and when the side-branches of the former are beginning to get too close and confining the latter, these should be cut back to allow the hardwoods room and prevent them from being drawn up in a weakly state, and as this is a most important point for the welfare

of the trees in after life it should always be well and timely attended to. In very thick places it is sometimes necessary to remove two or three tiers of the lower branches of the Firs by cutting them neatly off close to the stem, by which means the deciduous trees are allowed plenty of space for their development, and the Firs so treated can be cut out afterwards when wanted. Ornamental Conifers should be looked over, and in cases where two or more leaders are starting from the top, these should be repressed by pinching them off with the finger and thumb, leaving the strongest and best for the leader.

J. B. WEBSTER.

RAISING COVERT SHRUBS.

NOTHING strikes one more than the difference in the state of the woods on some estates. One estate will have abundant undercover of Hollies and the like, and another just adjoining will perhaps be destitute. We have seen extensive woods that the proprietor had been grumbling about to his woodland and neighbours for half his lifetime so bare of bush, that they would hardly have sheltered a rat in the winter, and somehow or other the proprietor was always planting too, but sparingly for want of the means, while no effort was being made to raise trees at home; whereas, on the other estate the woodland had been supplementing his stock with good trees of his own nursing. At the same time, I am a great believer in the extensive planting of the common Holly and English Yew as underwood in deciduous plantations which are moderately well thinned. There are no kinds of Evergreens to equal these, and I am acquainted with estates where the desire to plant them is only limited by the means of procuring them. It is not creditable to woodmen that in such cases they should ever be short of Hollies, because they might procure sufficient berries for nothing, or next to nothing, as would raise plants to stock any estate, and their employer would not grudge them a field to sow them in if they did not sow them where they were to grow. The best Holly hedges are raised from seed. If berries are collected in autumn and prepared by crushing and mixing with fine soil, and buried till spring, then sown, they will make nice plants the same year or the year following, and in this way an inexhaustible supply may be provided. Yews may be treated in the same manner. Rhododendron seeds are sown in pans in fine soil in a cool frame kept close and moist, and they generally come up thickly; afterwards they are planted out in beds and kept free from weeds. Here are three Evergreens, therefore, that are wanted for planting about woods and parks more than all others put together, and that can be easily raised at home, but seldom are, and hence the reason that when anyone wants in these days to set up a Holly or a Yew hedge quickly, it costs him about one guinea a yard to start with, and thousands of pounds to furnish his preserves.

YORKSHIREMAN.

OSIER PLANTING AND BASKET MAKING IN IRELAND.

WE (*Farmer's Gazette*) have received the report of a local improvement society established at Belleek, county Fermanagh, and styling itself "The Belleek Parish Association for the Promotion of Remunerative Employment among Labourers and Small Holders of Land." The society takes as its text the following extract from the report of the Royal Commission on Technical Education:—

"There is a general consensus of opinion on the part of persons of all ranks in that country—whatever may be their views on other subjects—that the prosperity of the poorer districts of Ireland may be greatly promoted by technical instruction in handicrafts and home industries. There is a conviction not less general, and it is one which our visits have fully confirmed in our mind, that the children and young people of Ireland of the labouring class possess great manual dexterity and aptitude, which only require to be developed in order to be useful to them and to those amongst whom they live."

The chairman of the Belleek society, Mr. J. C. Bloomfield, believing that much of the land in his district was suitable for the growth of Osiers, and that the cultivation of these as well as the manufacture of them into baskets might be profitably introduced to the notice of his poorer neighbours, made some practical inquiries which confirmed his original opinion. Mr. Bloomfield visited a basket-making district in England where he learned that the practice of this rough industry produced in some cases a profit of £40 an acre. He found that many railway companies have adopted a system of making the baskets used for the conveyance of perishable produce and of letting them out on hire, and that while all such baskets are made in England, the rods used in them are imported from Holland. Procuring a pattern basket, Mr. Bloomfield employed a local creel-maker, who copied it in such a manner as to elicit from the manager of the London and North-Western Railway Company a declaration that a week's instruction would suffice to enable the man employed to produce as good a basket as any they had in store. Encouraged by this opinion, Mr. Bloomfield and his friends determined to try and develop the basket-making industry in their district, and with this object it is proposed to establish a school in a large plain shed for the instruction of adults and youths in basket-making—an instructor other than a resident being only necessary for a very limited time—and for the present to import from abroad the rods necessary to make the plain, common, commercial baskets, of the different sizes and shapes, suitable to meet the requirements of the railways, wine merchants, grocers, &c., together with the carrying exigencies of the General Post-office, whose parcel post basket contract is already estimated at £40,000 per annum.

The efforts of this little society are deserving of warm encouragement from all who take an interest in the well-being of the working classes, and we wish the new project every success. It is right, however, to bear in mind that the idea is not a new one. About the beginning of the present century efforts were made to extend the growth of Willows in Ireland and their manufacture into baskets, and an essay on the subject of Willows was, we learn, published by the botanist of the Royal Dublin Society. We learn that a plot of ground in the society's gardens at Glasnevin has for some time been devoted to the cultivation of Willows, and that the best kinds may there be seen by visitors. We have ourselves seen many Willow gardens or "twig yards," as they are termed in various districts in the south of Ireland, and the produce of these is justly regarded as a valuable crop, which always fetches a fair price. It must be admitted, however, that the growths in these yards are mainly due to natural causes, little or no skilled labour being expended on the production of an Osier crop. In this, as in other minor industries, the margin left for improvement is wide indeed.

A load of bark.—Your correspondent "C. R. S. D.," using this term in his remarks on bark stripping (p. 510), reminds me of a paragraph that appeared some time ago in a paper devoted to the leather interest. The writer says, "Of all the stupid and puzzling things associated with tanning, the 'load of bark'—two tons and a quarter, equivalent to forty-five cwt., by which London tanners buy their Oak bark—is the worst. In most parts of the country the article is sold by the ton, and the same bark merchants who contract with Bermondsey tanners for so many loads actually deal with Scotch and Irish buyers by the ton. London tanners when buying foreign bark, be it Australian, Belgian, French, or any other kind, invariably purchase by the ton, and as no one has any interest in maintaining such a quantity or so absurd a term as a 'load of bark,' we hope our friends will all agree to let this vague, unmeaning quantity drop entirely out of their vocabulary. The only folly that could compare with this load system was the old-fashioned plan of buying bark in the woods by the cord or fathom as it was set up against a pole. Measuring in this

way has given place to the weighing machine, so we think that all concerned will back us in this reform. If our London tanners will adopt the ton system, we feel sure that our Hampshire and Sussex timber and bark merchants will readily fall into it." This is very sensible, as except where locally understood the term load has no meaning whatever, as it may be a gig load or a railway truck load for aught anyone knows to the contrary. Even here we have two tons—viz., 20 and 21 cwt., but the term load is unknown as a specific quantity in buying and selling.—WILTS.

SHRUBS FOR UNDERCOVER.

THE selection of the plants best adapted for undercover is most important to the planter of undercover, as success or failure depends in a great measure on the proper selection of plants to suit the different soils and situations. I will, therefore, endeavour to give a descriptive list of the plants that are best adapted for the maintaining of undercover for game.

NORWAY SPRUCE is admirably adapted for forming clumps of undercover in old plantations, or for planting as a nurse in mixed plantations. Being abundantly furnished with branches, if thinned in due time and its branches allowed to remain green to the base, it forms good shelter and cover for game. On dry soils or exposed situations it invariably becomes stunted in appearance, and dies prematurely. Suitable for a great variety of soils, it thrives best in a moist loam and sheltered situation.

AMERICAN SPRUCE (*Abies nigra*), a dark green variety, well suited for ornamental planting or game covers, as it is impervious to the attacks of hares and rabbits; specially adapted for planting in poor soils and exposed situations; but like most of the Spruce tribe, it thrives best in a moist loam and sheltered situation.

AUSTRIAN PINE (*Pinus austriaca*), if planted and kept thin, so as to allow its branches to spread, is well adapted for cover in exposed situations, along with Holly and Elder. Being naturally of a spreading habit and a rapid grower, it is well worthy of being more extensively used; but as it is liable to be injured by hares and rabbits, it should be protected for a few years, where these animals are numerous. Plants that are intended for planting in old plantations should be of a bushy form, well rooted, and from 2½ feet to 4 feet high. The Austrian Pine is quite hardy, and thrives in a great variety of soils and exposures.

CORSICAN PINE (*P. Laricio*).—This tree is not so well adapted by habit for cover as the Austrian Pine, its only recommendation being that it is not liable to be injured by hares or rabbits. It thrives in a great variety of soils, and is very much valued as a fast-growing hardy tree.

MOUNTAIN PINE (*P. montana*).—This is the best of all the Firs for forming undercover, as it is of a low-spreading habit, very hardy, and thrives in a great variety of soils. Being of slow growth and dwarf habit, it cannot be recommended as a useful timber tree, and should only be planted so as to intermix with the other trees for the purpose of maintaining the undercover.

THE CLUSTER PINE (*P. Pinaster*).—This is the most suitable tree of the Fir tribe for planting and maintaining cover for game in exposed maritime districts, as its branches, when young, are naturally of a low-spreading habit, and it seems to grow best when exposed to the influences of the sea breezes. It is suitable for a great variety of soils, but thrives best in a light, dry, sandy loam.

AZALEA PONTICA, a slow-growing hardy shrub, well worthy of being more extensively cultivated, suitable for planting along the sheltered sides of plantations; is not liable to be injured by game, and besides flowering in summer, it has very ornamental foliage in autumn. It thrives best in rich peaty soil and sheltered situations, but will grow well in any light dry loam.

BOX is a slow-growing hardy shrub, specially adapted for planting in ornamental plantations, as

it is not injured by hares or rabbits. It thrives well under the shade of large trees, and forms excellent cover for all sorts of game. Soil light sandy loam, and situation sheltered.

BRAMBLE is found growing natural in a great many plantations, but in game preserves, where it is not found, it is well worthy of being introduced, as, from its free-spreading growth, there are few deciduous plants better adapted for the protection of game. In young plantations it requires to be cut back every third or fourth year, to prevent it encroaching too near the young trees. It luxuriates on a great variety of soils and situations. The price is also very moderate.

COMMON BROOM is sometimes raised from seed for the purpose of forming game-cover, but is generally found growing natural. It is one of the best plants for maintaining game cover; for, although it should be partly destroyed by game in the winter season, it soon regains its former healthy appearance. It thrives best in light gravelly soils and exposed situations. To maintain good cover it should be pegged to the ground or cut down every fourth or fifth year.

ELDER is principally adapted for planting in exposed situations as a nurse to the Holly and Pines. Its hardiness and rapid growth are its principal recommendations for game-cover. It will grow on almost any soil, but thrives best on deep loam moderately moist. To maintain efficient cover it requires to be cut down every second or third year. The Beech, Sycamore, and Birch can be grown as copsewood in the same situations.

COMMON HOLLY is very liable to be injured by hares and rabbits when first planted, and should, therefore, be protected for a few years till it is beyond their reach, and even some of the old plants will require to be protected with Spruce branches during a severe winter. It is the best evergreen shrub for planting in exposed situations, and it is also specially adapted for planting in groups on the outside of plantations. It thrives best on rich loam containing a quantity of vegetable matter. Being considered a shy grower at first, the plants should be well rooted before being removed to the plantation.

COMMON LAUREL.—This is one of the most free-growing evergreen shrubs, suitable for a great variety of soils, but grows best on a light loam with a dry bottom, and moderately sheltered; liable to be injured by hares and rabbits when first planted; but if the plants are large and well rooted, it soon grows beyond the reach of these animals. Being naturally of a low-spreading habit, with its branches generally reclining to the ground, and a very rapid grower, it is admirably adapted for the maintaining of game cover. After it is thoroughly established, it will require to be cut back or pegged down every sixth or seventh year; in fact, the more it is cut back or pegged down the faster it seems to grow. It is best adapted for planting in clumps, and can be propagated by layers and cuttings.

PORTUGAL LAUREL.—This, like the preceding, is very liable to be injured by hares and rabbits when first planted; and should, therefore, be protected for a few years where these animals are numerous. Large plants of it are difficult to transplant unless they are well rooted. Being of a compact habit, it is well adapted for planting, either in groups or single specimens. It stands cutting well, and can therefore be kept to any size. Soil most suitable, rich loam, and situation moderately sheltered.

MAHONIA AQUIFOLIUM is a low-growing hardy shrub, well adapted for forming clumps of undercover for pheasants; but as it is generally destroyed by hares and rabbits, it cannot be recommended where these animals are numerous. It thrives well in any light loamy soil if the situation is sheltered.

THE PRIVET is a plant well adapted for forming clumps of undercover, and is one of the cheapest and easiest cultivated plants that can be used. It is a very rapid free grower, and thrives on a great many varieties of soils, but requires a moderately sheltered situation. It should be

pegged to the ground or cut every sixth or seventh year. A great many young Privet plants are choked by Grass and other weeds after they are planted. They are also sometimes destroyed by rabbits. The Privet can be readily propagated by cuttings in any ordinary soil.

RHODODENDRON PONTICUM is the best of all evergreen shrubs for the planting and maintaining of game cover, as it will thrive on almost any description of soil and is perfectly hardy, and in the most severe winters is never injured by hares or rabbits. It may be grown as single plants, but is specially adapted for planting in clumps. After the plants are thoroughly established in these clumps they should be regularly pegged to the ground every year, as the more the Rhododendron is pegged down the faster it grows. When the clumps get too thick, the plants can be removed and planted elsewhere, as it stands transplanting well, even after it has grown to a large size. In fact, wherever permanent game cover is required, the Rhododendron ponticum is quite indispensable, especially in old plantations. It thrives best in good peaty soil and sheltered situations.

COMMON YEW is a very ornamental and useful evergreen shrub, well adapted for planting either as a single plant or in groups; thrives well under the shade of trees, but is of very slow growth for a few years after being planted. Its leaves are poisonous for cattle and sheep, yet it is often injured by hares and rabbits. It should, therefore, be protected for a few years till it is beyond their reach; thrives best in a sandy loam and moderately sheltered situation.

SEA BUCKTHORN (*Hippophae rhamnoides*) is specially adapted for planting in maritime districts, either as a nurse for the Pinaster or for the formation of game cover; being of a straggling habit, it is well suited for this last-mentioned purpose, and is well worthy of being more extensively used, as it will luxuriate on the sea-coast in exposed situations and at an altitude where few other trees would grow; it thrives best in a deep sandy soil, but will grow in almost any ordinary soil; it can be readily propagated by layers or suckers.

SNOWBERRY (*Symphoricarpos racemosus*).—This is a low, free-growing deciduous shrub, well adapted for forming undercover, as it is seldom injured by game, even in severe winters. It luxuriates in any light free soil; and when once planted and established, it throws up numerous suckers from the roots, which soon spread over the ground. Its berries are very ornamental in the autumn and winter months.

A great many more plants may be used for undercover where there is little or no game to contend with; but as our subject is the planting and maintaining of undercover for game, the foregoing list must be considered as selected according to the best of our knowledge.—A. GILCHRIST, in *Transactions of the Scottish Arboricultural Society*.

Endurance of woods.—In some tests made with small squares of various woods buried 1 inch in the ground the following results were noted: Birch and Aspen decayed in three years; Willow and Horse Chestnut in four years; Maple and Red Beech in five years; Elm, Ash, Hornbeam, and Lombardy Poplar in seven years; Oak, Scotch Fir, Weymouth Pine, and Silver Fir decayed to a depth of half an inch in seven years; Larch, Juniper, and Arbor-vitæ were uninjured at the expiration of the seven years.—Y.

Destructive forest fires in Scotland.—Five miles of young trees have been destroyed by the fire that broke out on May 20 in Clash-nadarroch Forest, Inverness-shire, the property of the Duke of Richmond. Two acres of wood and 1500 acres of Heather were consumed on the Castle Forbes estate, Aberdeenshire, belonging to Lord Forbes. 200 acres of Heather were also burned on the estate of Mr. Grant Drummond, also in Aberdeenshire.

No. 708. SATURDAY, June 13, 1885. Vol. XXVII.

"This is an Art
Which does mend Nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare*.

A NEW CALIFORNIAN SHRUB.

THE long-heard-of *Carpenteria californica* has at last flowered in this country, and proves to be what was anticipated—a most beautiful addition to hardy shrubs. In the garden at Munstead, Godalming, it has flowered against a wall, and a branch from the plant has been sent to us by Miss Jekyll. It is nearly related to the Mock Oranges or Syringas (*Philadelphus*), with which it may be compared, though finer in every respect than the best of them. Its leaves are, moreover, different from those of any *Philadelphus*, being quite lance-shaped, from 3 inches to 4 inches long and silvery on their under surfaces. The flowers are produced on the upper parts of the young shoots in twos and threes from the axils of the leaves. They resemble those of *P. californicus* in form, but are much larger, being fully 3 inches across with rounded-edged petals, crimped and snow white, with the exception of a tuft of golden-tipped stamens in the centre. They expand three or four at a time on the shoots, the topmost one opening first; this shrub therefore has a beautiful appearance when in bloom, and as the buds expand in succession, it is attractive for some time. It is a tall-growing plant, and though it has been too precious to risk wholly unprotected, it will doubtless prove quite as hardy as any of the Californian species of *Philadelphus* from the same region—the Sierra Nevada, the locality where *P. californicus* grows wild. Altogether we regard it as one of the finest introductions among hardy shrubs that we have had for years, and we have yet to see it in perfection. The flower-spray which was exhibited at South Kensington on Tuesday last delighted and interested everyone who had previously heard of its beauty and had been waiting for its flowering. Fortunately, it is already obtainable in nurseries, and now that its merits are known it will doubtless be much sought after. It appears that botanists themselves know but little about it, for at the time when the "Botany of California" was written its flowers had not even been seen. It is, therefore, a new shrub in every sense.

EARLY SUMMER IN THE MIDLANDS.

OUR gardens and shrubberies are now most lovely. The flowers of spring have nearly left us to make room for those of summer, just beginning to appear. We gathered our last Lilies of the Valley and some double *Narcissus* a day or two ago. The large blue Irises are very fine this year. Scarlet and purple Anemones have been glorious, and many are still left. The lilac *Aubrietia* looks charming as a border for beds, or in large patches among other herbaceous things. Our *Gentianellas* have flowered well, and so have the Auriculas, but they are now things of the past. That graceful and æsthetic plant, Solomon's Seal (*Polygonatum*), the large white-flowered variety, grows luxuriantly here; we use it for our floral decorations; it is very graceful. Our Rhododendrons are in full bloom, and not far from here is a wood, not very large, but beautifully planted and so well arranged that one might fancy it was of considerable

extent. It is stocked with game, the low-growing shrubs forming an excellent cover. The Rhododendrons now in flower contrast finely with the dark foliage of the Pines and Larches, with the silvery Birches and the fresh young green of the Oaks. The *Anthericum Liliastrum* (St. Bruno's Lily) is one of the prettiest of early flowers. It should be grown in patches; being rather small and delicate, it hardly shows to advantage grown singly. It forms lovely bouquets, as does the white Clematis Miss Bateman, which is now a mass of star-like blossoms. Our other Clematises are not yet out, but we have a yellow Banksian Rose, which covers part of the front of the house; it has been in flower for weeks. Our Brompton Stocks are very fine, and so full of bloom, that you hardly see the foliage; they scent the air. But after all, the chief glory of a garden at this season is the flowering shrubs—the Lilacs, Laburnums, Snowballs, Syringas or Mock Oranges, and (perhaps the loveliest) the scarlet and pink, single and double, Thorns. The Lilacs have faded, but the other shrubs are in full beauty; one only wishes they would last. It saddens one to watch them depart. The Chestnuts are now more beautiful than usual; a Chestnut in full flower is one of the fairest sights of summer. Whatever we may say of England in bad weather, however we may revile her long dull winters and her tardy springs, we must allow that her summer, short and chequered though it often may be, is indeed lovely. There is a haze on a June morning through which we look out on a charming landscape. Across the level midland plain, dotted here and there with red-roofed villages embosomed in trees, with their Norman towers or Gothic spires of their ancient churches, the distance is of a soft purple, which seems to melt into cloud as it nears the horizon. Here we can discern, when the weather is clear, the fair towers of a noble minster many miles distant. The faint lines of the venerable pile look as if they were painted on the summer sky—a study in grey. To the lover of his garden this is a royal time. Every morning brings some fresh beauty to light; some new flower salutes the opening day. I often think that the man whose garden costs him both labour and study, who has to depend on his own exertions mainly, who plants his flowers with his own hands, values them the most. Those stately pleasantries which surround the historic houses and ancestral homes of our land (delightful as they are) do not probably afford their owners more real pleasure than our humbler gardens furnish to us. Much has been written on the subject of gardening both in past and present times, but, notwithstanding all we read in Chaucer and Spenser, though the latter describes an ideal garden of great beauty, "a second Paradise," when he says—

No tree, that is of count, in greenwood groves,
From lowest Juniper to Cedar tall:
No flower in field, that dainty odour throws,
And decks his branch with blossoms over all,
But there was planted, or grew natural—

we believe that the gentle science was little understood in England till the reign of William III. He gave a great impulse to the art; in the first half of the eighteenth century it may be said to have attained a high degree of perfection. In the time of Charles II. the prevailing taste was in favour of the stiff, formal style introduced by Le Nôtre. Nature was to give way to art and to wear fetters. The trees were carved into cones and pyramids or globes, or cut into walls; sometimes they were even made to assume the forms

of men and animals. The flower beds were laid out in architectural figures and approached by long formal alleys. Evelyn and Sir William Temple (two great authorities) reflect in their writings the fashionable ideas. But in the eighteenth century two celebrated gardeners, Bridgeman and Kent, originated a new form of landscape gardening, which soon became popular. They utterly discarded all vegetable sculpture and stiffness of design, and made it their aim to reproduce as far as possible in a small compass the variety and freedom of Nature. Addison and Pope defended the new mode with their pens, and laid out their gardens according to its canons. Addison ridicules the "British gardener, who, instead of humouring Nature, loves to deviate from her as much as possible." He says, "I look upon the pleasure which we take in a garden as one of the most innocent delights in human life; it is naturally apt to fill the mind with calmness and tranquillity and to lay all its turbulent passions at rest." Pope is said to have assisted Kent with his advice. The subject was ably handled by many of the writers of the time, and Whateley's "Observations on Modern Gardening" still remains a standard work. "One should never write," says Renan, "except on that which one loves;" and if we may judge from the number and importance of the books which treat of gardening, it must be greatly loved at the present day.

W. N.

CERTIFICATING NEW PLANTS.

It is difficult to understand upon what principle plants are certificated by the South Kensington committee. They at one time bestow a first-class certificate upon a worthless plant; at another, a plant not only absolutely new, but of great garden value, is overlooked. The last two meetings have afforded striking instances of such eccentricities. At the meeting before last an ugly Onion (*Allium karataviense*) was honoured with a first-class certificate, a plant which in all probability will never more be heard of. Last Tuesday ample material in the shape of flowering branches of the beautiful new Californian *Carpenteria* was placed before the committee; but, notwithstanding its beauty and garden value, it was passed over with the customary vote of thanks to the exhibitor. We understand that the committee desired to see a plant of it! With quite as much reason might they have wished to examine the bulb of that miserable Karatavian Onion with which they were so delighted. Moreover, the committee showed gross inconsistency in their awards on the same occasion. Some cut sprays of a new Japanese shrub, *Chionanthus retusa*, were shown, and a certificate was awarded. If this shrub should not prove hardy, or be of straggling habit, would the committee rescind the certificate? Not likely. Then why not have wished to see a plant of that? Again, at the previous meeting, cut sprays of two shrubs were shown—*Eurybia Ganniana* and a Lilac. We admit that the members of the committee knew the habit of the Lilac, but did they know all about the *Eurybia*? For the future we may expect to see trees put on the committee table; branches will not do. Apart from the interest and novelty attached to the *Carpenteria*, and regarding it merely as an improved *Philadelphus*, it has larger and finer flowers than any *Philadelphus*, and is more floriferous. If a *Begonia* is shown this week flowers 4 inches across and another one next with blooms 4½ inches, it gets a certificate; so on a like principle the *Carpenteria* should have

been certificated on account of its being the biggest of all Mock Oranges. An Iris, a poor form of the old *I. variegata*, figured a hundred years ago, was certificated, for what reason it is difficult to say, seeing that there are many better and common enough. This Iris (*Gracchus*) is the counterpart of the sixteenth plate in the *Botanical Magazine* of 1790, as anyone may see for themselves. We have a flower before us and have compared it with the plate. Certificates are showered upon plants in which the ordinary observer can see no distinction and sometimes no merit—*Verbenas* and *Begonias* as near alike as *Peas*; *Odonoglossums* also, except that sometimes one has a spot or two more than the other. No fewer than six certificates were given to *Talips*, the differences among which would puzzle anyone to see clearly. Seeing that such capriciousness exists on the part of the floral committee appointed by the Royal Horticultural Society, it is not surprising that the public at large has no confidence in the work carried on by them, and that it regards their decisions with distrust.

NOTES OF THE WEEK.

A bouquet of rare hardy flowers.—I have sent you flowers of *Ixiolirion brachyanthemum*. These charming plants flower a full month later than *I. Ledebouri*, flowers of which I sent a month ago. They last long in a cut state, and a bunch of them worn by a lady never fails to attract notice. The *Columbines* sent are seedlings from true American plants. The double form of *A. coerulea* is remarkably pretty. The rain has beaten them about, however. *Lilium tenuifolium* completes the bouquet, an invaluable plant for this time of year. I have a fine *Allium* now in flower, *A. stipitatum*. It grows some 3 feet high, and is crowned with a fine globular head (as big as a baby's) of a rich mauve colour. The individual flowers are very showy, and the plant itself conspicuous and ornamental. A pretty dwarf plant, *Haberlea rhodopensis* has just gone out of flower; its small *Gloxinia*-like blooms of pale purple make it a good plant to mix with other choice things in a shady piece of rockwork.—H. STUART-WORTLEY.

Ixiolirion montanum seems to us to be the richest in colour of the three or four *Ixia* Lilies now grown. The flowers are of the same size and shape as those of *tataricum*, *Pallasi*, and *Ledebouri*, but the purple is richer than in any of the others. It is a valuable hardy bulb, but comparatively unknown. It is now in flower in several gardens about London and in none finer than in Messrs. Paul's nursery at Broxbourne, where it receives special attention.

German Irises.—Four kinds of this Iris, under the names of *Cengialti*, *subbiflora*, *nepalensis*, and *germanica atro-vioacea*, have been sent to us by the New Plant & Bulb Company, Colchester. All the sorts seem to be forms of one species, and only differ in colour. *Cengialti* is a pure rich purple, *germanica atro-vioacea* is an intensely deep purple, as is also *subbiflora*, but *nepalensis* is of the colour of the common *germanica*. All have large and handsomely formed flowers, and would be ornaments to any garden. We cannot, however, see what right they have to distinct botanical names, as if they were species.

Lathyrus Sibthorpi is one of the prettiest of hardy perennial climbers flowering at the present time. It is much earlier than the common Everlasting Pea (*L. latifolius*), and the flowers are better in colour than those of the best varieties of that species. The flower-spikes are about eight-flowered, and the colour is a sort of crimson-magenta. It is now beautifully in bloom in Messrs. Paul's nursery at Broxbourne.

Anemone palmata alba is such a beautiful plant, that it cannot be noticed too often. Its

pure white starry flowers, tufted in the centre with golden stamens, are as lovely as any to be found in the genus. Being dwarf and compact in growth, it makes a capital rock garden plant, and grows freely enough in loamy soil in open spots. It is one of the gems of the rock garden at Messrs. Paul's Broxbourne Nursery.

A double-flowered Iceland Poppy (*Papaver nudicaule*) reaches us from Messrs. Paul's nursery at Cheshunt, but though uncommon it is not so beautiful or elegant as the original single kind. The flowers, which are large, are pure white and many-petalled. Possibly they may endure a longer time when cut than those of the single sorts.

The White Asphodel.—Mr. Stevens has sent us from his Byfleet garden a stem of *Asphodelus albus* to show what a handsome plant it is grown on light soil. The stems are about 4 feet high, branched, and for fully half their length furnished with large white flowers, inclined to a buff tinge. The unexpanded buds are particularly beautiful. It is altogether a really handsome and valuable plant, of free growth, an abundant flowerer, and evidently capable of producing a pretty effect in masses. It always succeeds best on a light warm soil.

***Habrothamnus corymbosus*.**—Of this handsome Mexican shrub a fine flowering branch has been sent to us from a plant growing against a south-west wall in a sheltered position at Dyrham Rectory, Chippenham. Mr. Blathwayt, who sends it, states that it was planted in the summer of 1883 and has only had a slight protection of Fir boughs in winter. It is now 6 feet high and as much across, and if the whole plant is as thickly covered with bloom as the branch sent it must be quite a fine sight. The colour of the flowers is red and they are produced in dense clusters all along the shoots.

***Phlox bifida*.**—This North American plant, which gives to the prairies of Illinois a glow of delicate purple during May, is seldom seen in English gardens, although both elegant and pretty. It grows about 9 inches high and has slender wiry stems bearing whorls of narrow leaves. The flowers, which form loose clusters on the tips of the stems, are 1 inch or so across, pale purple and each petal is deeply cleft. Some flowering specimens of it have been sent to us by the Rev. W. T. Blathwayt, of Dyrham Rectory, Chippenham, who evidently grows it successfully.

Lancashire Tulips.—At the meeting of the Royal Horticultural Society on Tuesday last, the 9th inst., Mr. S. Barlow, of Stakehill House, Castleton, Manchester, exhibited a collection of his fine named florists' Tulips, both breeders and broken flowers. This was an unusual and interesting contribution, and enabled southern Tulip growers to see what fine types have been produced during the past twenty years.

The Pearl Bush (*Exochorda grandiflora*) at Kew is now in great beauty, a huge bush of it, some 8 feet through, being covered with snow-white flowers, each about the size of a penny-piece. The tender green foliage is in beautiful harmony with the white flowers, and the whole bush has an appearance distinct from all others. It is a great gain to know that such a lovely shrub is quite hardy with us in light soil, and even in cold localities no more beautiful wall shrub could be found than it is.

White Hercules Ranunculus.—A most beautiful white Turban *Ranunculus* under this name has been sent to us by Mr. W. B. Hartland, of Cork. The flowers are large, and form perfect rosettes of a soft creamy white. It is one of the finest sorts we know, and well worth growing in quantities for cutting.

Double Poet's Narcissus.—Mr. W. B. Hartland has sent us from Cork flowers of two sorts of double *Narcissus poeticus*, one named *minor*, in which the crimson-edged crown is conspicuous, the other named *patellaris fl.-pl.*, in which all trace of the coloured crown is obliterated,

the flowers being as pure as those of a double *Gardenia* and as deliciously scented.

***Allium karataviense*.**—The judgment of those who adjudicate on new hardy plants at South Kensington is shown by the giving of a first-class certificate to a coarse and ugly Onion bearing the above name. It has neither richly-coloured flowers nor fine form to recommend it—in short, it is one of the meanest of a family yielding but few ornamental garden plants.—Q.

Scottish Pansy Society.—The secretary of this society, Mr. Welsh, writes as follows concerning it: "Our annual show takes place on Friday, the 19th inst. It is open to anyone to compete on payment of the annual subscription of 2s. 6d.; and as this season is an unusually late one, I hope we may have a greater number of competitors from England and Ireland than we have ever hitherto had."

***Oereus J. T. Peacock*.**—A flowering plant of this splendid variety has been sent to us by Mr. Peacock from his garden at Sudbury House, Hammersmith. The brilliancy of hue in this Cactus is simply indescribable, and it is doubtful if an artist's palette could reproduce its peculiarly subtle tints. The flower is about as large as that of *C. speciosissimus* and of similar shape. The outer petals are of a vivid scarlet, whilst the inner ones are flushed with violet-purple and shine like satin, the tassel-like tuft of stamens serving to intensify the glow of colour in the petals. This variety is unquestionably one of the finest of all Cactaceous plants, and one that is admired by everyone who sees it. It is of dwarf growth, and even small plants of it are floriferous.

***Drimys Winteri*.**—I send you a specimen of flowers of this shrub produced in the American garden at Combe Royal, South Devon. It has bloomed this spring for the first time. It is a tall shrub and a good evergreen. The flowers are, I think, however, more curious than beautiful.—A DEVONIAN.

* * A shrub with leaves like those of a common *Rhododendron*, and loose clusters of greenish yellow flowers produced from the tips of the branches.—ED.

INDOOR GARDEN.

PLANT-COVERED WALLS.

THE illustration on the opposite page may afford a suggestion to those who wish to see something in their greenhouses beyond stages and pots. A wall adorned in the manner indicated in the engraving is without question far more enjoyable in a conservatory or warm house than what is too often seen—bare whitewashed walls, with, perhaps, a straggling climber doing its best to reach the top. We do not wish to disparage the use of stages; far from it; without them a gardener cannot grow his plants creditably, but there is room for both stages and plant-covered walls in every greenhouse or stove, be it large or small. Oftentimes plants are starved in pots which, if planted in a niche in the wall, would grow luxuriantly and delight their owner by their free and beautiful growth. Ferns, *Lycopods*, *Selaginellas*, *Begonias*, *Tradescantias*, *Bromeliads*, and a host of others delight to grow in the cracks and crannies in a roughly built wall, especially if the wall is made of soft porous stone, so as to retain and give out moisture to the roots, which run over it in all directions. But little skill is required to construct such a wall; a little art is, however, needed in arranging the plants upon it neatly, so that they may have a pretty effect when fully grown. A suitable wall properly planted would remain a permanent feature for several seasons without further trouble beyond a daily watering during summer and an occasional syringing, while in winter it would require but little attention if the house is not overheated. Plant-covered walls in hothouses are becoming more and more common, and no doubt the time will come when stages in a conservatory, or any house not used for cultivating pot plants, will be as uncommon as they are now the rule.

VARIETY DESIRABLE IN GREENHOUSES.

OF late years there has been a marked improvement in some things that play a prominent part in ordinary greenhouses, especially in the case of soft-wooded plants. Tuberous Begonias alone range in colour from pure white to yellow, pink, scarlet, crimson, and rosy purple, and continue in flower from spring until autumn. They are also but little troubled with insect pests, and another advantage which they possess is the fact that the dry tubers can be wintered without occupying much room at a time when every bit of space under glass is taxed to the utmost. In zonal Pelargoniums, double and single, we have a race of plants of the easiest possible culture, and that in addition will keep on blooming from one end of the year to the other. Primulas, Cinerarias, Calceolarias, and Gloxioias are also in every way superior to those grown in times past. Among Cyclamens, too, that play such a conspicuous part in greenhouse decoration through the winter and spring months, there has been such a marked improvement in the size and colour of their flowers and in their profuse blooming habit, that a good strain of seed will give varieties that leave the parents from which they originated quite in the shade. Chrysanthemums likewise keep up of themselves a blaze of colour in cool plant houses through the late months of the year, and the introduction of the Japanese varieties has been a decided gain in the way of relief from the formal shape which flowers of the older kinds possessed. Indispensable, however, as the different plants named are for decorative use, and especially for keeping up a supply of cut flowers, still it is anything but desirable that there should be such a preponderance of them grown as to exclude

variety, which is the great charm of a mixed greenhouse. So far has this exclusiveness been carried, that the large-flowered and fancy Pelargoniums that used to find a place everywhere, and which were looked upon as ranking second to nothing else, are now so comparatively little seen, that it is a question if there are not more gardens in which they are not to be found than where they are still grown. With the exception of Camellias and Azaleas and here and

there a few winter-flowering Heaths, plants of a beautiful and enduring character, such as the hard-wooded section affords, appear to be now so far overlooked, that it has become almost a rarity to meet with them. If this goes on, the greenhouse, in place of being filled with a combination of the greatest number of distinct and handsome plants that it can be made to accommodate,

of ordinary observation and attention would enable anyone to succeed with them. Amongst these may be named *Boronia Drummondii*, pinnata, megastigma, and elatior, all elegant habited plants and good and lasting flowerers; *Cantua dependens*, another distinct and handsome plant rarely met with; and *Cassia corymbosa*, as easy to manage as an *Acacia*, and one of the finest

yellow-flowered plants we possess. Many of the smaller-growing *Acacias*, too, make charming objects in a greenhouse, either confined to bush shape in the way of the old *A. armata*, or to the form of standards on 3-foot or 4-foot legs with bushy heads. The *Adenandras*, likewise, in addition to their profuse-flowering habit, are amongst the most fragrant plants grown. *Apelexis*, with their distinct everlasting flowers, keep fresh and effective for two months at a time in the early part of summer; these are succeeded by *Phœnocomia proliferum* with flowers very similar in character, but in general appearance so different from other things, that it is worth a place even if it never flowered at all. *Aotus gracilima*, with its drooping thread-like shoots studded with peablossomed crimson and yellow flowers, should likewise be met with everywhere. *Chorozeas*, such as *C. Lawrenceanum*, *C. varium nanum*, *C. v. Chandleri*, and *C. cordatum*, are rapid growers and profuse bloomers, their bright red and yellow flowers distinguishing them from everything else with which they may be associated. *Clianthus puniceus* and magnificent also bear handsome flowers, and *Correas* are amongst the most free and continuous blooming of plants. *Croweas*, with their pink star-shaped blossoms, are also bright and beautiful late in the year. The *Oleanders* have flowers little inferior to *Carnations*; they



Part of a wall in warm house covered with Begonias, Ferns, &c.

threatens to become as barren of general interest as our flower gardens were when the mania for confining them to ten or a dozen common-place summer bedders was at its height.

It is not difficult to understand that hard-wooded plants that require a good deal of experience and attention to keep in a satisfactory condition should be excluded; but there is a host of plants belonging to that class that present so little difficulty in the way of management, that the exercise

will withstand almost any kind of usage, and yet they are now rarely met with. *Pleroma elegans*, one of the grandest plants ever introduced, with flowers unequalled as regards shade of colour, should be a prominent object in every collection, but such is by no means the case. In addition to the foregoing there should also be in every greenhouse *Polygalas*, which are almost as easy to manage as *Fuchsias*, and equally free in the production of their flowers; likewise the

different varieties of Statice, such as *S. Holfordi*, *imbricata*, and *profusa*, all of which bloom for months together; *Epacris*, which are amongst the freest and most cheerful-looking of all spring flowering plants; even *Daphne indica*, which is prized by everyone for its matchless perfume, is now so little grown, that anyone may go through a score of greenhouses without meeting with it.

The above is anything but an exhaustive list of plants which any ordinary greenhouse should contain, but their absence is enough to show the barrenness to which the cultivation of greenhouse plants has been reduced. It cannot be urged, as in the case of some things, that their growth has been abandoned through their requiring to be formally trained and tied, such as becomes more or less necessary with exhibition plants, as with due attention to stopping in their early stages of growth, so as to avoid over-straggling, they require no more in the shape of sticks and ties than a *Pelargonium* or a *Begonia*. T. B.

CARNATIONS BLOOMING IN WINTER.

AFTER reading Mr. Woodall's remarks (p. 511), I am of opinion that a few further observations on this subject may be useful. It has been stated that there is little or no difference between border Carnations and what are termed Perpetual or Tree Carnations. That is a mistake; there is a difference, and it is easily explained. The ordinary type of Carnation if treated as a border plant will throw up one flower-stem from the centre, which will be furnished with one large centre bloom and numerous smaller ones on the side of the stem. The flowers will open about the end of July or early in August. By that time numerous side growths will be produced from the base of the plant, which will be ready to be layered when the blooms have opened; there is nothing to be gained by layering them sooner. If the layers are very vigorous, some of them will attempt to flower in the autumn, and if potted and nursed onwards, they will produce flowers in winter and early spring, but these are exceptional cases. They are nevertheless still Carnations of the ordinary type, and are not perpetual blooming or Tree varieties. The flower-stem of a border Carnation when it has performed its function dies down to the base; not so the Tree Carnation. At the time of the flowers opening, or even before the side-growths are developed from the axils of the leaves, the stem, instead of decaying, increases in thickness with the growth of the side branches; these side branches ultimately bear flowers, and the plants will continue to increase in size from the production of these lateral growths for many years until a woody stem is produced; hence the term Tree Carnation. No doubt the first of these plants was the result of a seminal variation, which some shrewd observer propagated, and once obtained it was easy enough to raise other seedlings with this peculiar characteristic. I have a plant now raised from the border varieties which has this habit of producing side branches. Good Carnation flowers in winter can only be produced satisfactorily in a heated house. They delight in a dry atmosphere and an average minimum temperature of 50°; the temperature might fall to 45° in very cold weather, or during a spell of warmer nights it might be 55°. I am quite prepared to admit that a few stray blooms of good quality may be produced in mild weather during winter, but no one who had to keep up a continuous supply would dare to trust to such precarious means. The flowers would, moreover, be of poor quality. The production of choice flowers in winter at a cheap rate is doubtless of much importance to a large number of the readers of THE GARDEN, but the means of obtaining them should be clearly stated and the causes of probable failure be pointed out. It may, therefore, be well to supplement the above with a few concise cultural remarks on the two sections of Carnations.

BORDER VARIETIES are now universally grown. An eminent florist said the other day, "Ten years ago we did not grow any border Carnations. Last season we sold twenty thousand," a statement

which shows conclusively the change that has taken place in out-of-door gardening. Ten years ago it was considered good taste to have a bed containing a thousand yellow *Calceolarias* consisting of one variety, so as to have a level surface of one shade of colour. Who, therefore, need wonder that a thousand Carnations, sweetly perfumed and of endless shades of colour, are planted in one bed. Our last year's seedlings are now rapidly throwing up their flower-stems, and those intended to flower next year have been pricked out from the seedling pots. They will be planted out in a week or two where they are to flower. A large number of choice named varieties which are grown in pots are now out of doors, and have recently been surface-dressed with rich soil. The two insect pests which infest the plants greatly at this season are green fly and yellow thrips; both are very troublesome and do much mischief if not destroyed in time. The present season has not been very favourable to their development; it has been too cold at night, and the rains which we have had have kept the plants clean. We have often had to take them under glass in order to destroy the thrips with tobacco smoke.

TREE CARNATIONS are grown in pots all the year round. Those intended to flower next autumn, winter, and spring have been potted a second time into 4-inch and 5-inch pots. They have not yet been placed out-of-doors, but we will have them put in a sunny position during this week. The pots will be set on ashes and plunged in Cocoa-nut fibre refuse. The first flowers will be produced in September, and from that time a plentiful supply will be maintained all through the winter, the plants being placed in an airy house and in a warm dry atmosphere, such as has been described. I never use peat mould for the border type of Carnations, but a little is generally mixed with the turfy loam for winter flowering kinds; we use a fourth part of turfy peat instead of leaf-mould and as much decayed stable manure with the addition of some clean sharp river or white sand. For large greenhouses the plants may be grown on from year to year, using pots in proportion to their size. Some of the best old plants I ever saw were in the gardens of the Duke of Roxburgh, at Floors Castle, some fifteen years ago; they were grown in 12-inch pots, and I was told that they would be well in flower by the end of October, their blooms being in special request at that time. They would not require more than the usual greenhouse temperature in October. —J. DOUGLAS.

—On the corroborative testimony furnished by Mr. Woodall in THE GARDEN (p. 511) on the practicability of blooming border Carnations in cold frames, as I stated, I need not dwell. I only wish to point out that the remarks to which Mr. Douglas took exception originally consisted of a reference to the slight differences existing between so-called winter Carnations and the border kinds; and when I said the latter would flower in April or May in cold frames, I meant in a temperature similar to that in which winter kinds are often grown—to wit, in late Peach screens and the like. Our frames are cold frames in the correct sense of the word, only to keep frost out of them we turn on hot water, and Mr. Douglas, I presume, puts on mats—that is all the difference. I find, as Mr. Woodall finds, that some July layers are more forward than others and bloom in April and May under the circumstances described, and I doubt not Mr. Douglas's experience will yet be contradicted by others notwithstanding his exceptional opportunities of learning such facts. It should be pointed out that in Mr. Douglas's earlier communications on this subject he distinctly conveys the impression that not only did he never see border Carnations bloom as described by me, but that the thing was impossible. More; he admits that "anyone experienced in growing links and Carnations knows that isolated plants may run up to flower before their time." As to *Phloxes* lifted in March blooming in May, I say they will do so. I have seen them also in collections of hardy plants in full bloom in May, with no more assistance, I was told, than slight pro-

tection under glass. As early *Phloxes* bloom in June and July in the open ground, what is to prevent them blooming a month or more earlier under glass?—J. S. W.

Abutilon vitifolium album.—Two years ago there was in THE GARDEN an excellent plate of *Abutilon vitifolium* of the ordinary colour. I now send you the white variety, which is flowering freely here against a south-east wall. I have not tried it as a standard, but it appears to be perfectly hardy. A few days ago I saw in a friend's garden at Bishops Teignton a beautiful lilac *Abutilon vitifolium* (a standard) in full bloom.—J. H. ARCHER-HIND, *Coombe Fishacre House, South Devon*.

* * This white variety we think even more beautiful than the lilac-coloured type, and as we have not seen it before we think it must be rare. This *Abutilon* is a most desirable plant for a greenhouse or warm wall in a mild district.—ED.

Stephanotis in sunshine.—At the end of our Cucumber pit we have a plant of *Stephanotis* planted out; a large portion of it is trained against a brick wall and faces the west. It does not get the sun until the afternoon, and there is only a cluster of bloom here and there on it. Last year some of the shoots were trained along the top wires of the Cucumber trellis close up to the glass and in full sunshine. Along their whole length they have produced an enormous quantity of bloom—in fact, densely packed wreaths. There is more flower on a foot-run of the wire thus exposed than on a square yard of the shaded wall side.—J. MUIR, *Margam*.

MASCALLS, NEAR PADDOCK WOOD, KENT.

THIS delightful place, the residence of Major Horrocks, is at all seasons of the year well worth seeing. I have seen it in its summer glory and in the glowing tints of autumn, when its orchard was all aglow with magnificent crops of Apples, but I question if at either of these times it is more interesting than now, when the fresh green tints of some trees and the soft olive of the young Oaks and the lovely blossoms of the Apple are in their full tide of beauty. A few notes, then, of its most interesting garden may be an encouragement to many who think they are precluded from attempting anything artistic—if one may use such a term with regard to a garden so little devoid of formality.

Let me premise, then, that the place has no advantage whatever as to situation; Nature has done but little for it. When it came into Major Horrocks' possession some twenty years ago, it was an old-fashioned Kentish farmhouse with a parterre on the Grass near the house, an old Walnut tree close by, and a flat field beyond. When he came he determined to alter matters; he was not a horticulturist or a landscape gardener, and so little encouragement did he receive from the gardener then in charge, that he was told by him "that if he was going to mess about with his alterations, he had better go." However, the major thought that there was something in the man; at any rate he was outspokenly honest, and so he pocketed the affront, and the event proved that he was right. He was a born landscape gardener, and between them they have converted the place into a most interesting garden. The first thing done was to remove the beds near the house, to push back the groups that he designed to use, so as to have a clean sweep of lawn reaching quite to the belt of shrubs which surround the place, and doing away with little beds of scarlet Geraniums and such like bedding-out things, but using every kind of plant that either by foliage or flower would add to the effect. The belt was composed of *Cryptomerias*, Laurels, Portugal Laurels, &c. The Laurels have already been cut away, having served their purpose as nurses, and the Portugal Laurels will follow, leaving the Conifers in possession. This border is not fronted with flowering plants, but comes right to the Grass on which, so to speak, the Conifers rest; this gives an appearance of size to the place

which could not be gained by any other means, as the main road to Brenchley skirts the place. We are in Kent not much endowed with streams or rivers, but, happily, descending from the hills above there was a small rivulet which ran through the grounds, and Major Horrocks has utilised it to make a charming pond, which is certainly the chief feature of the place. The banks have been raised into goodly eminences and the pond is furnished with many flowering plants. The Bog Bean and the Aponogeton were in flower, *Caltha palustris* and its double variety around the margin; a plant of *Richardia* (white Arum Lily) annually throws up its goodly supply of blooms, while *Sagittaria* and other water plants will come on by-and-by. It is full, too, of fish, which seem, like the plants, to flourish exceedingly. On the banks around are to be seen at all times interesting plants of all descriptions, not, perhaps, rarities, for Major Horrocks does not go in for them, but such as give an effect; these are used with the most charming disregard of proprieties—the commonest plant being placed alongside of a sub-tropical one which has wintered in the greenhouse. Nowhere, for instance, have I seen the old *Brugmansia* so successfully utilised as it is here. Then here are plants of the alpine Daisy, Saxifrages, *Ceanothus*, *Dielytras*, Poppies, Tulips, &c., all mixed up, not at haphazard, but where they will afford by their foliage striking bits of colour and catch the eye at once.

It may give some idea of the utterly abnormal manner in which Major Horrocks gets some of his best effects if I state the contents of some of his beds. Here, for instance, is one which I do not suppose anyone else has ever attempted—a fine Pampas in the centre, and round it alternating clumps of *Arundo conspicua* and the common Globe Artichoke, which, whether in its foliage or with its fine blue flowers, is a conspicuous object. Then there are some charming beds of *Phloxes*; here, too, is a bold attempt most successfully made. He was told that it would be heresy to mix the pink and lilac forms together, but he did so, adding the white, and the result has been one of the most delightful combinations of colouring one can imagine, reminding one somewhat of the daring manner in which the Japanese place their colours. Here, too, is a bed of *Aloes*, variegated and others, raised up in small ledges, one above the other. These will be by-and-by intermingled with *Gazanias* and blue *Lobelias*, and thus carpeted, I have no doubt this will be very effective. Then here is an old Irish Yew, through which is clambering the old crimson China Rose, which shortly will be such a glow of colour that it will be seen all over the ground. One bed of these *Phloxes* has in the centre a golden *Thuja*, and the contrast afforded is excellent; while here in another place is a Yew surrounded with *Stachys lanata*, equally effective. Another bed contains a row of *Iris*; then one of Poppy, and the purple Nut in the centre. Another consists of blue *Veronica*, hybrid Pink, and a golden *Thuja*. Then there was a bed edged round with *Othonna cheirifolia*, whose brilliant yellow flowers told with great effect. It is the first time that I have seen it so extensively used, and it is in this manner very effective. These are only samples of the manner in which the subjects are used, and will be sufficient to show that the major is not bound by any law but that of taste, and that his taste is good. He despises names; gets, of course, all sorts of plants, puts them in and their labels with them, but after a time the label goes to the ground, and the name from his head; if the plant remains and does well, that is all that he cares about.

Of course, as it may well be supposed with anyone who has so keen an eye for colour and effect of contrast, all kinds of flowering shrubs and coloured trees find a home here. I have never seen the *Aucubas* so full of berry as here, while Japanese Maples, Copper Beeches, purple nuts, *Liquidambar*, &c., are scattered about in various parts. The trees are made to do double duty. Up the stem of one climbs *Clematis Jackmanni*; up another *Aristolochias*, and so on. The Walnut tree, which, as I have said, is near the house, has so

pushed its roots in all directions, that it is well nigh impossible to get anything to grow; so here has been placed a rockery, and on it in summer time are planted all sorts of curious succulents, with which the poverty of the soil does not interfere.

As I am writing on the subject of effects of colour, I should like to notice a very pleasing combination which we have just had in the flat dish which occupies the centre of the dining room table—viz., the use of *Forget-me-nots* and the dark brownish crimson *Wallflower* disposed in groups. If the *Forget-me-not* is so arranged as to appear to fall down over it and the *Wallflower* placed between, I am sure it will please. The dish is bordered by Ivy leaves; it is not irrelevant to *Mascalls* to mention this, for Major Horrocks thinks that the arrangement of flowers would be better for the table if so disposed, that is, being placed in masses rather than in single sprays. I have tried it, and there is a difference of opinion concerning it, and I daresay I shall have to give way, although I think the idea a good one. In the houses and outhouses there were disposed a large number of plants ready for the summer decoration of the garden—*Brugmansias*, *Tropeolums*, *Pelargoniums*, *Abutilons*, and various ornamental plants, and as I have visited it in the summer, I know what admirable effect is produced by these plants; the *Brugmansias* with their large canopy of fragrant white bells are a sight in themselves.

One word as to the orchard. It was planted years ago by the then owner of *Mascalls*, who knew what he was about; it consists of about nine acres; the trees are regularly planted and all the lower branches are kept cut, so that there is a clear view right under the trees; it was a wondrous sight, as it was in full flower. I have seen it when of the King of the Pippins alone there were at least 500 bushels on the trees! What a glow of colour it was then may well be imagined.

I have very inadequately, I know, tried to do justice to this most interesting garden, but I hope I have said enough concerning it to show that it is one of no common interest; and this I know I can say, that if any reader of *THE GARDEN* from this time onwards would care to visit a garden in which there will be lessons to learn, he will be sure of a courteous and hospitable reception from its owner.

DELTA.

SEED-RAISING.

THIS important branch of hardy flower growing has not received the same amount of attention as general culture has, but perhaps this will come later, for the usefulness of seed-raising even in the case of perennial species which can be otherwise propagated is sure sooner or later to be found out. But how different are the results of seed sowing in some hands compared with others; whilst one person in the most offhanded manner will set up a proper set of conditions for successful seed germination, with others it is a work of much thought and labour, and often nearly always a failure. Patience is the main factor in seed-raising, but it does not make seeds sprout. Amateurs by close observation may learn or unlearn something useful at every effort. The quicker germination in the middle of the seed pan, either from being extra firmed down or kept more equally moist, may be noted; an unlevel surface, after repeated applications of water, may become more level and seed may grow better on one side than on the other, thus indicating the more or less covering required by that particular seed. To watch the results of every drip from the lights is often suggestive; had it not been for an accident like this, some *Dictamnus* and *Convolvulus* seeds which had been sown two or three years might yet have been hard; whereas the constant moisture or wetness of the soil caused by drip must have caused them to vegetate. Doubtless the covering and watering of seeds require to be varied very much, but one or two rules in seed-raising may be termed golden, viz., the soil should be porous and free from rank decaying substances; the bed should be freshly

made, but firm; the drainage should be good, but not so abundant as to act as an air current. The retention of moisture is better than frequent applications of water. According to my experience, the seeds of hardy perennial flowers as supplied by the trade are much more uncertain than those of others—perhaps because they are less used and understood, and they may not always be as fresh as they should be. Under any circumstances, however, careful sowing, regular attention, and patience will be required. Many seeds after being in the earth two or three years have quickened this spring, and what is worthy of note is that several sorts from fresh seeds sown last autumn are just as forward. *Corydalis nobilis*, *Dictamnus Fraxinella*, and *Swertia perennis* are some of them. After the young plants are up they must have air, for without it young growths will not progress as they should do. Hence where various seeds are being raised together, they will need to be separated in proportion to the progress which some sorts make. Seed-raising requires constant watchfulness both from amateurs and professionals, but whilst the latter can take in the conditions at a glance, the former have to feel their way, and in so delicate a branch of plant-culture as seed raising, every move, even accident or mistake, may furnish useful hints; therefore knowledge is soon acquired.

J. WOOD.

Woodville, Kirkstall.

FLOWER GARDEN.

ALPINE PINKS.

WHAT are *Dianthus glacialis*, *D. tener*, *D. Fischeri*, *D. neglectus*, *D. alpinus*, and *D. sylvestris*? In the first place, *D. glacialis*, if at all in cultivation, is very scarce, and the plant that does duty for it turns out to be but a slight form of our old familiar friend *D. alpinus*; plants received as *D. glacialis* from two distinct sources give the same result. I have never seen *D. glacialis* in a living state, but on perusal of dried specimens from its native localities, I find that it forms dense tufts such as one might expect a glacial plant to do. The leaves are much narrower than those of *D. alpinus*, needle pointed, upright, and quite exceeding the flowers in height; the calyx is much shorter and the scales longer than the calyx. The flowers are much the same in colour as those of *D. alpinus*, but they are only or rarely half the size, and an equally reliable character is the very long exerted styles. As to *D. tener*, the plant which we received under that name belongs to *D. alpinus*, and appears to answer to the acute-leaved form of that plant described in botanical works. *D. tener* is a totally different plant—indeed, it belongs to the *plumarius* group, and in general characters is not far removed from that species. It is tall and straggly, and not to be mistaken for an alpine Pink. *D. Fischeri* is another misleading name given to a dwarf alpine *Dianthus*. *D. Fischeri*, as figured in Sweet's "Flower Garden" and described in Don's "Dictionary," belongs to the *plumarius* group, and is very far removed from the plant that now bears that name, which is simply a floriferous garden form of *D. neglectus*. It grows from 4 inches to 6 inches high, bears two or three flowers on each stalk, rose coloured with darker stripes from the base of the petal to the margin, and furnished with a few short stiff hairs at the throat only. The leaves are narrow, as in genuine *D. neglectus*, serrated on the margins, straight, forming little *Yucca gloriosa*-like tufts. This and *D. neglectus* proper may easily be distinguished by their almost total want of calyx tube and short sharp-pointed oval scales. *D. alpinus* is a very distinct plant, and seen side by side with the others could not be mistaken for any of them. The leaves are much broader than those of any of the alpine species, abruptly blunt at the tips, and always of a very dark green colour. The calyx tube is also very distinctive, long, and barrel-shaped, with two closely adpressed scales. The flowers are likewise larger than those of any of the others; they average $1\frac{1}{2}$ inches in dia-

meter, and are pale rose with a dark ring round the eye; the anthers are lavender, and there is a tuft of long hairs at the base of each petal. *D. sylvestris* is another plant not easily mistaken. It has fine large tufts of wiry Grass-like leaves and long slender flower-stalks; the flowers are not so large as those of *D. alpinus*, but the calyx tube if anything is longer and sheathed at the base with a secondary tube having a short blunt or wavy-edged margin. The flowers are borne two or more on each stalk, the one below the other. K.

CROWN IMPERIALS.

If it is true that doctors disagree, I think it is as true that gardeners disagree. It often amuses me to note the precisely opposite directions which are laid down in your columns about the same thing, and in those of other horticultural journals. As an example of this, I take Mr. Wood's remarks about Crown Imperials in a recent number. I always read what he says with interest, and very often with profit, but there are two or three ideas which he has broached about them which are completely at variance with my recent experiences. Mr. Wood recommends that Crown Imperials should be grown in full sunshine (see p. 362). I think, on the contrary, that they are lovers of partial shade. He has an impression that they like calcareous soil; they seem to me to be quite indifferent to it. He would prescribe for them extreme dryness. I believe it is the very thing which they dislike more than anything else. It is odd that two persons can have taken in hand the same thing and arrived at such very different conclusions about it. My apology for being rather positive is as follows: For years and years I have, comparatively speaking, failed with these very grand spring flowers. I got some of them to flower now and then, but others never would do so. Abortive efforts, and in many cases dwindling bulbs, made me sick of Crown Imperials altogether, and I very nearly resolved to give them up. I was, however, induced by a friend to try them once more, and to alter my practice entirely, and these glorious flowers (even the yellow ones) have become a stately show with me, and I shall never be without them again. I put them now on the north side instead of on the south side of my house, and I plant them in light moist, rather rich, soil composed of sand and leaf mould, and they seem to like it exceedingly. They never can have extreme dryness where they are, and they have no taste of calcareous soil. But what most of all surprised me was the following occurrence. I brought a quantity of these Crown Imperial bulbs from an old garden in Yorkshire, where I have known them to be luxuriating and spreading all over the place for fifty years; and some of them I treated as given above, and they have done very well; but the rest I neglected, and I plunged them in a heap of sand in a shady, cool corner of my yard, and there I forgot them, and I left them to themselves. The result, however, has been a most pleasant surprise, and it speaks volumes about the treatment Crown Imperials love. The large stems and flower-heads which are now drying off show what a picture there has been. I am sure that they would never remain barren where they are for seven continuous years, and I must say I am very much inclined to doubt the fact (see p. 362) that they like a sunny situation. H. EWBANK.

St. John's, Ryde, Isle of Wight.

SOWING PRIMROSE SEED.

"A. D." says if Primrose seed be held over till next year, its chance of growing is very small. I have sown all the finest varieties in April either in the open ground or in boxes simply covered by a hand-light against an east wall, and always have had a good crop. This year seed of good coloured kinds saved from our rockery has come up just as thickly as they can stand; bought seed not quite so thickly, and I have all the most select strains procurable. I gave some of our seed to a cottager, who sowed it outdoors, and it has all come up as thickly as mine. On a partly shaded

border in our late district the plants come up equally well, but are a trifle later than those sown under handlights, which flower in October the same year, and without fail the following spring. Having put, perhaps, as great a quantity of Primroses out as anyone has done in a private garden, I can speak with confidence on the subject. My present batch is for the woods. I agree with Mr. Douglas that sowing as soon as the seeds are ripe does not accelerate germination, as the seed does not come up freely till the following spring, and this holds good with many things. Delicate seeds that are likely to suffer from drought in the seed cupboard I treat like Holly and Yew seeds, which are crushed and stored in dryish soil in a perfectly cold shed. Rhododendron and Azalea seed I keep in the same manner. I last year sowed a lot of newly-gathered Sweet Brier seed, but although the autumn was warm and favourable, not a seed moved till April this year, and I should say we have now twenty or thirty thousand nice little plants just coming into rough leaf. They seemed to come all up in a week. Some seeds seem to need rest before germinating. Sowing Primroses in heat is not a good plan, as the plants never do so well. A cool place in a quite cold frame is best, and the soil must be kept regularly moist. Prick out in June in light rich soil and transplant in October for blooming the following spring. J. S.

JUNE FLOWERS IN THE MIDLANDS.

RHODODENDRONS AND AZALEAS. — Among flowering shrubs the first to be named are certainly Rhododendrons and Azaleas. The day has gone by for planting Rhododendrons of the old ponticum type, except as a cover for game where no other plant can exist against rabbits. For ornamental purposes it cannot be mentioned in the same breath with the numerous named kinds which are equally hardy and splendid beyond comparison, affording as some of them do the very richest colours among flowers, viz., deep crimson, rosy crimson, scarlet, white, purple, blush, rose, and numerous intermediate shades. I can conceive of no floral display more striking at this season than a plantation of hybrid Rhododendrons in sufficient quantity, and I protest against the extravagant use of the old ponticum where flowers and effect are an object. Hitherto the price has prevented the hybrid forms from being planted freely, but they are now much cheaper, and I was informed the other day by a member of the trade that an effort would be made to meet the demand. A word of caution should be uttered against planting varieties piecemeal over large areas. The best plan by far is to plant sufficient of one sort in one place to produce an effective show according to the extent of ground to be planted, and the brilliant scarlet, bright rose and white sorts will be found by far the best. Some of the colours are peculiar rather than telling, being dull and of an indeterminate hue. Here all the Rhododendrons are June flowerers, but they last well on into July some years. Of the Azaleas I would speak as highly as of the Rhododendrons, for although not so large as the Rhododendron, they are equally showy and bright, and in addition sweet-scented—at least the common kinds. The old American and Ghent kinds provide the fragrance, and the new mollis forms the colours, which are almost as varied as those of the Rhododendron. I believe no one has yet realised what a grand display can be produced at this season with Azalea mollis, because none but the nurserymen have enough of it yet. It is quite equal to the Indian Azalea, and those who have seen a group of the last at an exhibition in May may form some idea of its value out of doors. It is being sold cheaper and cheaper every year, and will soon be plentiful; even small plants flower freely, and it only needs planting in sufficient quantity to insure a display anywhere.

The other trees in full glory just now with us are Apples, Morello Cherries, Lilacs, double Gorse, Pyrus Malus floribunda, Laburnum, just coming out; also Hawthorn, Berberis, and other subjects.

The glorious effect produced by a mass of standard Apple trees or Cherries—especially the Morello Cherry—beats that of most flowering trees, and how it is that they have not hitherto been more extensively planted in woods and pleasure grounds is a mystery. The snowy-white Morellos and rosy-tinted Apples with their masses of flower might light up the background of many a park at this season of the year if the trees were only planted in sufficient quantity.

Among herbaceous plants, one of the most conspicuous subjects at this season is the *Trollius europæus*, and more especially the rich orange-yellow variety named Gibsoni, which has large and perfect flowers. The other varieties are also good, and the flowers are useful for cutting. The plant thrives best in a cool soil, but it is at home almost anywhere, never failing to grow strongly and flower freely.

FORGET-ME-NOTS.—The blue and white varieties of *M. sylvatica* seem to have established themselves as the favourites in gardens. Both thrive exceedingly well even in dry soils and bloom a long while. The difference in the habit between the previous year's seedlings and plants two or three years of age is remarkable, and worth taking note of. The first year the plants are tall and comparatively straggly, but the second year they become squat, rather stunted, and when in flower have the appearance of a dense cushion of bloom, and are hardly distinguishable from *M. dissitiflora*. It need hardly be said that the two-year-old plants are the most effective, especially on a rockery. Plants do not do any good after the second or third year, but I notice that the very oldest roots sometimes produce pink flowers only.

IBERIS CORIFOLIA AND SEMPERVIRENS.—The first of these has the finest individual flowers, but as the one comes slightly behind the other, both should be planted. They just succeed the white-flowered Arabis.

THE BLUEBELLS (*Scilla*).—I see Backhouse spells this word with two "i's"—*Scillia*—and other authorities with one; who is right? I find also that some confusion exists concerning *Scilla campanulata alba* and *S. nutans alba*. The first is a fine subject at this season, one of the very best border plants grown; the other is also good, but the two are quite distinct in habit. *S. campanulata alba* does not, however, increase nearly so fast as the other kinds, and hence it is scarce. At the present time it is very effective with us, resembling a diminutive Cape Hyacinth or a gigantic Lily of the Valley, only it is far more showy than either.

ARMERIA LAUCHEANA.—I am not sure if this is a June flower as yet, but I saw it in perfection in Messrs. James Dickson & Sons' hardy collection at Manchester a week ago and was struck with its rich showy crimson colour. In other respects it is just a Thrift after the common type. I should say it was fine for massing on rockeries. It is new, I believe.

VIOLAS AND PANSIES.—May and June in ordinary seasons are really the months in which these bloom in perfection. Our seedlings, named sorts and cross-breeds, are just at present in perfection, the flowers quite hiding the foliage, and larger and better coloured than they will be at any other time during the season. The plants dearly love a mulching of some rotten refuse, and, if the seed-pods are picked off, flowers will continue to be produced till late in the season; but all soils are not alike in this respect, and the northern growers have the advantage of us in duration of bloom.

NARCISSUS POETICUS (double and single).—These are the latest of the Daffodils. The double variety opened its first flowers about June 2, and will continue in flower for some time. It is the advantage of these in cool localities that the Daffodils flower well on into summer.

PINKS MISS PATERSON AND NAPOLEON.—These two varieties are a great improvement on the common early summer border Pinks, produc-

ing flowers of dense red or crimson hue, while the plants are robust.

SAXIFRAGA WALLACEI AND PALMATA.—These two plants are very like each other in general appearance, white in flower, but *S. Wallacei* has the largest and whitest flowers, and as a variety for planting for effect is by far the best. It is one of the very best rock plants grown and continues in flower a long time. It succeeds best on a rather bare spot, for although it will grow and flower in rich soil it is apt to rot off during the winter.

ALYSSUM MONTANUM.—This little plant is in perfection at the end of May and beginning of June, growing only about 3 inches high in dense tufts with clear yellow flowers; it makes a good rockery plant.

VERONICA RUPESTRIS.—One of the best of rock plants attaching itself closely to the surface of the soil or rock, forming a perfect mat, growing quickly and producing an effective mass of deep blue flowers. It will bloom in autumn also if shorn over now, and as the plant grows like a weed

neath trees, for how quickly the dainty flowerets wither with an inky darkness if planted where the mid-day sun can beat on them; how tired and sickly-looking grow their leaves if resting on the hot bare ground; while here in shadowy coolness they remain fresh and fair for weeks together.—L.

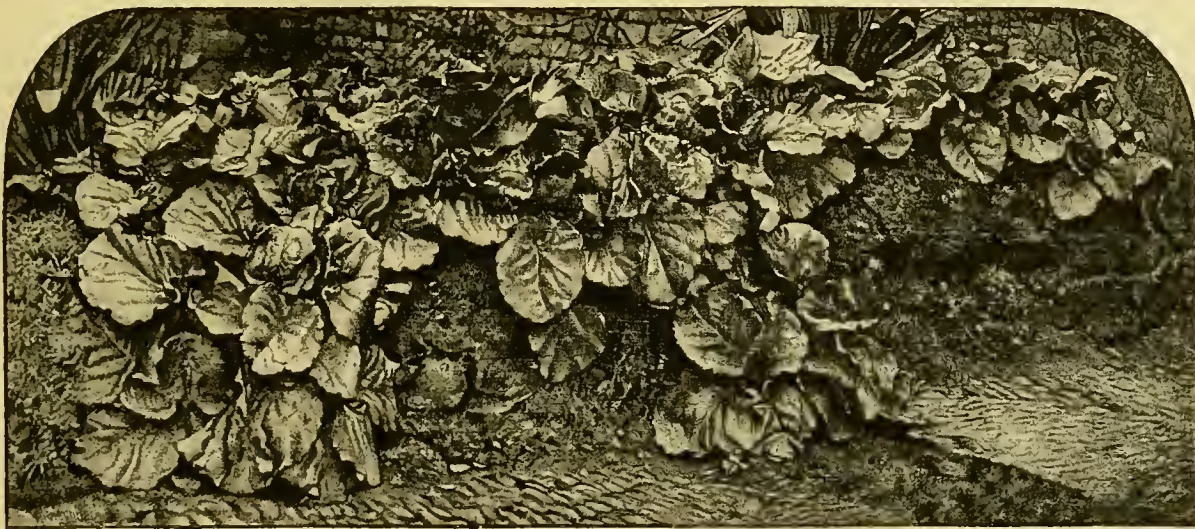
* * With this came a handful of lovely Bluebells on stems longer and stronger than ever we remember to have seen them before.—ED.

GROUP OF HEART-LEAVED SAXIFRAGES.

FOR important effects where bold carpeting plants are wanted, none are more useful than the broad-leaved Saxifrages. The engraving shows *Megasea cordifolia* carpeting Yuccas in a low strip of rockery bounding a path that passes across a flower border and through a door in a garden wall. It is a fine thing at all times of the year; the leaves in winter assume a variety of richly-coloured markings, while in early summer the aspect of the group is varied by the bold

placed in water, they soon unfold, and remain in good condition for at least a week—the admiration of all who see them.—P. GRIEVE, *Bury St. Edmunds*.

Silene pendula.—This charming hardy annual is now very attractive in the open ground from seed sown last autumn. Its rosy pink flowers are produced in the greatest profusion on plants 1 foot high, and that without any attention being given beyond transplanting from the seed bed into ordinary soil, wherever a telling effect when in flower would be the result. The variety of *S. pendula* named *compacta* is worthy of its distinctive name, as it does not grow so high nor spread nearly so much as the type. It may therefore be used in spring bedding or in the front line of a mixed border, where the stronger growing species would not suit so well. *S. pendula* is an old inhabitant of our gardens, but still not too much cultivated, especially from autumn-sown seeds. Annuals that are hardy enough to withstand the winter are better sown in autumn than in spring, at least in part, for mixed border de-



Group of Broad-leaved Saxifrages on bank, showing effect of unity as compared with "dotty" planting of borders.

there is no objection to treating some of the plants in this way.

Other June flowers with us at present are Primroses still, Columbines, Wallflowers, Daisies, Tulips, creeping Phloxes, Irises, and Saxifrages. S. W.

Bluebells under trees.—When leafy June sets in one feels inclined to wander beyond one's garden, no matter what treasures may be enclosed by its walls, or how friendly may have been their shelter at other times. During all the early weeks of May spring has been breaking through the woods and tripping over the meadows, and now a tide of verdure, sparkling with blossoms, has overflowed both hill and dale. Pasture fields appear quite golden, King Cops nearly covering the tender Grass, and Gorse the wilder ground, beyond which lies the blue sea. But among all the lovely sights of early summer, none seems fairer than that of the Bluebells in the wood. It is a narrow wood consisting of deciduous trees, bounded on one side by an old grey wall. Beneath the Grass is young and tender; above, the soft shadow is of fresh Horse Chestnut leaves, bronzy Sycamore, and boughs of Elm. Between these two delicious coolnesses—the dewy Grass and new-born leaves—the Bluebells seem to lie as a soft cloud. Their stems have grown tall, each bearing aloft some twenty bells or more, so that they well outstrip the Grass (seeding though it be), and appear to float over the verdure beneath. No one who has once seen Bluebells thus at home will ever grow them elsewhere than in Grass be-

flower-spikes, followed by the fresh young leaves. These fine foliated plants are of great value near or against masonry; not only is their aspect suitable, but their solid, permanent character is in harmony with stonework. For bold groups near entrance or terrace steps they are, perhaps, unequalled by any class of plant.

Spiræa palmata.—This fine herbaceous plant thrives freely in any ordinary good soil, but although drought does not permanently injure it, it does not flower in perfection if it be allowed to get too dry at the root at this season. Under such circumstances the flowers are imperfectly developed and the effect is spoiled. It succeeds best on a partially shaded border, but in light dry soils it will do well enough if well watered and mulched, and it is worth all that attention. Notwithstanding the fact that it lifts badly, it flowers freely with us the year after transplantation if moved in October or November.—J. S. W.

Iris Sussiana.—Some seem to think that this singular Iris is difficult to grow, but that is not the case; the roasting or drying-off system under glass when it is at rest is unnecessary—in short, injurious rather than otherwise. All that is needful for its successive culture appears to be a somewhat dry situation and comparatively light rich soil. In damp or wet places I believe it seldom succeeds. I have just been looking at a bed of it near here where it has been planted two years. The bed is about 12 feet by 4 feet, and in that space I counted upwards of 300 blooms expanded, or about to expand. If the latter are

coration, as they get well established, and are nearly prepared to flower by the time spring-sown ones are up. The latter sowing, however, makes a succession, and is also necessary in case of a failure in consequence of a severe or an over-wet winter proving destructive to the autumn-sown plants.—G.

Haberlea rhodopensis.—A little extra care is never lost on this rare alpine; it seems to be one of those plants that, contrary to the general belief, stands any amount of coddling and never fails to yield a rich harvest of bloom. On the rockery, too, under exactly the same conditions as those recommended for *Ramondia pyrenaica*, the *Haberlea* seems to be quite at home. In a cool shady spot in pure peat with small stones bedded round its neck a plant of it is growing vigorously, and has withstood the last three winters. It has thrown up fourteen flower-spikes, each bearing three *Gloxinia*-like blossoms, having pretty purple tubes gradually becoming white towards the mouth. The leaves are somewhat like those of the *Ramondia*, not wrinkled, but covered with stiff hairs. It is easily increased by division; simply take off the side shoots, insert them in small pots, and keep them close for a day or so.—K.

Fancy Pansies.—I saw the other day some truly grand fancy Pansies raised from French seed and grown in Mr. Pollock's garden at Hanworth. Not a few of these blooms were equal in size and quality to the finest named flowers shown the other day at South Kensington. A market grower at Feltham has likewise a superb strain

also obtained from French seed a few years since. They do remarkably well, having regard to the heat and drought incidental to our southern position, and the blooms are splendid in form, markings, and colour. The introduction of these huge blotched Pansies has given new life and energy to Pansy culture, for the old belted and self English Pansies cannot hold their own with them for a moment as decorative flowers. It would be, indeed, pleasing could we see these fine blotched Pansies as common in gardens as inferior ones once were.—A. D.

Aquilegia chrysantha.—An attempt on my part to cross this beautiful species with pollen from a pure white form of the garden Columbine made two years since has proved a failure so far as concerns the result I had hoped for, which was the production of a white chrysantha. Such an acquisition would indeed be valuable, but it is not to be got through such means; almost every one of the seedling plants, though retaining the chrysantha habit and foliage, have produced blooms with shortened spurs, rosy tinted sepals, and pale sulphur corollas, so that I have numbers of chrysanthas spoiled for my pains. Curiously enough, however, there are two or three plants which have flowers entirely devoid of spurs and corolla; they have only rosy pink sepals. These bear from behind a close resemblance to blooms of *Acroclinium roseum*, and are decidedly curious novelties if nothing more.—A. D.

GARDEN DESIGN.

LAWNS, WALKS, AND ROADS.

A LAWN is, and will always continue to be, the most attractive and fascinating feature in landscape gardening, and to harmonise its trim, clean, and velvety appearance with the more rugged and unbroken foliage of the Evergreens which border it, is the most gratifying success of the garden architect. To some people any bit of Grass is a lawn, and one kind of Grass looks as well as any other, only it would seem as if the coarser the Grass and the rougher the surface the more natural it appears to them. The principle which should guide people in the treatment of the lawn is very different from that which directs all other attempts to beautify and adorn grounds, for this reason, that, when the ornamentation sought is by the introduction of trees, we select the most perfect types of their species, so that the copse or plantation will assume a truly natural appearance. A weeping tree seems to me to be as much out of place in a conspicuous position on a lawn as would a Fir tree beside a fountain; but some people have a passion for weeping trees. On the other hand, a lawn in its perfection is purely artificial in everything that marks its distinguishing characteristics. The surface must be made as smooth as it can possibly be; in the most brilliant rays of a midsummer sun it must not sear or blanch; it must be simply a velvety carpet of living green from early springtime until the coming of frost and snow. Besides, the designer must have the art to conceal its truly artificial character and make it appear that this elegant, emerald surface, which should be soft and delicate enough for a fairy dance, is the most natural thing to expect to find set right in the midst of fringing plantations of Evergreens. The first thing to do after having determined to make a lawn is to consider its size. There are lawns, and there are simply Grass plots which their owners fondly dignify by that name. Men strive to magnify the importance of everything now-a-days. They buy a country house, with a couple of acres of land, and at once it becomes an "estate." Every little pond is a lake. Now when we attempt the decoration of Nature we must leave false-heartedness alone. A lawn must necessarily be of such a size that the proper treatment in harmonising its surroundings will not dwarf its appearance and cause it to look like an opening in some wood.

It is well to border a lawn with a plantation of trees. The manner of doing this is to be determined by the views to be obtained from the house,

which control every other consideration; but if views of distant scenery or of water cannot be incorporated into the vistas of our lawn, then it is better to make bordering plantations of Evergreens, planting them with an irregular margin of smaller trees and shrubs, forming inviting nooks, which are delightful for their sunny warmth in the chilly days of spring and autumn. If the trees are well grown, so that they throw out their branches close to the ground, the surface of the lawn will seem to merge in the foliage of the trees with a delightful illusion. Some have a great fancy to plant irregular beds of flowers on the lawn. This of course is a matter of taste, but it destroys the beauty of an unbroken carpet of green.

STATUARY, VASES, AND ROCKWORK.

There is a great difference in taste as to the introduction of statuary upon the lawn; in fact, tastes are often a matter of fashion or of cultivation any way, just as one learns the use of unnatural things or becomes addicted to any habit; so taste may be educated, but, at the same time, not elevated or purified. The Greeks and Romans introduced statues into their gardens, and therefore some will always maintain that it is correct for us to do the same, making no account of the great difference and unsuitableness of our climate for the introduction of statuary into ornamental gardens. Downing has quoted very aptly in this connection some appropriate lines from Pope in sarcastic allusion to the same freaks of fancy in his day:—

Statues growing that noble place in,
All heathen goddesses most rare,
Homer, Plutarch, and Nebuchadnezzar,
Standing naked in the open air!

Works of art are very difficult things to harmonise in ornamental grounds. A well-designed fountain is a pleasing feature in the centre of a lawn, that is, if it is a fountain designed for water and not to show the skill of the artist, the stone-cutter, or the ironfounder; or an abject thing in a drizzle, like that in some public gardens. It requires a great deal of skill to handle water properly in the form of fountains for purposes of decoration. The most famous jet in the world is the Emperor fountain, at Chatsworth, which plays 195 feet in a solid stream. The volume of water required is so vast, that it can be used only upon perfectly calm days, or the wind would blow the masses of spray over the surrounding lawn and do a great deal of damage; it gives one an idea of immense power, but not of beauty. There are many forms in which a much less volume of water would produce finer effects for decoration. If excessive quantities of water fill us with a sense of force and power, so a diminutive or inadequate supply seems to me altogether trifling and puerile. Choice vases, judiciously disposed about grounds in chosen spots, are not only ornamental, but useful when filled with tender or trailing plants that cannot well be set out in the border, and aid to heighten the effect sought to be produced. If you have a passion for rockwork, beware that you do not make an imitation of a rubbish heap. Use natural Moss-grown boulders, in irregular masses, with Ferns and trailing plants, and do not be too ambitious.

AVENUES AND PATHS.

These are located and constructed either for utility or ornament. When for use entirely they should be as direct as possible, without unnecessary windings or detours. When either is made as an adjunct to ornamental grounds, some people fall into the error, that because a great artist once said "the line of beauty is a curve," consequently all things crooked must be pleasing and therefore ornamental; so they proceed to lay out their avenues upon this principle and introduce their curves with perfect abandon, the seeming excuse for a crook here being that there was a corresponding or a worse crook somewhere else. At all points where avenues deviate from a direct line there should be close plantations or a clump of trees, so that it may appear to be the most natural thing in the world that the detour was necessary, even though when understood the

matter appears to be no plainer than the reason for the pond in some public garden—not that the water was especially attractive or that the pond itself is either very beautiful or essential, but it made the construction of a bridge necessary to cross it, and that is reason enough, for which we should always be sufficiently grateful. The location of our walks and avenues thus subsides into a matter purely of taste, and there we all differ; but their formation is as purely a matter of fact, and in that all must agree, for facts are stubborn things.

In wet ground the labour of making the road is increased; but it must commence with the exclusion of all vegetable material and the water; without this all attempts to construct a proper road will be in vain. Through swamps no rules can be laid down beforehand, but the thorough drainage of the ground is still the principal thing to be done. If water is entirely excluded and the most substantial material obtainable is used for the surfacing, there need be no trouble or complaint about a road anywhere, and it can be depended upon that undue economy, in the first instance, in preparing the foundation of roads is the dearest policy in the long run; it only entails continued expense for repairs.

Great care should be exercised, in the use of rockwork especially, not to undertake too much. A little plot of not more than 200 feet square, by a cottage, denominated a lawn, with a pile of rocks, having a pipe at the top, with a little drizzle of water, shows a demoralised and not a cultivated taste. Drooping trees are often planted in the centre of a lawn; but nothing can be more out of place; they should be around the edge. Curved lines are very beautiful, but walks should be straight, and not curved, when there is no reason for departing from straight lines. Trees on lawns should be so planted as to be deemed an improvement, heightening by their natural beauty and at the same time concealing the hand of art.—*Massachusetts Horticultural Society's Transactions.*

TUSSOCKY PARKS.

THE great difference in appearance between a park and a well-mown lawn during the winter and spring will, I daresay, often have been observed. The first has a dead and withered appearance, while the other is always green and pleasant to look upon. Some imagine this to be due to the lawn being more frequently mowed, but that is a mistake. The fresh and verdant appearance of the lawn is due simply to the Grass being constantly cut by the scythe or lawn mower; and if by any means we could keep our parks more closely shorn, they would always be green too. Parks round country seats are never ploughed, and consequently they get matted and tussocky on the surface, no matter how well they may be pastured. In autumn the tussocks die and become withered, and remain in that condition till the young Grass begins to grow through them the following summer, but the young blades being greatly obstructed by the dead herbage are not seen, and hence the park has a brown, rusty look long after the Grasses begin to grow. This is bad for cattle, too, because in nibbling the sweet young Grass they eat a proportionate quantity of the dead and withered herbage along with it, and to their injury, because there is no nourishment in it and all such dead herbage is difficult of digestion. This state of things could easily be remedied if we had a harrow powerful enough to scarify the surface of the Grass early in spring, so as to tear the dead tussocks to pieces and scatter them over the surface as a manure. Some time ago I was in correspondence on this subject with a noted implement maker, who quite agreed as to the advantages of such a harrow, if one could be devised sufficiently powerful to effect the object in view, suggesting that a traction engine would be the most fitting propeller of such a harrow, which would have to be a revolving one fitted with powerful teeth and of considerable weight. Samples of the sod from the parks were

sent to him, and it was found that the dead Grasses were from 6 inches to 9 inches deep in many places, and as thick and tough as a door-mat; consequently a common chain harrow scarcely touched them. Paring and burning is effectual, but out of the question on the scale contemplated. The result of our cogitation on the subject was that the productive power of old pasture land and parks was very greatly impaired by this accumulation of dead herbage, resulting in substantial loss to the grazier, while the beauty of the landscape was marred for several months in the year. Y.

FRUIT GARDEN.

WEST COUNTRY APPLES.

THERE seems to be a disposition in some quarters to underrate the qualities of English grown Apples, and to show a preference for those imported from other countries. Disparagement may perhaps be useful in some cases, but not in this—indeed, it is likely to do harm, as anything that tends to favour foreign supply cannot certainly be advantageous to home growers. That there is not room for complaint I do not for a moment deny, and perhaps the time may come when those who cultivate land in favourable fruit-growing counties will acknowledge as much, and set about righting matters in a way that cannot but be advantageous to themselves; but, seeing what I have seen and knowing that good Apples are produced in this country, I cannot allow it to be accepted as a fact without protest that this country cannot produce Apples equal to those of any other country. All that I am prepared to grant to foreigners in this case is that they grow Apple trees in larger numbers than is done in England, and that they have forestalled us in finding a profitable market for their produce. As to home-grown fruit, samples seen in January and February are of course of less interest than those of the following months. But such sorts as Blenheim Orange, Newtown Pippin, Northern Spy, Mannington Pearmain, and some local sorts with such queer sounding names as Bottle Neck, Short Stem, Western Lass, and Hudson's Favourite have been this spring so excellent both in size and colour, that no one could wish to see better fruit placed upon their tables. Samples examined during March do not call for special mention, as many of the sorts just named kept well till the middle of April. It is in-fruit that kept sound throughout April and during the first week in May interest mainly centres; amongst these I found several sorts that deserve to be extensively cultivated. At the end of April I had before me in an excellent state of preservation the following well-known varieties, viz., Betty Geeson, Rymer, Sykehouse Russet, Winter Pearmain, Dutch Mignonne, Striped Beaufin, and Bess Pool. Of sorts of less merit I had Scarlet Nonpareil, Royal Russet, and one or two local kinds that only require to be better known to find admirers. These examples showed that the western counties are certainly much stronger in culinary Apples than they are in dessert kinds, but perhaps this is as might be expected, seeing that there is generally a greater demand for cooking Apples than for those for eating raw. It cannot, however, be said that either class is so complete as it might be, but I am satisfied that there is a number of first-class keeping sorts now in cultivation in this country, and a climate equal to producing them in an average of seasons in sufficient quantities to supply all that is required.

I cannot, however, ignore the fact that our growers have in no way made the best use of the materials which they have on hand. If the Apple growers of Somersetshire and Devonshire choose to organise themselves, they could with very little difficulty get together such a display of high-class fruit in the month of March as would astonish those who are not aware what these counties are capable of producing. The very fine examples which I have seen of Stone Pippin, Bedfordshire Foundling, and Winter Nonsuch are sufficient to convince anyone that we have only to set about growing Apples in the right way, and

to cover a sufficient area of land with trees to grow all that are wanted for home supply, because if it is possible to grow a few good Apples in seasons when the crop is general, it is also possible to grow them in larger quantities, and the sooner this is done the better it will be both for the pocket and the reputation of cultivators who are always complaining that they cannot get a fair return for their capital.

As showing what may be done as regards the production of a better class of Apples, I may mention that the most interesting lot that ever came before me was grown in a Somersetshire village by a man who farms only a few acres. Some eighty or a hundred pigs have the run of his orchard (which is little over an acre), except for a few months when the fruit is on the trees. During the winter hardly a blade of Grass is to be seen. In fact, in wet weather the surface is often trodden into a quagmire, as the troughs in which they are fed are distributed about the place. Thus the land is richly manured, and the fruit from this orchard affords ample evidence that it is so, for all the sorts grow to their full size, and in some cases so much so as to be difficult to recognise. There is also an absence of deformity, and there is a clearness of skin that shows they are grown under favourable conditions. It is only right, however, to say that the trees are in their prime, having been planted about fourteen years, and that they are in all respects fairly well attended to. This case, however, affords an excellent illustration of what the Apple is capable of doing when grown on land that can furnish the nourishment which the roots require to sustain healthy growth.

One sort sent to me from Devonshire under the name of Lemon Pippin, which, however, is not its correct name, demands special notice on account of its excellent culinary and long-keeping qualities. Out of more than thirty varieties which I have examined this kept the longest of any, and it was as fresh and sprightly in flavour at the end of May as it was two months earlier. Its only fault is its small size, but its other qualities make up for a good deal. How it came to be called Lemon Pippin I cannot understand, for, except a slight resemblance in colour to that variety, it is not otherwise like it. It is a flat Apple, with scarcely any eye and a long thick footstalk set in a shallow cavity. I have failed altogether in finding its correct name, which I regret, as if it were cultivated under more favourable conditions, doubtless its size would be improved. I am quite of opinion that the small size of much of our west country fruit tells very much against it when sent to market, for it unfortunately happens that many of our local sorts remarkable for long keeping and high flavour are small and not very handsome. For years past most of our orchard fruits have been planted in a tree-sick soil, and indifferent management in other respects renders the trees quite incapable of producing fruit of a reasonable size.

As regards cider Apples, it is clear that regular crops are not altogether unmixed blessings, for the stores of cider of the past year are not nearly yet exhausted, and with the prospect that we now have of an abundant crop, prices are sure to come down instead of going up. This, I cannot help thinking, should induce growers to direct attention to some other class of fruit. J. C. C.

Thinning late Grapes.—These now need a good deal of attention, and it is of great advantage to thin them much more than early or mid-season sorts. Spring, summer, and early autumn Grapes are generally cut as soon as ripe. They have not to hang any length of time or during the wet, dark weeks and months of winter, and the berries may be packed very closely without suffering, but late Grapes which have to hang for a long time are sure to decay if the berries are so close that no air can circulate amongst them. In perfectly watertight houses they may be left rather close, but where there are any drip or much damp extra thinning is beneficial. When the berries are not pressing on each other the air can circu-

late freely amongst them, and should water happen to fall on them it passes down without lodging on the way, thereby causing decay. The centres of the bunches especially should be well thinned out, and where thinning has been completed and it is seen that the berries are likely to become a firm mass, a good many of them should be clipped out at once, as it can be done better now and with less damage to the bloom than when they are partially ripe. The Black Alicante is very liable to fill up in the middle and ought to be thinned severely. Most Grape growers know how many berries they have to clip out during damp weather in November and December through the air being unable to circulate amongst the closely-packed berries, and it is much more profitable and satisfactory to thin more now than to allow the Vine to mature fruit which is worthless. —J. MUIR.

WHEN TO GATHER PEACHES.

MORE judgment is required to be exercised in gathering Peaches and Nectarines than may at first appear to be the case. True, numbers of cultivators do not trouble themselves greatly about the matter, but simply let the majority of the fruits hang till they drop or are on the point of dropping into nets purposely fixed underneath to catch them. This fashion of fixing nets under the trees is a time-honoured one, but, like many other popular notions, is far from being either a wise or necessary precaution as far as preserving the fruit is concerned. I am of opinion that neither Peaches nor Nectarines ought to remain on the trees till they are fit to drop, and many Peaches especially may easily thus be spoilt from being over-ripe. We cultivate this class of fruit rather extensively, but dispense with the use of nets. The exact time to gather the fruits ought always to depend upon circumstances, especial regard being paid to the travelling qualities of those to be sent to a distance. For home use I give the preference to fruits gathered just when they part freely from their foot-stalks, and even these to be at their very best require to be placed in the fruit room for one or more days according to the variety. The only exceptions to this rule in our case are Hale's Early and Early Alexander, as both these quick-ripening sorts are best when eaten directly after they are pulled and before they are over-ripe, otherwise they are liable to become dry and mealy. Some sorts of Peaches, notably Walburton Late Admirable, a grand variety that should be included in every collection, Grosse Mignonne, Barrington, and Bellegarde, seem to gain in lusciousness by being kept for a few days, always, however, provided they separate from the foot-stalks without being actually dragged away. The same may also be said of Nectarines Lord Napier, Pine-apple, Pitmaston Orange, and Victoria, but I find keeping does not improve the quality of Downton, Elruge, and Hunt's Tawny; in fact these rather inferior sorts are apt to become sourer if kept for a few days. The longer the fruit must be kept the greater the need of early and careful gathering, the utmost care being taken not to cause the slightest bruise, or good-bye to long keeping. By long keeping, I mean any time from a week to three weeks, the very soundest only of the fruit keeping at all well. Gathered before they are really ripe they may keep longer, but they will not become fit to eat, and it is altogether a mistake to attempt ripening them off the trees. Our plan is to go over the trees once, and frequently twice a day, and every fruit fit for use is gathered and placed carefully on a bed of cotton-wool faced with tissue paper. We can usually tell at a glance which are ready to gather, and these, taken full in the hand and firmly pulled, come away with an audible click. They should be soft, yet sufficiently firm not to bruise easily, and the less they are squeezed when tested the better, as every pressure, however slight, may leave a mark which, in the course of a day, will disfigure the fruit. Those who must squeeze them in order to test their ripeness should lightly press the base of the fruit with their forefinger, and if found to be soft there, the fruit is

ripe all over, and will not be disfigured by the pressure. In the case of extra fine and choice fruit—that perhaps required for exhibition—extra pains must be taken. Mr. Coleman recommends (p. 499) the gatherer to take a pad of cotton-wool in the left hand with which to grasp the fruit, carefully detaching it with a pair of grape scissors, and if this highly successful grower considers such a plan necessary, it is quite certain less experienced cultivators will do well to follow it. We find that the fruit keeps best in a dry and cool fruit room, and here that delicious and refreshing coolness, for which Peaches are justly prized, is further intensified. Any that drop or ripen prematurely are fit only for tarts.

FRUIT TO TRAVEL A considerable distance if packed when fully ripe are certain to bruise, no matter how carefully packed, and unless eaten on the same day on which they reach their destination, will prove of little value to the recipients. Numbers of private growers send surplus supplies to market, and, when sound and attractive in appearance, satisfactory prices are realised; in fact Peaches and Nectarines would appear to be the only fruits not extensively contributed in good condition by foreign competitors. It is simply a waste of packing material to send either slightly damaged or over-ripe fruit to market, as the salesmen cannot reasonably demand good prices for fruit damaged and, perhaps, decaying before it leaves their offices. As a rule fruits sent to large towns are picked before they are really fit for use, being coloured and, perhaps, highly scented, and yet nearly hard. These naturally travel well and keep fresh for several days, thus enabling fruiterers to sell at least the greater portion, but if purchasers never taste Peaches and Nectarines other than these they cannot be said to know much about the quality of really good fruit. Senders may at first feel rather squeamish about packing off unripe fruit, but if they persist in sending properly ripened produce, the salesmen's returns will soon effect a cure. The practice may be objectionable, but it is unavoidable. For the London house we prefer to pack fruit that leaves the tree when slightly pulled, and these are all the better for being placed in the fruit-room for a few hours to cool. When, however, it is necessary, as it sometimes is, to send fruit before it is really fit for table, these, if packed at once and surrounded with a good thickness of thoroughly warmed cotton-wool, will soften considerably during the journey. Exhibitors, too, should make a note of this, as they will find the plan may sometimes prevent their having to stage a dish of hard unripe fruit.

BOXES with trays and divisions for carrying fruit are fast going out of favour, or, at any rate, the divisions are found to be uncalled for. Flat deal boxes, of length and width according to the number of fruit to be sent, and of sufficient depth to admit of a layer of packing material being placed above and below the fruit, will answer either for sending by post or rail. Light, clean, and springy Moss is the favourite packing material with a few noted growers, the fruit, wrapped in soft tissue or silver paper, being bedded in the Moss rather closely, or, in other words, completely buried in it. As suitable Moss is not easily procured, the majority must, perforce, have recourse to the more expensive cotton-wool, and this we use without receiving any complaint against it. It is pulled into strips from 10 inches to 14 inches in length and 6 inches to 8 inches in width, or according to the size of the fruit to be packed. The width is then folded once, so as to bring the skin side outwards, and it is then ready for winding, rather firmly, round each fruit. The latter is always enclosed in a young Grape leaf or wrapped in soft paper, so as to keep it clear of the cotton-wool. The whole are packed together as closely as possible, always, it must be added, resting on their bases. If the depth of the box permits, it is advisable to place a layer of cotton-wool in the bottom, though this is not necessary if the strips be properly bound round the fruit, while another layer on the top will insure the necessary

tightness when the lid is fastened down. The boxes must be full, and, if there are not enough fruits to do this, the space should be firmly filled with packing material. There must be no rolling about, neither should anything else be packed above or below the fruit. W. I. M.

The Bogdanoff Apple.—Professor Budd, of Iowa, who is giving much attention to the cultivation of Russian Apples with a view to securing hardy sorts for regions where our old standard Apples will not endure the winters, writes to the *Prairie Farmer* that he finds the Bogdanoff to combine the two qualities of hardness and good quality in a high degree, and it keeps till May. As an indication of the hardness of the tree, Professor Budd states that while the intense cold of the past winter has darkened the wood of the Wealthy, which is noted for its hardness, the Bogdanoff remains bright and uninjured. It is expected that this Apple will prove one of the reliable ironclads of the North-west.

PLANTS UNTRUE TO NAME.

THE thanks of all plant growers are due to Mr. Frank Miles for his remarks about things not true to name. There was a very telling drawing in *Punch* a few years back, in which a draper was informing his assistant that he kept her to sell what he had, and not what his customers wanted. Any attempt to introduce that kind of thing in the plant trade should be resolutely exposed. That it is not confined to foreign nurserymen is evident by the necessity some nurserymen are under of adding the word "true" after the names of some plants, showing that inferior kinds are often substituted. My experience is that known plant growers are usually carefully served, but that those whose names are not known in the floral world may have inferior things sent wrongly named. This is especially the case with florists' flowers, which I have several times had wrongly named. Choice seeds are also difficult to get true. I have twice had Lobb's *Tropæolums* untrue to name, and have so often had the choicer *Schizanthuses* untrue, that I have given them up in despair of ever seeing them. *Iris anglica* I have had from one of the best English nurseries in twenty-four choicest kinds, which became five very poor kinds when they bloomed, not quite so good as a mixed cheap lot at a third of the price with no pretensions to be named kinds. Another annoyance is the *Columbines*; when these hybridise so much, why send seedlings as true varieties before they have bloomed in the nursery and shown their true character? And a still greater annoyance is to receive as a plant a minute scrap which is barely rooted, and which has been starving in a small pot, when one would willingly have paid an equally remunerative price for a good strong tuft lifted from the open ground. A great improvement would be for each firm to advertise and sell nothing but plants grown in their own establishments and seeds saved from their own plants.—J. D.

—The timely appeal of Mr. Frank Miles against sending out plants untrue to name will, doubtless, have a salutary effect should it meet the eye of those for whom it is intended. Many things we know are being continually distributed under wrong names, and in some instances bad writing or spelling on the labels is to blame, the names being thus wrongly interpreted. The majority of nurserymen and seedsmen buy their plants, seeds, and bulbs as we do, the only difference being that they buy in larger quantities, and they themselves are often deceived. Ordinary *Draba incana* I have received from the same place for two years running under the name of *Braya alpina*, a rare and valuable plant; and again we get *Helenium tennifolium* as *Neja linearifolia*; *Silene bicolor* comes to us as *S. Elizabethæ*, *Sedum coraleum* as *S. corsicum* and *S. glandulosum*, *S. asiaticum* as *trifidum*, a *Polemonium* as a *Saxifrage*, and a *Saxifrage* as a *Primula*, and so forth. Were it useful, I could almost fill a page with such misnomers.—K.

GARDEN FLORA.

PLATE 496.

HARDY CYCLAMENS.

(WITH A FIGURE OF *C. REPANDUM*.)

CYCLAMENS are amongst the most welcome of all early spring and late autumn flowers. Though consisting of something less than a dozen kinds, they possess variety enough to satisfy even the most fastidious in that respect. Shady nooks on the rockery or rootery seem to be the spots best adapted for them, and here *C. Coum* and the other small growing sorts appear to be quite at home. The larger growing kinds, however, such as *C. repandum*, *europæum*, &c., are well worthy of more extended cultivation, and on no account should a trial in a shady spot of the wild garden be missed. Here *C. repandum*, at least, is perfectly content, and when well established, increases in quite a wonderful way. Any little attention, such as top-dressing, destroying coarse weeds, in order to insure for it all the light possible, &c., will be well repaid by a profusion of rosy flowers, certainly unequalled by those of anything else at that early season. In placing them round trees a little attention should be given to natural effect. Nothing mars enjoyment of such plants more than formality. The chief thing to be attended to in the culture of *Cyclamens* is shade; this may be attained either by planting underneath trees, near stones, or else on the north or shady side of a rockery. Drainage is also a matter that should not be lost sight of. The larger sorts may be allowed to seed themselves; the seeds of the smaller ones should be gathered and sown in a cool frame as soon as collected.

C. AFRICANUM, a native of the calcareous mountains of Algeria, is, perhaps, too near *C. neapolitanum* to deserve a separate place here. It is, however, remarkable for its large glossy leaves, of themselves no small attraction. In exposed places it gets cut by early spring frosts, but in shady spots well protected overhead it does very well in the open air. It may be grown in pots where a collection of rarities is kept in that way, and it is very useful for mixing with dwarfier plants. It forms a very large corm, which should be quite covered with soil, as it forms roots all over its surface. Its leaves, which are almost round, have cordate bases, and they measure from 6 inches to 7 inches in diameter, with large wavy toothed margins. Unlike those of *Coum*, they are thin in texture, the older ones being prettily marbled with white. The flowers are reddish with a bright purple spot at the base of the segments; they are auricled, about an inch long, and appear in September and October. Stems twist spiral fashion when the seeds are ripening. (Syns., *C. macrophyllum* and *C. algeriense*.)

C. COUM.—This is, perhaps, the best known of all *Cyclamens* and most widely distributed in gardens. It is one of the most distinct, and one concerning which least confusion exists. It is also one of the few in which the leaves appear along with the blooms. It is perfectly hardy even in the most exposed places, although it thrives best and increases in size quickest in warm shady nooks. The ground in which it is planted should be well drained, it being, like most tuberous-rooted plants, adverse to stagnant water. Its flowers, which are produced early in spring—often in January and the two following months—are small and of a deep reddish colour. The leaves, which are quite round, are dark glossy green on the upper surface and purple beneath, with edges quite entire; in texture they are firm and leathery and destitute of marbling. It is a native of Turkey, Armenia, &c. It has given rise

* Drawn in Messrs. Backhouse's nursery, York, by the late Mr. Noel Humphreys.



to a few varieties, the most notable of which is album, a pretty white-flowered one; and carneum, rose-coloured. *C. orbiculatum* is also said to be a form of *Coum*.

C. EUROPEUM.—This early autumn flowering species produces its pretty, fragrant flowers from August to October. It seems to thrive best in



Cyclamen europeum.

rather peaty soil and likes plenty of shade. Its tubers, which emit slender roots from the undersides only, should not be quite covered, as where the soil is heavy they are apt to rot. Its leaves, which are coteremporary with the flowers, are round or slightly oval and deeply cordate at the base; marbled, though not so distinctly as in most of the others. They are purple underneath and have finely serrated margins; the flowers are bright red, and when produced in quantity very handsome. It is a native of South Europe generally. The best known varieties of it are littorale, one with entire leaves, and Clusii, in which they are distinctly toothed. A variety of this species under the name of Peakianum is also found in gardens. (Syns., odoratum, æstivum, purpurascens, *Coum*, retroflexum, and officinale.)

C. IBERICUM.—This is apparently nearly allied to *C. Coum*, and is said to be merely a geographical sub-species. It is best known in gardens under the name of *C. vernum*, and as such is figured in Sweet's "Flower Garden." It has also been named



Cyclamen neapolitanum.

C. Coum var. *ibericum*, *Coum* var. *vernum* *cascadicum*, *vernale*, *elegans*, and *europeum*. It flowers at the same time as *Coum*, and may be grown under exactly the same conditions; the tubers are larger than those of *Coum*, and the leaves, which are oval and distinctly marbled with white, are a little waved at the margins. The flowers, which are small, are bright red, and have a deep purplish spot at the base of each petal. To this most of the garden forms of the Atkinsi set belong—Atkinsi itself, a kind with large beautiful white flowers with purple spots at the base, being the most notable. They flower in February and March. The type is a native of the Caucasus.

C. NEAPOLITANUM, the type of *C. africanum*, flowers from August to September. Its tubers are large and round, often over a foot in diameter. Its leaves, which are oval-cordate, succeed the flowers; they are thin and extremely variable in shape, even on the same plant; they have toothed margins. The flowers, which are reddish, vary to white, and there is a purple spot at the base of each segment. *C. subhastatum*, *ficariifolium*, *cypricum*, &c., *pyrenaicum* and autumnals of gardens, and *linearifolium*, a monstrosity without a corolla, are natives of South Europe generally.

C. REPANDUM, perhaps more generally grown in gardens under the name of *hederasfolium*, is one of the best of *Cyclamens* for ordinary garden culture. In several places, notably in Cornwall, it has been successfully naturalised in woods, and some tubers from there have been known to measure over 1 foot in diameter, and to produce over 100 flowers. It loves shade, and should be planted in light rich soil under deep-rooting trees.

When planted under such surface-rooting trees as Elms, the tubers get strangled and little or no flower is produced; this is especially the case where the ground has been top-dressed, which is usually done when the flowering season is over. It is an effective plant, nestling under overhanging stones in the rock garden, where during the early part of the season its pretty Ivy-shaped leaves have a grand appearance. The leaves and flowers are produced together, the former being oval in outline, with deep cordate bases. They are marbled on the upper surface and tinged with purple underneath. The margins are beset with large teeth, generally wavy. The flowers, which are medium-sized, are rose coloured and spotted at the base with deep purple. They are produced from the end of February until May. It comes from Southern Europe; a variety called *balearicum* differs but little from the type, except that its segments are narrower. Syns., *vernum*, *ficariifolium* and *romanum*. Others are *cilicicum*, not in cultivation, and *gracum*, not far removed from *repandum* in appearance, but it flowers in the autumn instead of in spring. D. K.

THE PYRENEAN ROSE.

AMONGST Roses there is much confusion in the way of nomenclature, and the subject of the accompanying plate (*R. pyrenaica*) has shared the common fate of other species, although Gouan in his illustrations has pointed out four distinctive characters. These are seven ovate-lanceolate leaflets, decurrent stipules, hispid peduncles, and dilated sepals. In tab. 6724 of the *Botanical Magazine* this Rose is included under *alpina*. This Pyrenean form, though introduced as early as 1683, is still comparatively scarce in gardens, though it is hardly to be matched for grace and beauty combined amongst all the hardy single Roses in cultivation. It is said to be plentiful in the Pyrenees, where it scrambles over rocks and stones, producing when in flower a sight never to be forgotten. Though botanically included under *alpina*, a mere form of which it may be, it well deserves, as a garden plant, the varietal name *pyrenaica*, as it is a much dwarfer growing plant, and altogether more suitable for the rock garden than *alpina*. It never fails with its June and July greeting of richly coloured flowers, reminding one, as far as form and outline are concerned, of the Dog Roses in our hedgerows.

R. ALPINA proper is altogether a taller and more straggly grower than *R. pyrenaica*, and although almost equal to it in beauty, takes up too much space where the rockery is confined to be recommended for culture. *R. pyrenaica* is generally less than 2 feet in height, and seems inclined to scramble rather than, like the type, take an upright habit of growth. It is nearly always spineless, or with only a very few near the base of the branches. The flowers, which are produced in

June and July, are deep pink, or rather rosy red, have bright golden yellow anthers, and vary from 2 inches to 3 inches in diameter; their stalks are invariably covered with short, glandular tipped hairs. The leaves have seven leaflets and large, flat stipules at the base of the leaf-stalks, broaden-



Flowers and fruit of *Rosa alpina*.

ing towards the tip and generally bristly. This little Rose will grow in ordinary garden soil, but requires all the sun it can get so as to ripen its wood. It may be trimmed without sustaining much hurt.

Others are *Rosa berberifolia*, which is hardy only in sheltered places; *R. Ecæ*, a very rare Rose from Afghanistan, with large, handsome, deep yellow flowers; *R. rugosa* and its varieties, &c., all of which are useful in gardens. D. K.

WORK DONE IN WEEK ENDING JUNE 9. JUNE 3.

EIGHTY-TWO DEGREES in the shade is warmth sufficient to risk out the tenderest kinds of bedding plants. Two of our men have been employed all day in planting out *Alternantheras* no plants move better, that is, with less check to growth, than these do when grown under the frame system of propagation, as all ours are. The soil in which they are struck being principally leaf soil, abundance of fibrous roots are quickly made in it, and consequently all of them move with good balls of earth attached, and grow away almost as freely as if they had never been moved; they are well watered immediately after planting, and soon as possible a mulching of Cocoa fibre refuse will be applied, which, whilst it will prevent the soil from getting surface-bound, will also promote growth by keeping the ground in an equable state of moisture. Made another sowing of Peas, Turnips, and Radishes, the two last on east borders, for both enjoy partial shade at this time of year. Thinned out French Beans, and to the tall variety Canadian Wonder placed small sticks. Broad Beans are grown in limited quantity only, but being required throughout the season another sowing has been made to-day. To destroy the black fly on the earliest lot, all the tops have been pinched out. Some think that by this method, pinching, they are ready for use earlier, but from recent observation I very much doubt whether such is the fact. Wall fruits now take up the whole time of one man, who to-day has finished the first stopping back of the foreright shoots of Plums and laid in such new young growths as are needed to replace long naked branches at next winter's pruning. The crop of fruit is a moderate one only, so much of it having fallen, owing to the sharp frosts of three weeks ago. The trees would be immensely benefited by a good washing with the hose, and they must have it shortly. Grape-thinning is still the order of the day, and till it is finished little else but routine duties in regard to work in the houses can be done. Peaches that are nearly ripe have been shaded with tiffany to prevent scorching, that would surely have taken place to-day, for one or two fruits were thus injured by the less fierce sunshine of yesterday.

JUNE 4.

Our thermometer at noon registered 86° in the shade, and there has been unclouded sunshine all day. Continued planting out *Alternantheras*, also

planted out Cannas, Sunflowers, Tobaccos, and Castor-olls, Perillas, variegated Mesembryanthemums, Centaurea candidissima, and Chamæpeuce Casabonæ as undergrowth. Began earthing up our main plot of Potatoes; the ground was surface-hoed a day or two ago for the destruction of weeds. Gave a thorough watering to Apricots on walls; the great bulk of the soil was moist enough, but they were suffering from drought close to the wall and the soil was breaking away from it, notwithstanding the thick mulching of litter that has been on continuously. Clipping Grass edgings of coach roads, weeding, sweeping them, &c. Thinning late Muscat Grapes; these and a few more Lady Downes are all that now remain to be done. The stopping, pinching, and tying down of the shoots of the same is being got over as rapidly as time for it can be afforded. A few leaves in two or three vineries having got scorched; a slight shade—whitening and water—was applied at noon to-day. The first shower will wash it off, but if needs be it can quickly be re-applied, and will be if this fierce sunshine continues. The whitening is runned through a very fine sieve before being mixed in the water, and there is then no difficulty about getting it through the syringe in as fine a spray as may be desired. Got together all the odds and ends of bedding plants, cleared up pots and other litter and untidiness inevitable to bedding out, and never was I more thankful than this year at being able to see the end of the work, and I would like to add (may people take the hint) the riddance for another season of persons with a large share of self-possession who call to ask for "any old bedding plants that you are going to throw away."

JUNE 5.

Another scorching day. Continued earthing Potatoes and cleaning up roads. Weeded amongst herbaceous plants and tied up many of them; they grow so rapidly now, that it is difficult to keep pace as to ties and supports. The various varieties of Pæonies now make a splendid show, and our stock of them must be increased. A few single Dahlias, Sunflowers, Eucalyptus, and tall old plants of Abutilon have been planted in vacant spots at the back parts of the borders, and in front a few odd bedding plants of various sorts; Mignonette and Sweet Peas are also welcome associates to perennials; the former require thinning out soon as we get the first shower. Staked the last sown row of Sweet Peas, and the first sowing has had the points pinched out to induce a branching habit, by which a profusion of flower is assured from bottom to top of the haulm. As might be expected, they flower a little later in consequence, but that to us is of little consequence, as the family will not be in residence before the end of July. Tied down shoots in late vineries. Pinched the side shoots of Tomatoes and securely staked the plants. The fruit is gathered soon as ripe, and deformed fruit picked off soon as perceived; the plants are thus relieved of all unnecessary strain, and consequently they continue to show successional fruit that much the better, and as the plants get older clear manure water is given about thrice a week, and a surface mulching of well-decayed manure is kept on at all times. Melons ripening are exposed to every bit of sunshine by tying aside the foliage; all are growing suspended from a trellis, small pieces of coarse fish netting being used as supports, the netting being secured to the trellis by a tie at each corner. Re-potted a few tuberous Begonias and Fuchsias for autumn flowering, and for the present the flowers of both are kept picked off.

JUNE 6.

Grand rain—0.48 during the night, and, coming immediately after five days of scorching sunshine, its effects will be marvellous on every description of vegetation. Planted out more Celery and the first lot of Veitch's Autumn Giant Cauliflower and another lot of Coleworts. Thinned out Beet-root, Turnips, and Lettuce. We have no ground for more winter greens and Broccoli till the first Peas and Potatoes are over, else we would like to put out a few Savoy and the earliest Broccoli, such as Snow's and Veitch's Protecting.

Weeded Rose beds, clipped the Grass edgings, and thinned out Mignonette that is sown between the Roses. Again examined the plants to search out the Rose grub or caterpillar; from all other insects the plants are perfectly free, and the bloom promises to be of the finest description. Pinched Pyrethrum Gold Feather, clipped flower of Sedum acre elegans, and clipped Herniaria into form; pegged down Verbenas and picked flower off them, also off Calceolarias, Violas, Ageratums, and Heliotropes, our present aim being to encourage growth rather than flowering of the plants. Alternantheras and Coleuses are being mulched with Cocoa fibre refuse, a plan that we find far more conducive to growth than is the more general practice of frequent stirring of the surface soil. Made up rough hotbeds for Gherkins, ridge Cucumbers, and more Vegetable Marrows; Grass mowings, the refuse green stuff from kitchen garden, and a little litter make most excellent beds for these crops. Movable frames are used for starting the plants into growth, after which they are either removed altogether or else the lights are kept constantly off. Washed Plums and Morello Cherries on walls with hose, and began the final thinning out of Pears on walls. Thinning is done in proportion to the size of the fruit when it is matured, as, for instance, on Winter Nelis and Josephine de Malines, which are small fruited kinds, double the quantity is left that there is on Beurré Diel or Duchesse d'Angoulême. The mulchings of fruit tree borders have all been sprinkled with Beeson's manure and soot in mixture, and these rains will wash it in, and I am satisfied that early aids of this kind are of much more service than when deferred till the fruit has attained nearly full size. Gathered first ripe Figs (Brown Turkey) and pinched out the points of a few of the shoots and tied down others. Picked over all the Strawberries that were ready and put into the house another 100 plants. Next week will see all our plants hoosed, and by the time these have fruited there will be plenty ripe on the plants in the open ground. Other work has been solely of a cleaning-up description.

JUNE 8.

Began to rain in the early morning, and continued without intermission till 3 p.m., 0.71 having fallen. No outside work whatever has been done, but we had no lack of indoor jobs on hand, such as cutting pegs for flower garden use and getting ready stakes for tying Dahlias, washing pots, and clearing up tool, potting, and soil sheds; others found work in assisting indoor hands to clean, wash the pots, and rearrange plants in stove and fruit houses. It has been a perfect day for Grape thinning, and the late Muscats are nearly finished. Pinched out all the points of sub-laterals and tied down shoots in late Peach house, particular care being taken to have the fruit exposed to light.

JUNE 9.

Fine, though dull and cloudy. Planted remainder of Celery. Earthed up more Potatoes and finished thinning out of Beet. The ground lately occupied with the latest Broccoli—the remainder of which have been heeled in—is now being trenched for the latest lot of Peas, between the rows of which will be sown summer Spinach. Planted out a few more clumps of Asters, Stocks, Phlox Drummondii, and Zinnias. Everlastings have been planted on a border in kitchen garden, as the flowers of these are required in quantity for decoration in winter. Finished bedding out a bed of Wigandias, being the last to be planted. The ground is both warm and moist, that we may reasonably expect the plants to be in full beauty earlier than is usually the case. At the present time work in the houses varies but little. To-day we have got to the end of Grape thinning for this year, but the fruit houses will still require the largest share of attention. As the Peaches in early house are gathered, the trees are given a good washing with the syringe to free them of red spider. To preserve them we place them on a bed of dry Moss in our coolest fruit room, and by taking great care not to bruise them when gathering, we have kept them in good condition from a

fortnight to three weeks. Nectarines and Figs also keep extremely well in the same way, though sometimes if over-ripe, the latter turns mouldy. It is therefore desirable to gather Figs before they are dead ripe, that is, supposing they are to be kept as long as possible. HANTS.

FRUITS UNDER GLASS.

VINES IN POTS.

Although the modern mode of planting a viney one year and fruiting every alternate Vine when twelve months old has nearly stamped out the tedious and expensive system of growing and fruiting them in pots, there are circumstances under which this mode of obtaining early Grapes justify the end. Take, for instance, a newly-established range of vineries offering abundant space for fruiting pot Vines either of home growth or purchased from a nursery, combined with an urgent demand for a moderate supply of Grapes; the question of cost will be a secondary consideration, but the Grapes, under the skilful management of a far-seeing manager, will be forthcoming. If early, so much the better; if late, they may be equally valuable. In either case they should be grown under special treatment, otherwise the latter part of their management may be attended by inconvenience. Under ordinary treatment the best result is secured by allowing the roots to find their way into the plunging material, but this mode of culture prevents the removal of the Vines until after the crop is taken, and although they may be trained along the upper half of lofty houses, the newly-planted Vines will be upon them before the Grapes are ripe or the whole of them can be advantageously consumed. To overcome this difficulty, each Vine, with the aperture in its pot slightly enlarged, should be placed in a second pot containing a few lumps of turf and charcoal, if not before, immediately after it is taken in for forcing. Each set of Vines can then be placed on pedestals or in troughs where, under high culture, they will mature good crops of fruit, while their roots, which have been kept at home, will not receive the slightest check should it be found necessary to remove the Vines to more suitable quarters. Pot Vines now ripening their fruit under ordinary treatment, plunged or otherwise, should have liberal supplies of water until the Grapes are fit for use; then, if practicable, each pot should be well covered up with some genial non-conducting material, such as half-rotted stable manure or the remains of an old Mushroom bed to prevent the escape of moisture, and so dispense with the necessity for frequent watering. Of the two, the first is perhaps the best, not only for Vines in pots, but for all Vines, as it is free from fungoid growth, and containing, as it does, a quantity of ammonia, it feeds the foliage and acts as an excellent insecticide. An abundance of air is of course highly essential from the time the Grapes begin to colour until they are ripe, and if the tropical weather which has so suddenly set in continues, there will be no difficulty experienced in supplying this necessary element. All black Grapes colour best when well covered with healthy foliage, but white varieties make tardy progress when the sun is excluded.

Cut-back Vines that were shaken out and potted in February will now be getting well advanced, if the young canes are not already changing colour and showing signs of ripening. When this stage is reached more air will be necessary to mature and harden the wood and foliage; but it will be necessary to shut up early for the present with sun heat and moisture to swell up and perfect the buds and to prevent spider from getting into the house. All laterals, provided the main leaves are intact, must be kept closely stopped from the base upwards to the bud, to which the rods will be shortened at pruning time. Above that bud more liberty may be allowed to the sub-laterals for the twofold purpose of keeping the sap in motion and preventing the bunch producing buds from breaking into premature growth. The roots must not be allowed to get away from the pots, neither must they feel the want of water, stimulating or otherwise, as may be determined

by the strength of the canes and the vigour of the foliage. As the season gets more advanced, it will be advisable to shut up with a drier atmosphere, but not sufficiently so to bring on premature ripening, and to keep the house dry and cool by re-opening the ventilators at nightfall.

Yearlings, or Vines struck from eyes this spring, if intended for fruiting next season, will require generous treatment for some time to come, otherwise the canes and roots will not get sufficiently advanced to insure their ripening before the time arrives for putting them to rest. The better to secure this all-important condition, the pots selected for the final shift should not be so large as those generally used for Vines that were grown last season and cut back in December. Pots 10 inches to 12 inches in diameter, well crocked, will be found quite large enough, and a sound compost, consisting of good fibry turf, crushed bones, and a dash of lime rubble, will suit them better than the light fibreless soils which rush up long-jointed canes under high feeding, but become pasty and exhausted long before the Vines are taken into the fruiting house. When the heavy loam, free from animal manure, is used the fibry lumps should be well rammed into the pots to prevent it from holding a quantity of water in the winter. The bones and rubble will induce the formation of an abundance of bright, healthy roots that will retain their vitality, and top-dressings will keep them near the surface, where they are of most value.

Young Vines of the current year's propagation may still be planted with every prospect of their filling the trellis before the autumn, but no time must be lost and the preparation of the compost, as suggested in a former paper, must be effected in a way and of materials that will insure fermentation. The borders or ridges need not exceed 1 yard in width, and as these will rest upon good drainage, artificial warmth can easily be forced through them by means of external and internal linings, which should be applied before the heat from the newly cut turf begins to subside. Vines intended for midsummer planting succeed best when propagated and grown on in sods of turf placed over a slight hotbed, as the roots radiating from the eyes are ready for the start in the right direction. When grown in pots they are apt to coil before the time arrives for planting.

THE ORCHARD HOUSE.

The weather at the beginning of the month was, if anything, too hot for hardy kinds of fruit trees which succeed well in the open air; but the genial change to a moister atmosphere is now more favourable to their growth. Watering and syringing are now the important operations which must not on any account be neglected, for if once allowed to flag through dryness at the roots Peaches and Nectarines will most likely throw all their fruit, if not at once, certainly at stoning time. Large healthy trees established in 12-inch to 14-inch pots and carrying free crops of fruit cannot easily be overwatered whenever a supply is needed, and many of them will require it twice a day. Of equal importance is syringing also twice a day, the first time as soon as the garden is open, say six o'clock, and again when the sun is getting well off the house. The water used for this purpose should be quite equal to the mean temperature of the house, a condition which can always be secured by having good sized cisterns, open at top, in some convenient place in the houses. Soft water being so much better than hard, all that falls upon the roof should be collected into tanks for summer use. The water used for syringing will be improved by the submersion of a small bag of soot from time to time just to give it a tinge of colour, for not only is it a good stimulant, but it is also a profitable insecticide. Now is the time to persevere with top-dressing and feeding, as many of the trees are already beginning to feel the strain of the crop; little and often, and not too strong, is the best maxim. So much having been said about powerful top-dressings, it may be well to remind the inexperienced that extremes are bad; powerful stimulants are dangerous, and that the best results always follow

their use in moderation. The young shoots now making rapid growth will require frequent attention, not only to maintain the balance of the trees, but at the same time to prevent waste of sap on gross shoots, which judicious stopping will force into weaker growths carrying fruit. Pyramids, as a rule, make the strongest shoots near the top, while those occupying a horizontal position near the base are often too weak, but by commencing at the apex and pinching thence down to the centre, and allowing the base shoots to continue their growth, a great deal of the superabundant sap can be forced where it is most wanted and the true character of the trees will be maintained. Ventilation under all circumstances must now be on a liberal scale, and in the event of the fruit being required as early as may be consistent with good management, rapid progress may be made by closing with plenty of moisture and in time for the house to run up to 80° from sun heat alone. If, on the other hand, the fruit is wanted to lead up to the supply from open walls, all the ventilators may be left open by night and day.

PEACH CASES,

like cold Orchid houses, are this year in a most satisfactory condition. The trees laden with fruit are clean and free, and the growth under the brilliant sunshine we have so lately experienced is now past all danger from the attacks of aphids. There is, however, another enemy which thrives under tropical heat, and that is red spider, but by the vigorous application of water through the hose, its progress, if not its appearance, can easily be prevented. Root watering, it is hardly necessary to say, must not be neglected, as trees under glass exhale an immense quantity of moisture, and lack of this element invariably leads to disappointment. If not already finished, the final disbudding should now be brought to a close, gross shoots pinched to secure an even diffusion of the sap, and leading growths tied or nailed in neatly to the wires or wall. Thinning, too, at all times a pleasant occupation, will have to be performed with a firm hand, otherwise the fruit will be small and the trees will balance the account by producing a light crop next year. One Peach to every square foot of foliage will be found a heavy crop for healthy trees to carry to maturity. If too many are left, they will ripen prematurely and part from the trees when they ought to be commencing the last swelling. Nectarines may be left a little closer, but not much, as many of the fine kinds, including Lord Napier, Albert Victor, and Stanwick Elruge, raised by Mr. Rivers, often attain the size of good Peaches.

Eastnor Castle, Ledbury.

W. COLEMAN.

ROSE GARDEN.

Rosa Devonensis.—Are we to consider that there is only one variety of this Rose, as appears from the synonyms selected by the National Rose Society? If so, I must certainly differ from that body. I have grown the climbing variety of that name both under glass and in the open air, and had in both instances to discard it on account of its rampant growth, for which I could not afford space; but whoever heard of anyone having to discard the old *Devonensis* for that reason? My difficulty with that variety is to get it to grow, while the climbing variety would make shoots 20 feet long in one season and nearly 2 inches in circumference. The members of the National Rose Society could only have had flowers of both varieties before them to come to such a conclusion. If that were so, the error is a pardonable one, for in that respect both varieties are exact counterparts of each other. In growth there is, however, quite as much difference as there is between a Verbena and a wild Hop. —J. C. C.

Grace Darling, sent to me by Mr. Bennett, is one of the most beautiful pot Roses I have ever seen.—S. REYNOLDS HOLE.

Rose stocks.—I would suggest trying *Rosa rugosa*, the Japanese Rose, as a stock for budding Roses on. I mean to try it fully this season, and believe that it will prove a success.—GEORGE F. WILSON, *Heatherbank, Weybridge Heath.*

Rosa rugosa.—After a most unfavourable spring in a cool situation this Rose comes out fresher and in better condition than any other Rose on the place. The foliage is most luxuriant, untouched by the frost and cold, and untainted by insects or disease, and the flower-buds are far in advance of any others, being at this date (May 30) on the point of expanding. Our bushes, which have not been pruned in the least, show far the most forward buds and the greatest number of them near the points of the shoots, many of the shoots at the base, though breaking as freely as at the top, being blind. This shows that the plant will not stand hard pruning, and, considering its handsome foliage, I think the less it receives the better. It promises to be a valuable acquisition for the shrubbery and wild garden.—J. S. W.

Raising Roses from seed.—To anyone gifted with an ordinary amount of patience, the raising of Roses from seed is a pleasant occupation. I have raised many seedlings, and I find that the plan which gives the least trouble is to sow the seed in deep pans or boxes about the end of February, covering the seed about a quarter of an inch deep. If required to vegetate quickly, it must have artificial heat, but a high temperature is not necessary. I find that if the pans are placed in a cold pit or frame, the plants will come on very well. We sowed several boxes with Rose seeds last February, and set them on the floor of a cool Peach house; the young plants began to appear in April, and they have been coming up ever since, but, owing to press of work and want of attention, the young plants have died off as fast as they appeared. If we could have spared them a close pit or frame, they might all have been saved. The young tender plants require to be carefully shaded from bright sun and to be kept out of cold currents of air, and the soil must be kept regularly moist without being too wet or too dry for any length of time. The next important matter is to carefully lift them as they get large enough to handle. I always lift them when they have formed the second pair of leaves, and put each plant separately in a 3-inch pot, returning the plants to the frame. The seeds vegetate so irregularly, that it is necessary either to sow them very thinly or to take out the plants as they get large enough to transplant, or the earliest lot which come up will overgrow the later ones, for I find that young plants keep coming up for several months. Therefore, there should be no hurry in getting rid of the pans in which the seed was sown. I have no doubt that it would be less trouble and give better results to devote a small frame to them. With a suitable frame and a bed of fine, rich soil for the reception of the seed, one might raise any number of plants with little trouble. In that case the seed may even be sown now (although it would have been better if it had been sown two months earlier) in the same way as is suggested in the case of pans. The plants should not be exposed to severe frost until they have made two summers' growth.—J. C. C.

KITCHEN GARDEN.

Wide planting of frame Potatoes.—Almost everyone who grows vegetables in frames in early spring are inclined to sow, plant, and cultivate them much too close. The impression is that as space is limited the closer they can be grown the greater bulk will be secured, but I do not think this is the case; we have tried our frame Potatoes planted about 1 foot from set to set. They came up well enough, but soon became a mass of stems and foliage, and when digging-up time arrived the tubers were certainly numerous, but far too small. Our frame Potatoes this spring were planted 20 inches apart each way, and when dug up in April and May we were astonished at the handsome tubers which were turned out. A small one was quite the exception, and I feel sure that we had a heavier and more satisfactory crop than would have been had had they been planted as close again. The tubers were as large and fine as any we have had out-of-doors in June

or July, and I am sure we will not try anything like close planting again. Radishes in frames are also often sown so close, that they form a mass of leaves before anything like bulbs begin to appear, and half or more of them never bulb at all, while if they were sown so thin that each plant could grow without hindrance from its neighbour every one would bulb and do very much better than on the closely crowded system.—J. MUIR, *Margam Park*.

PROFITABLE GARDENING.*

HORTICULTURE, that branch of culture which includes the growing of fruit, flowers, and vegetables, is of necessity bounded by narrow limits in acres. Let us at the outset make two divisions of it which may be termed extensive and intensive. Extensive horticulture is illustrated in the great orchards and fruit farms of Michigan and other States; intensive horticulture is fairly represented in suburban market gardens and fruit farms. It is a matter of vital importance that we familiarise ourselves with the process by which three or four or even more crops are raised on a single acre of land in one year. The time is not distant when such knowledge will be to many a necessity. We are drifting toward this high culture which alone overreaches severe competition. Our large cities, and gradually also our smaller villages, must be supplied with fresh and nutritious fruits and vegetables, but it is only growers who can grow the most, the earliest, and the best on the least ground who can hope for great success in gardening. The most instructive illustrations of intensive horticulture are found among market gardeners near large cities. No other class of cultivators understands so well the secret of making the earth yield its utmost. The secret of their success lies in the promptness and thoroughness with which every operation is conducted. Their methods are for the most part simple and capable of application to any garden. The garden vegetables rarely bring what the general cultivator would call high prices. They are articles of universal consumption, and so cheap that every family in city and country can afford them. Most of them can be readily grown by any one on land ten times cheaper than the valuable acres in the vicinity of large cities. How, then, does the market gardener make his money? His secret lies in these two causes: he grows more vegetables to the acre than the ordinary cultivator, and he markets them in better season and in a more attractive condition. The average farmer with land worth but £10 or so an acre, and manure costing but a trifle, makes a bare margin from Cabbages, but the expert market gardener, on land worth £200 an acre, and with a considerable outlay for manure, realises a good profit. As to high culture, it is necessary at once to understand that it is three-sided, and that all sides must be simultaneously developed. It consists of good tillage, abundant fertilising, and judicious planning as to the succession of crops. Good tillage is not keeping down weeds—it is stirring the soil deeply and often for the direct benefit of the crop. I know of no fallacy so unfounded as that which uses the hoe only when weeds become conspicuous. Good tillage kills the weeds while they are still under the surface. I never knew a market gardener who knew or who cared much about weeds. In a certain garden of 100 acres I never saw a weed, unless it grew along a path or about a compost heap. Weeds are only a good to prick up the shiftless cultivator. If not this, they may be regarded as a warning not to cultivate more than one can cultivate well.

Next to the care of the soil itself, manure is the most important consideration. A market gardener does not consider a good dressing of manure once in two or three years to be sufficient; that is not high culture. Every acre must be annually heavily manured. A good grower usually has little faith in the value of manure the second year after it is applied. He applies it to his land

in a thoroughly decayed condition, and expects to reap his reward at once. For certain crops he even applies it twice a year. Even after several years of this excessive manuring, should a year be skipped, the crops will almost universally fail to produce a profit. Mr. Peter Henderson relates an apt illustration of this sort. A market gardener of twenty years' experience, and whose premises had always been a perfect model of productiveness proposed to run a street through his grounds. Thinking this land sufficiently rich to carry a crop of Cabbages without manure, he gave it no attention. On either side of the street he applied guano at the rate of 1200 pounds to the acre. Upon the unfertilised portion and the contiguous areas he planted early Cabbages. From the fertilised ground his Cabbages brought him £280 per acre; from the unfertilised, £66 per acre—a loss per acre of over £200. The double cropping of lands is the distinctive feature of intensive horticulture. The *multum in parvo*, the ever persistent cropping of every foot of ground in every available season, is the only method of realising a profit from high-priced land. A good story is told of a shrewd gardener who hired a piece of land at a nominal price, allowing the owner the privilege of entering upon the land at any time by paying him the value of the crop upon it. The owner soon saw the increasing value of his land, but after watching it for several years, he could not find a time when the crops upon the ground were not worth more than the ground itself, and he was finally obliged to sell to the tenant at a very low figure. A skilful gardener who has a small place contrives to keep some crop upon the land the year round. Most of his vegetables are started in hot-beds, cold frames, or especially prepared seed beds, and are transplanted to the open as soon as some crop is harvested. In this manner no time is lost in waiting for seeds to germinate. A simple illustration of triple cropping is the growing of Radishes, Carrots, and Celery upon the same ground. The Radishes and Carrots are sown at the same time in alternate rows under glass frames. These spring cold frames are made simply by laying sashes across two boards which stand edgewise and run parallel to each other at a distance of 6 feet apart, forming the sides of the same. These boards are movable, and upon the advent of warm weather, they and the sashes are piled away. The earlier Radishes are marketed before the weather is warm enough to remove the sashes, and the Carrots soon have the whole ground. By the middle of June the Carrots begin to come into market, but before they are all harvested, Celery has been set between every third or fourth row, and it soon occupies the space.—*Country Gentleman*.

Soaking seeds.—The practice of soaking such seeds as Peas, Scarlet Runners, and Broad Beans before sowing is not, I regret to say, discontinued by many amateurs and others, although the practice has been often condemned by practical men. I was forcibly reminded of this to-day by a neighbour who a month ago came for a few seeds of Scarlet Runners which he took away, as I thought, to sow directly, but instead of doing so he threw the Beans into a bucket of water and there allowed them to remain for twenty-four hours; then he sowed them in the ordinary way. To-day he came to me and said the Beans which I gave him could not have been good ones, as not one had grown. For the moment I was perplexed to know how to account for so signal a failure, seeing that Beans in our own garden sown about the same time and out of the same bag had every one grown. However, it soon struck me what was the cause. I inquired if he had not soaked the Beans before sowing them. To this he replied in the affirmative. It was clear that the soaking had caused the mischief, and it cannot be too well known that under the most favourable circumstances the practice is bad; it is especially so in the case of seeds sown so early in the season as the beginning of May. Even in the most favourable seasons the ground is not warm enough then, even if it should be dry, to

cause such seeds to vegetate quickly, and in such weather as we had during the past month, when there was a continuous low temperature and the soil wet and cold, many seeds properly treated rotted in the ground before they could vegetate, how much more likely would they therefore be to do so when they were just in a condition to burst into life. When seeds are dealt with in such a manner we need not seek far for the cause of failure, and I hope this note of warning may be the means of its being better understood that the soaking of seeds of vegetables is a bad practice at any time, and that those who practise it must not be surprised if they meet with failure when they least expect it.—J. C. C.

Aphides and strongly-scented plants.

—The predilection of aphides for the leaves of highly-scented conservatory plants and plants bearing fragrant flowers is certainly remarkable. For instance, the strongly-perfumed *Pelargoniums* are peculiarly liable to become infested; others, with the exception of the Ivy-leaved, the leaves and scent of which bear so extraordinary a resemblance to the plant after which it is named, art never, or "hardly ever," thus blighted; and it may be noted that the stronger the odour the more liable to aphid attack—the Nutmeg, the Oak-leaf, the Lemon, and the old-fashioned "Unique," with its scent of Peppermint, being especial pendants of green fly. Look, too, at the Rose ("sweetest flower that grows"), at the Lemon Verbena, the Daphne, and the Carnations, how thickly covered they all become with the detestable little pests. With plants out of doors the rule seems to be reversed, for whilst Gooseberry and Currant trees, white and red, are frequently sadly disfigured by thick swarms of aphides, the aromatic Black Currant and the poisonous (?) American Ribes escape unmolested. The only probable reason for the preference given to the scented plants of glasshouses is that they are, as a rule, more succulent and juicy than others.—*ENTOMOLOGIST*.

QUESTIONS.

5358.—**The Paulownia Imperialis** in my garden is now in flower for the first time since 1876. I should like to know if this tree has generally flowered this year. The blossom on mine is tolerably abundant.—W. W., *Alton, Lancs.*

5359.—**Small v. large Grapes**—Will Mr. Coleman or some other good Grape grower kindly tell me whether small bunches and berries of Black Hamburgh Grapes if well coloured are as good in flavour as larger bunches and berries of the same sort? If not, what is the difference between them, and why?—R.

5360.—**Horse ants.**—Can any of the readers of THE GARDEN advise me how to rid a new garden (formerly a piece of common) of these destructive pests? The ground has been undisturbed for some years, and as many as eight enormous nests have been found. In trenching some of these were burned with paraffin, but this failed to destroy them entirely, as they are now commencing to work again among the freshly planted fruit trees. Any information will be most thankfully received.—T. E., *Berks.*

5361.—**Lead wire v. Roses.**—Can any of your readers enlighten me upon the following matter: In November last I planted about thirty Hardy Perpetual Roses in a bed specially prepared for them, and my gardener labelled each plant by suspending a zinc label attached to a piece of lead wire upon the branches, the name being written on the label with indelible ink. I examined the bed yesterday and discovered that in every case except one the branch upon which the label was suspended had either died outright or failed to make any growth, although the rest of the plants were in splendid condition, showing profusion of strong healthy buds. The exception was in the case of Rose Paul Neron. Is there any explanation for this strong chemical action produced by the combined presence of lead wire, zinc label, and indelible ink?—J. W. J.

5362.—**Orchard trees.**—Having an orchard here of standard Apple, Pear, and Plum trees that were in a very bad state through poorness of soil, the latter being of a rather clayey character, I loosened it for a good distance round each tree, and top-dressed heavily with decayed matter from the rubbish heap and rotten manure from the farmyard. This has been done now for three seasons, with the result that I expect, from the abundance of blossom on all the trees this year, a good crop of fruit. We have, however, a pony, and in order that he may eat up all the Grass, he is tied up with a piece of rope to each tree in succession, and left there sometimes for two days together without being moved: the result is that he treads the ground down very hard indeed. Now, will some good grower of fruit kindly tell me whether the pony does good or harm in thus hardening the ground?—R.

* Extract from a lecture delivered before the Ingham County, Mich., Horticultural Society, by Prof. L. H. Bailey, Jun.

TREES AND SHRUBS.

KALMIAS, OR AMERICAN LAURELS.

FOR the next few weeks these evergreen shrubs, from the mountains and awamps of North America, will be in great beauty in our gardens, where, happily, they have existed for the last hundred years. Their lovely wax-like blossoms tinged with the most delicate shades of pink and rose are ever welcome and are particularly valuable, because they come into blossom just as the first glow of Rhododendrons and American Honey-suckles (Azalea) is over. Their luxuriant growth in our gardens, their indifference to our fickle climate, and their adaptability to almost any kind of soil, provided it be moist and without chalk or lime in any form, makes them most valuable. They delight most in deep moist peaty soil, and if the position is sheltered all the better. *Kalmias* may, therefore, be grown in most gardens, for even in exposed hillside situations some cosy nook may often be found, and, if not naturally moist, may be made so with a little trouble. There are four species of *Kalmia*, but only one of these, viz., *K. latifolia*, is common in English gardens, although the others, *K. glauca*, *angustifolia*, and *hirsuta*, have been introduced quite as long. The three latter are small shrubs compared with *K. latifolia*, which attains as much as 15 feet to 20 feet in height. Since it has been under cultivation numerous varieties of it have been produced varying much in the depth of colour. Of *Kalmias* in their native habitats Emerson writes as follows:—

THE MOUNTAIN LAUREL. CLAMOUN. SPOONWOOD (*K. latifolia*).—This extremely beautiful shrub occurs in various parts of the State; on the shores of Massachusetts Bay, at Cohasset, in several points on both sides of Buzzard's Bay, in the neighbourhood of Newburyport and Lowell, in many parts of Worcester County, on every side of Wachuset, and in the towns on both declivities of the Green Mountains. In the deep, shady ravines of these mountains it sometimes attains a height of 15 feet or even 20 feet, with a diameter of 3 inches or 4 inches; in most other places, and especially on open ground, it rarely exceeds 4 feet or 5 feet. On an open, rocky pasture of many acres, south of Meeting-house Pond in Westboro', it forms large, close clumps or islets, intersected by plots and alleys of Grass. In June and July, when every one of these innumerable green islets is crowned with white or rose-coloured flowers, and cattle are feeding on the Grass or lying under the few Oaks which are scattered through the pasture—the whole, with the lake and its fringe of trees, is worth going out of one's way to see. The Indians called this plant "Clamoun." It is sometimes called Spoonwood, rarely, Calico Bush; most frequently Mountain Laurel or broad-

leaved *Kalmia*. The stem of the Mountain Laurel is slender, with branches in twos or threes, or in imperfect whorls. The bark on the recent branchlets is of a yellowish green, which in a year begins to turn brown, and afterwards becomes ash-coloured. The flowers are in terminal heads, which crown the last year's leaves, and consist of two or three stout stems proceeding from the axil of as many leaves, and giving off from one to three pairs of opposite branches. The partial flower-stalks are an inch or more long, covered with glandular hairs. The colour of the corolla varies from a pure white to a rich rose. The border of the tube within is painted with a wavy, rosy line, and there is a delicate pencilling of purple above each depression for the anthers. The wood of the Mountain Laurel is very smooth, close-grained, and hard, and that of the root is marked with red lines. It is substituted for Box, is well adapted to the turner's use, and for the

sides. The flowers are very beautiful, of a deep rose-red. From its supposed poisonous effect upon lambs, this plant is often called Lamb-kill or Sheep-kill. It is found from Hudson's Bay to Georgia. There are many slight varieties of this plant, some of them remarkable for leaves glaucous beneath and somewhat so above.

THE PALE LAUREL (*K. glauca*).—An almost aquatic plant, with a long, straggling stem, a greenish brown, smooth bark, and slender, two-edged, opposite branches, or three-edged in whorls of three. The leaves are mostly opposite or in threes, nearly sessile, linear-lance-shaped, entire, obtuse or pointed, wedge-shaped at base, revolute at the edge, of a brilliant dark green above, whitish or glaucous beneath. Flowers in terminal corymbs, made of alternately opposite pairs, or in threes, from the axil of a small leaf or bract, with two lateral scales. Footstalks thread-like, three-fourths of an inch long. Calyx persistent, with five long, obtuse, brown segments. Corolla pale rose-coloured, with cavities to receive the ten anthers, which are supported on stamens proceeding from the central portion of the corolla, with filaments surrounded by a circle of hairs at the base, and brown anthers. This plant is found in Richmond, in Berkshire, and in a few other places in the State. Dr. Alexander pointed it out to me in Hubbardston, growing with *Ledum*, in an open, sphagnous swamp which had been used as a reservoir for a mill-stream, and had thus been kept full of water nearly throughout the year. When I gathered these plants there, the swamp was overgrown with a most abundant growth of *Cassandra caliculata*, covering the surface with a purplish brown hue. Amidst this the *Sphagnum* had formed masses a foot or two above the general level, on which the *Ledum* and *Kalmia* were growing, the long, prostrate root-like stems penetrating



The Mountain Laurel (*Kalmia latifolia*) at home.

engraver on wood, and is employed in making the handles of small tools, screws, boxes, and musical instruments. Found in nearly all parts of the State, and from Canada to Florida. Flowering in June and July. Easily cultivated in a moist soil, and richly deserving a place in every American garden.

THE NARROW-LEAVED LAUREL (*K. angustifolia*).—A low evergreen shrub, usually half a foot or a foot high, rarely 2 feet, forming often small tufts or patches in low grounds. The stem is ascending, covered with a brown bark, shining through the thin, membranaceous, silvery epidermis, in recent shoots of a light reddish green. Branches often in threes. Leaves in whorls of three, entire, lance-shaped, revolute on the margin, with the midrib very prominent beneath, shining green above, paler and often rusty beneath, of a soft, leathery texture, those of the previous year browner and harder. Flowers in corymbs, in from three to twelve whorls of three, in the axils of the persistent last year's leaves, and surmounted by the new leaves. In each axil is a panicle, consisting of about three imperfect whorls of three flowers. At the base of each flower-stem is a small linear bract, and two smaller ones are on the

to a great distance in the spongy mass. On the edges were *Rhodora* and *Andromeda*; the general more wet level was occupied by Cotton Grass, and the dry banks by Narrow-leaved *Kalmia*, *Huckleberries*, and other shrubs that avoid the water. It is found from near the Arctic circle in Canada to Pennsylvania. The flower of *Kalmia glauca* has been compared to a miniature parasol, the corolla to the covering, the stamens to the ribs, and the style to the handle.

K. hirsuta.—This is quite distinct from any of the other *Kalmias*, the whole shrub being covered with glandular hairs. The branches are round, the leaves oblong or lance-shaped, about half an inch long. It grows about a foot high and produces its flowers in terminal erect racemes. The flowers are about half an inch across, of the same shape as in the other species, and of a delicate rose-pink. It inhabits the sandy Pine barren swamps in East Virginia and southwards. It was figured in the *Botanical Magazine* in 1790, but is now rarely met with. Emerson does not mention it in his book.

Spanish Gorse.—Among hardy shrubs none are more easily grown, or more beautiful at this time of the year, than the Spanish Gorse. Here on the banks of the carriage drive and elsewhere,

on poor clayey soil (subsoil), it is a lovely sight. It was planted, I believe, out of 5-inch pots in the autumn of 1881, and now it is more than 5 feet through and 2 feet high, forming a perfect circle. and every plant is densely covered with bright golden flowers. Planted here and there amongst it is the white Broom, and the two together give the bank a bright and beautiful appearance.—W. EARP, *Osborne*.

TREES FOR AVENUES.

ALTHOUGH the planting of avenues of trees is not so much in fashion as formerly the following notes on some of the more suitable subjects for this purpose may be of interest. The English Elm (*Ulmus campestris*), the commonest of objects in the landscape, is by no means an unsuitable tree for forming avenues. It may not be so well adapted as some others in positions where the land is very wet and shallow, but for many situations it may be used with good results. The rough or Dutch cork-barked Elm (*Ulmus major*) is approved by some because of its quick growth; it is a tree that will bear removing well; it is green in the spring almost as soon as any tree, and retains its leaves until late in the autumn. The Lime (*Tilia europæa*) is also held in high esteem for avenues, on account of its regular growth and fine shade. As an ornamental tree the Lime is always worth cultivating, since it ranks in the first class in point of magnitude, frequently attaining to a height of 80 feet or 90 feet. In places not too much exposed to rough winds, the Horse Chestnut (*Æsculus Hippocastanum*) is a very effective tree for avenues. The Sweet Chestnut (*Castanea vesca*) does well on poor gravelly or sandy soils, and will thrive on any but moist or marshy situations. It grows to a considerable height when closely planted, but as a single tree it acquires a spreading habit. The Beech (*Fagus sylvatica*) is a tree that in certain situations forms splendid avenues; indeed, some of the grandest avenues in this country are composed of the common Beech. A tree adapted to many soils, and having the advantage of a quick growth, is the Abele (*Populus alba*); it seldom fails in transplanting, and succeeds very well in wet soils in which others are apt to fail. The Lombardy Poplar (*Populus fastigiata*), from its erect habit, is also a tree that has been used considerably for forming avenues, and in some cases with good effect. The Oak is seldom used for avenues on account of its slow growth. The old method of planting was by regular rows of trees, but this has now to some extent given way to the more ornamental way of planting the trees in clumps, but this can only be done where there is considerable space at command, as for limited areas and short distances the plan is not practicable. Y.

THE SCARLET-FRUITED THORN.

THE scarlet-fruited Thorn (*C. coccinea*) is so called to distinguish it from some of the bright coloured varieties of the common Hawthorn which are often spoken of as Scarlet Thorns, while the blooms of *C. coccinea* are white, and especially interesting from their being amongst the first to open, for some specimens here have been for the last fortnight objects of great beauty, being laden with clusters of white flowers of a larger size than most Thorns, and in the ordinary course of events these will be succeeded by berries which ripen in the autumn, and are, when in that stage, of a bright red colour. This Thorn is of free vigorous growth and attains to tree-like dimensions; the foliage also is handsome, being of a lively green hue, and in autumn it dies off tinted more or less with yellow and red, when it is very conspicuous. As a medium-growing tree for an isolated position on the lawn or in similar spots, this Thorn is well suited, and it is by no means fastidious as to soil or situation, for some specimens that recently came under my observation had been crammed in a shrubby border with a multitude of others, and the Thorns, having over-topped the masses of Laurels and such like, had formed large spreading heads, that

were then giving a good promise of bloom. In North America the Scarlet-fruited Thorn is widely distributed, and, of course, varies to some extent, there being a few recognised varieties, but none of them surpass in beauty the ordinary type, which should be planted wherever trees and shrubs are grown.

ALPHA.

The Paper Birch.—With the exception of one of the Poplars—the American Aspen (*Populus tremuloides*)—the Paper Birch extends to higher latitudes than any other deciduous tree of the North American forests. It is not so graceful as our native *Betula alba*, but would probably prove in most places in this country a fast grower, and attain a large size. The very tough, durable bark is easily separated into thin layers impervious to water, and is largely used in the construction of canoes, hence one of its popular names, Canoe Birch. Lindley calls it the most valuable of all the species of Birch, and Professor Sargent, in his "Catalogue of the Forest Trees of North America," says the wood is white, compact, moderately hard, and furnishes an excellent fuel; it is extensively employed in the manufacture of spools, shoe-lasts, pegs, &c., and is now largely exported. It is almost needless to say that the Paper Birch is thoroughly hardy in this country, and should have a fair trial as a timber-producing tree on lands which grow Birches, but do not suit other forest trees.

The Fastigiata Birch (*Betula alba* var. *fastigiata*) should find a place in every park and in every collection of ornamental deciduous trees. It is the exact counterpart among the Birches of the Cypress Oak among the Oaks. In addition to the peculiarity of its columnar habit of growth, it has the merit of retaining its dark green foliage much longer than any other variety of our native Birch, and indeed longer than perhaps any other cultivated species. I am at present ignorant of the history or origin of this interesting tree; it is in all probability a somewhat recent sport; at any rate, it was unknown to Loudon.

The Dwarf Wych Elm.—Amongst the very numerous forms of *Ulmus montana* which are now cultivated in tree nurseries, none are more interesting than the form which has received the varietal name of *nana*. In the Kew Elm collection there is a fine specimen which forms a hemispherical mass of dark green no higher than a man. We have known this plant for many years, and it does not seem to have materially increased either in size or spread of branches since the first time we saw it. Unlike a good many monstrous forms of tall-growing trees, this appears in perfect health, and is certainly an attractive and interesting specimen. It should always be planted singly in some open spot, where its compact, cushion-like style of growth can be fully seen.

The White Ash.—Apart from its probable value as a timber tree, the White Ash (*Fraxinus americana*) is a much more ornamental and striking tree than our native Ash. The large and handsome leaves with their distinctly whitish under surfaces and vigorous growths place this North American tree in the first rank of ornamental trees for the park or pleasure ground, as its timber places it, throughout the districts where it grows wild, in the first rank from a purely economic standpoint. It is, moreover, a quick grower, and quite as hardy as our common British Ash. The wood is light, tough, very strong and elastic, and is extensively employed in the manufacture of agricultural implements, carriages, oars, cabinet-work, &c. It attains a height of 60 feet to 80 feet, with a trunk 4 feet to 6 feet in diameter. It has grey furrowed bark and smooth grey branchlets, with rusty coloured buds.

The Black Spruce.—It is hardly likely that this species (*Picea nigra*) will ever compete successfully—in this country at any rate—with the common Norway Spruce. In America, however, it is a valuable tree, with light coloured or reddish wood, which combines lightness and elasticity with strength. The Spruce timber of the eastern markets is derived from it; it is largely

sawn into boards and square timber, and was formerly used for ship-building, spars, &c. At present it is largely employed in the manufacture of paper. In this country it forms a very compact-growing, handsome little tree, and the dark green leaves and small cones, which are produced in great profusion, render it very ornamental as a spicemen plant for the lawn, &c. Cold mountain woods are the places it particularly affects in the New World, and where it attains the largest size; in swamps it is more frequently of small size and of little value. Its geographical distribution is Newfoundland, Nova Scotia, and Canada; through the Northern United States from Maine to Wisconsin, and south along the Alleghany Mountains to the high peaks of North Carolina.

Ligustrum sinense.—Of all the Privets this is the most floriferous, and, perhaps, the most beautiful. It was introduced to this country by Fortune from China many years ago, and is one of those shrubs which are hardly likely to be allowed to disappear from cultivation. For the last fortnight or so huge bushes have been one mass of white blossoms in some of the shrubberies at Kew. In habit, too, the species is infinitely more graceful than the common Privet and a number of its allies. When planted singly and allowed to develop without interference, *L. sinense* makes an extremely ornamental object, and flowers, too, at a time when but few hardy shrubs are to be found in bloom.

Prunus Pissardi is undoubtedly one of the finest foliage shrubs which have been introduced to British gardens for many years. Although it is towards autumn that it wears its brightest garb, the leaves at all times are brightly and deeply tinged with vinous red. When better known—the plant is but a very recent introduction to British gardens—it is sure to become a general favourite. Seedlings raised from fruits ripened in France have produced green leaves and proved that *P. Pissardi* is not a species, as was at first supposed, but only a very striking variety of *P. cerasifera*.

CONIFERS ON THE PRAIRIES.

PICEA PUNGENS.—This Conifer is known as the Silver Spruce in the Rocky Mountains. It is truly a most beautiful tree, and may justly be said to stand foremost among the mountain Conifers for the symmetry and the beauty of its foliage. This tree grows on what are known as the "foothills" in conjunction with the Douglas Fir, preferring the borders of streams. *Picea Engelmanni* is also found in the same localities, at an elevation of from 6000 feet to 7000 feet, but the Douglas Fir is found still higher. *Picea pungens* is a very stately tree when it reaches a height of 150 feet. When 50 feet high, standing by itself with room to display its perfectly symmetrical shape, stiff horizontal branches extending 20 feet from the trunk, the lower ones sweeping the ground, covered with rich foliage which glistens like silver under the rays of the morning sun, it is a grand object for a lawn or large plantation. There are two varieties, only differing in colour, one being glaucous and the other entirely green, darker than the Douglas Fir. I have found no difficulty in transplanting these varieties from that high altitude to one 4000 feet lower, where they have made a satisfactory growth. During last May I moved several hundreds 1½ feet to 4 feet in height, with a loss of only 10 per cent., and the season was the driest we have had for years.

ABIES DOUGLASI.—It has been advocated to plant the Douglas Fir in conjunction with the Larch. The foliage of the Douglas Fir is not so dense as that of *Picea pungens*, of a light green, with branches inclined to droop. The tree attains a large size on the Pacific coast, and furnishes a great amount of the timber for export to Asia, known there as the Yellow Fir. The forests of the eastern and central regions of the United States have been of late years so extensively cut away, that the only heavy timbered tracts are in the north-west, and these will soon be invaded by

railways. With the possibility of a future timber famine, increased attention is being called to replanting forests, and extensive planting on the bare prairies where but few trees exist. I have had no difficulty in transplanting any of the Spruce family, they having more fibrous roots than the Pines.

ABIES GRANDIS.—This is another grand tree, and deserves especial mention. It is tall and imposing, has stiff strong branches in regular whorls, and leaves dark green above and glaucous below. I have often noticed, where the trees had a chance to spread their branches, the lower ones with their heavy foliage drooped to the ground, there would be a cordon of young trees of from 10 feet to 12 feet in height which had taken root from the branches of the parent. The wood is soft, very white, and eminently adapted for beautiful inside finishings. And here let me say that the American people are largely using our woods for finishing their dwellings from pantry to drawing-rooms, while the railway car builders are finishing their elegant day, sleeping, and dining carriages with alternate panels of American woods, showing Nature's beauty undefaced by paint.

ROCKY MOUNTAIN CONIFERS.—Returning to our Rocky Mountain Conifers, the *Picea Engelmanni* is another grand variety, the most alpine of all the Spruces, being often found at an altitude of 10,000 feet. In lower altitudes it reaches a height of 100 feet, very pyramidal, and beautifully glaucous. The wood is white, soft, easily worked, and valuable. Of the Pine family, *Pinus ponderosa* stands justly at the head as a timber tree. It is called by the mountain men Black Pine. Its dense, deep green, massive foliage strongly resembles that of the Austrian. By all it is acknowledged as the grandest of North American Pines, and called Yellow Pine on the Pacific coast, where it abounds. *Pinus flexilis*, a five-leaved Pine, also seeks a high elevation, but does not grow to the great size of the *ponderosa*; still it is a beautiful ornamental tree. *Pinus contorta* (twisted Pine) does not grow to more than 40 feet or 50 feet in height, but its peculiarly fine light green foliage makes it an excellent lawn tree in contrast with darker-leaved kinds. *Juniperus coerulescens*, with very bright silver foliage; *J. occidentalis aurea*, golden tipped, and *J. prostrata*, which has a bright lemon colour in winter, are all beautiful trees for lawns or plantations. We have gone back to the old nomenclature of Europe, substituting *Picea* for *Abies*. This has been brought about by the late Dr. Engelmann, of St. Louis, who was the best authority on Conifers on this continent.

JAMES T. ALLAN.

Omaha, Nebraska.

THE FUCHSIA-FLOWERED RIBES.

(R. SPECIOSUM.)

A LARGE bush of this beautiful flowering shrub is just now laden with myriads of its bright crimson Fuchsia-like blossoms, the colour of the blooms and the general character of the plant being so distinct from all other shrubs in flower at the present time, added to which the blooming season is spread over a long period, and even when not in that state it is a handsome bush. It is surprising that this beautiful *Ribes* is not met with in every garden of any pretensions whatever, instead of which it is quite an exception to see a specimen in a thriving condition, though its requirements are by no means great. It seems to thrive best in a fairly good well-drained soil, but not in too hot and dry a situation. When employed as a wall plant it is very effective, and sheltered in this way the blossoms will often commence to expand quite early in the spring, that is if the weather be mild. It can be propagated by means of cuttings as well as layers, or by detaching rooted suckers, which frequently make their appearance around the base of the plant. Another American species with flowers somewhat after the manner of *R. speciosum* is *R. Lobbi*, a little-known, but very interesting kind, though in point of beauty much behind the above mentioned. It

forms a stout growing bush, the branches of which, especially in a young state, are thickly beset with spines, that impart to it a very distinct character during the winter when devoid of foliage. This species is very floriferous, the blooms being something like those of a Fuchsia with chocolate coloured sepals and petals of a whitish hue. This *Ribes* is a native of California, and was named in honour of William Lobb, to whom we are indebted for so many beautiful hardy shrubs. It is also occasionally met with under the name of *Ribes subvestitum*. T.

Judas Tree (*Cercis siliquastrum*).—I send a branch of this tree to show how well it is flowering here this year. The tree from which it was cut is a very old one, and has been in bloom three weeks. I may add that I have a hive of bees about 100 yards from it, and for the last few days they have taken complete possession of it, preferring it to Broad Beans and other flowers.—W. SUTTON, *Pain's Hill, Cobham, Surrey.*

* * A charming branch in which the old leafless wood swarms with rosy purple flowers. The young terminal twigs, too, have just unfolded their kidney-shaped leaves, which as a rule come after the flowers. This tree has flowered well this year in several places.—ED.

Adenocarpus decorticans.—Of this new hardy flowering shrub Mr. Gumbleton has sent us a beautiful coloured illustration drawn from a plant which flowered in his garden at Queens-town during the present spring. It is a native of the mountain chain known as the Sierra Nevada, in Spain, where it grows in common with the *Pinus Pinsapo*. Its flowers are produced in great abundance, and are of a clear, bright yellow, reminding one somewhat in appearance of those of our common Furze. It is said to thrive best (at all events when young) in peaty soil and is impatient of moving, so will be best kept in a pot till ready to be put out where it is finally to remain. It was entirely uninjured in the open ground at Sceaux by the very severe winter of 1879-80, so is perfectly hardy. It multiplies freely from seed.

Lonicera tatarica.—The Tartarian Honeysuckle is a pretty spring-flowering shrub, and one that will thrive in almost any soil or situation, but, of course, it blooms more freely when the preceding year's growth is thoroughly well ripened than it does in a damp shady place where the shoots never acquire the solidity that they do if more exposed. It is a free, erect-growing shrub, reaching a height of about 6 feet, and during the latter part of April and in May is thickly studded with blossoms. The flowers are small, but from their number they make a goodly show, the colour being in the ordinary form of a pinkish tint, but there are varieties in one of which the blooms are white, and in the other of a much deeper hue than the common kind. This Honeysuckle is a native of Tartary, and, though thoroughly hardy in this country, is apt to start into growth very early in the spring, when in the event of severe frosts the young foliage sometimes suffers. The propagation of this Honeysuckle is readily effected, as cuttings are by no means difficult to strike, and from the quantity of suckers that are pushed up a plant may often be divided after the manner of a herbaceous subject.—ALPHA.

SHORT NOTES.—TREES AND SHRUBS.

Branch-shedding in trees.—The Aspen (*Populus tremula*) sheds its branches in hot weather more suddenly and more frequently than even the Elm. Large limbs break off without the slightest warning.

Cytisus Adami.—This curious graft hybrid between the Laburnum and purple *Cytisus* seems to be unusually plentiful this season, several of our readers having sent it lately. A fine specimen of it comes from Highcliffe, Lympstone.

Araucarias coning.—I have a cone on an *Araucaria imbricata*, which seems to be unusual—at least, this tree, which I planted nearly thirty years ago, has never borne a cone before.—W. W., *Alton, Hants.*

* * It is not unusual for the *Araucaria* in favourable situations to bear cones.—ED.

Berberis Wallichiana.—Among the different *Berberis* just commencing to expand their blossoms this is one of the most distinct, and, withal, a very handsome evergreen shrub. It is of a compact habit of growth, plentifully furnished with deep green foliage and clusters of lemon-yellow coloured blossoms. The blooms are larger than in most other kinds, and an additional feature is afforded by the long prominent spines which in some conditions of growth are very conspicuous. This *Berberis* is often met with under the name of *B. Hookeri*. It is a native of the Himalayas, and though to some extent injured by severe frosts, it seldom suffers to any great extent. Like most of its class, it will thrive almost anywhere, provided the conditions under which it is situated are at all favourable.—H. P.

The Maple as a hedge plant.—The common Maple (*Acer campestre*) is by no means a bad plant for hedges. There is a considerable quantity of it growing in the hedges in our neighbourhood, and where it is kept well cut back it makes a compact thornless hedge. The leaves are now fully opened, and form such a dense mass of foliage, that the woody part of the shrub is completely hidden. It seems to luxuriate here, although the soil is gravelly with a rocky subsoil. The Sycamore, too (*Acer Pseudo-platanus*), I see is growing well in some hedges. Its leaves, of course, are much broader than the common Maple, but the effect is very good, as the foliage is darker than the majority of hedge plants. To have a really ornamental Maple hedge, however, it is important that the wood should be well kept back, as this will induce the growth of a number of young shoots and a complete shield of foliage.—D.

Paulownia imperialis in bloom.—It may interest some of your readers to know that the *Paulownia imperialis* is flowering splendidly here. This tree rarely flowers in this country, the heat of our summers being barely sufficient to ripen its succulent wood, and its rich supply of blossoms this year is, no doubt, due to the unusual heat of last summer, as well as to its sheltered southern aspect. I may add that the alpine plants in this garden, which are spread over rockeries covering an acre and a half, have flowered well this season. I have at present some eighty plants of *Edelweiss* bearing larger and white blossoms than in their native Alps. The *Arnica*, *Dianthus glacialis*, *Ramondia pyrenaica*, and many other alpine plants are in full bloom, and the collection of *Saxifrages*, *Androsaces*, and *Gentians* presents a feature of much interest to those who care for the cultivation of alpine.—JAMES H. SCLATER, *Newick Park, Lewes.*

The Red Horse Chestnut (*Æsculus rubicunda*).—This is one of the most handsome flowering trees that is at the present time enlivening our parks and gardens. When in full bloom the effect of so many brightly coloured spikes of flowers is really grand, and forms a fine contrast to the lighter blossoms of the common kind. It is too well known to need any description, being commonly spoken of as the red-flowered Horse Chestnut to distinguish it from the common kind (*Æ. Hippocastanum*), from which it differs, beside the colour of the flowers, in being a much smaller tree and of a greater depth of green, while it is also somewhat later in opening its blossoms. As a lawn tree of a medium size it is unsurpassed, being admirably adapted for single specimens from the circumstance that so treated, it forms a dense tree of a beautiful regular outline, the ample foliage of which is very handsome, even when not in flower. As the red-flowered Horse Chestnut is generally propagated by grafting on the common kind, it comes into flower much sooner than it otherwise would if raised from seed. Individual plants vary a good deal in colour, no doubt owing to the trees having been propagated from seedlings, but it is the deep rich coloured form that makes the finest display. There appears to be some doubt as to the origin of this tree. It is also known under the name of *Æ. carnea*. Of the common Horse Chestnut (*Æ. Hippocastanum*) there are several

varieties, but the variegated forms, however beautiful they may look when in the propagator's hands or in the form of small plants under glass, are seldom satisfactory when planted out-of-doors, the sun and wind generally turning the variegated portions to a brownish hue. Besides the variegated there is also a cut-leaved form, while the double-flowered came with a high recommendation from America, which up to the present hardly seems to have been borne out in England, but probably as the plants become stronger and better established finer flowers will be produced.

Oedrela sinensis is the only member of a genus of large trees which is hardy in this country. Jamaica or West Indian Cedar is furnished by *C. odorata*, which is cultivated in stoves or greenhouses in this country, and the timber of *C. Toona*, largely used in Australia and India for furniture and general ornamental work, is also grown in England under similar conditions. At Kew, however, *C. sinensis* seems as hardy as the *Ailantus glandulosus*, which it much resembles in general aspect. It was introduced from China to the Jardin des Plantes, at Paris, rather more than a score years ago, and for a long time was known in nurseries under the name of *Ailantus flavescent*. It, however, does not possess the strongly disagreeable odour of the foliage of the *Ailantus*, and the whole plant has a yellower hue. The roots, too, are red and not white, as in the *Ailantus*. Like that, it is readily propagated by means of root cuttings, and, in rapidity of growth and general adaptability for decorative purposes it seems likely to rival the *Ailantus*.—N.

The Upright Cypress—In England this Cypress is recorded to have been growing in gardens early in 1500, since which time it has been planted in almost every shrubbery, and it is still deservedly a favourite with most people. I have never seen *C. sempervirens* in this country much above 60 feet in height, but trees of this size are by no means scarce. There are several varieties of it as regards habit, all of which are useful and highly ornamental. They grow freely, and will succeed almost anywhere and on any kind of soil, but they always start best associated with common shrubs planted pretty freely as nurses, to be cut away or thinned out in due season in order to give space both for root and branch; when fully grown, they seed freely, and with us, in Devonshire, the wood is both durable and useful when converted into house furniture, harps, and other musical instruments, resisting as it does the worm and moth. As to growth, I like to see all plants of noble port with a foot or two of clear bole at the base. Cyresses are not expected to make grand effects in the background of free-growing trees; but they are more fitted for planting near the front, or as single trees on Grass, or in and about cemeteries, &c. They form striking contrasts with buildings, especially with such as have horizontal roofs, but they will not withstand the smoke of large cities.—A.

Double-flowering Peaches.—There is a strange effectiveness about these which makes them very precious for the garden landscape, although our climate does not in all parts allow them to make good growth and bloom. In the London district this year they have been very handsome, both in bud and blossom, and a few weeks ago they gave a glow of delicate colour to most of the public parks. The curious suddenness of the effect, so to say, of a brilliant double Peach running out of a group of shrubs is such as cannot be got from anything else. Anyone having artistic ideas in planting would find such trees most useful. Some pretty specimens may be seen in Kensington Gardens, and doing fairly well; but they are mixed up with the mean undergrowth, which spoils the good effect of all the things in our shrubberies. Such plants should be allowed to tell their own story, not only as regards the colour of the flower, but as regards freedom from mean and shabby surroundings, which confuse the eye and prevent it from realising the full beauty of these valuable trees. There is a good variety of colour, deep and bright crimson, and also a pure white, which

comes in to help the many white flowering trees of early May, and yet it is quite distinct from all. Warm, well-drained soils appear to be essential to the healthy growth of double Peaches. If such good results are attained near and within the circle of smoky London, naturally far better would be obtained in country gardens in favourable situations.

GROUPING ORNAMENTAL TREES.

It is essential, in studying the beauty of trees, that they be seen in groups of one kind, for it is impossible to derive the fullest expression of



A group of Scotch Firs.

beauty from trees that are huddled together in such incongruous mixtures as is often seen.

Planting ornamental trees is a work requiring some forethought, as it is not altogether for the present immediate effect that it is done, but for time far distant, and one needs to have the future form, size, and general appearance of the trees in his mind's eye at the beginning if he would avoid making blunders that never can be corrected. It requires a practical and intimate acquaintance with all the trees used in forming groups, not only as they appear in their native

forests, but when cultivated, for some show the effects of culture differently than others.

Many persons who plant trees in groups for ornamental purposes commit errors in consequence of not taking "one long look ahead." Probably in many instances mistakes are made by those who direct the planting of the trees, as they judge of the future size from the specimens in hand, the largest being selected for centres of groups or backgrounds of belts. A few years, however, are only required to develop and show errors.

The picturesque groups of native trees one often meets with serve admirably as models for the planter of trees for ornamental effect. For example, what can be more beautiful than groups of self-sown Birches, Hollies, Junipers one often sees on wild heath land, and where can such tree-beauty be found to surpass the native growth of the Scotch Fir on the hillsides and glens in the Highlands of Scotland?

Now and again we meet with artificially planted groups that compare well with those seen in Nature, and a better example of this could not be given than that shown in the annexed illustration, which represents one of the most picturesque groups of Scotch Firs in this country.

As an ornamental tree, says Loudon, various opinions are entertained of the Scotch Fir, the diversity of which may be partly owing to the great extent to which the tree has been planted in almost every part of the low country of Britain, and the great difference between the tree in these plantations is in its native habitats and in hilly or mountainous scenery. Even the difference between the tree standing alone or in small groups and growing on extensive plantations is so great, that it can hardly be recognised by the general observer to be the same species of tree. Gilpin regarded it as a most picturesque tree. He says, "People who judge of it from the wretched specimens which are suffocated in English plantations, with their roots in heavy and eternally wet clays, may well call it a wretched tree; but when amongst its own highland heather, and standing freely in its native knoll of dry gravel or thinly-covered rock, over which it spreads its network of roots, its appearance is far different. Nothing can well be more picturesque than a native group of Scotch Firs springing up in irregular clusters with huge ruddy-tinged boles towering high and surmounted by a beautiful and irregular canopy of sombre green leafage.

Pure air and drainage the Scotch Fir must have in order to bring it to that perfection in which it may yet be seen while clinging to the almost naked rocks in many of the highland glens. In the valleys where the air is moist, the boles of the trees are sometimes grey with Lichens; but higher up, where the air is more rarified, the smooth trunks are often of that deep flesh colour that gives them such a striking appearance at a distance.

It is astonishing how rapidly the Pine shoots up to the size of a tree in many parts of Scotland, but it requires generations to bring it to perfection, and it will require time to solve the problem whether the immense Pine woods planted in Scotland will ever equal in size of timber and quality the ancient forests of that country.

W. G.

Arbutus Andrachne.—In the neighbourhood of London, at any rate, *Arbutus Andrachne* becomes a much taller and finer tree than the common Strawberry tree (*Arbutus Unedo*). It seems, moreover, to be considerably hardier, as good-sized specimens at Kew successfully withstood the trying ideal of the two successively severe winters which proved too much for so many trees and shrubs a few years ago. It was introduced to this country from the Levant about 1724, and, to show the estimation in which it was held nearly a century afterwards, the following sentence is quoted from the volume of the "Botanical Magazine" for 1819: "In the late Dr. John Fothergill's greenhouse at Upton there was one little inferior in size to that at Chelsea,

and much more beautiful, which was sold for £40, when this valuable collection was brought to the hammer." The papery bark peels off in large flakes annually, and the varying colour of the trunk and branches consequently adds no little to the beauty of an old specimen. After the previous season's bark is shed the colour is green; it then changes to whitish, through different shades of brown, until, when winter comes, it is a fine red.—N.

SOCIETIES.

ROYAL HORTICULTURAL.

JUNE 9.

ANOTHER large and highly attractive exhibition took place on Tuesday last at South Kensington, for, in addition to the usual fortnightly meeting of the committee, there was a special show of Orchids, which was fairly representative, though not so extensive as the show in connection with the Orchid conference a few weeks ago. A good many new and rare plants were shown, the following being awarded first-class certificates:—

CATLEYA CANHAMII.—This was the most remarkable plant shown. It is another addition to the long list of hybrid Orchids which have originated in Messrs. Veitch's nursery at Chelsea, and is one of the finest of all. It is a cross between *Lælia purpurata* and *Cattleya Mossiæ*. To describe it, it must be compared with a fine form of *L. purpurata alba*, with which it agrees in size and form. The sepals are white, but not so pure as those of the white *L. purpurata*. The lip is very fine, being large and of an intensely deep carmine-crimson with a distinct and conspicuous margin of pure white, which character, indeed, constitutes the chief beauty of the flower. The growth is more like that of *C. Mossiæ* than *L. purpurata*. The plant shown bore two flowers on one spike. It is unique.

BILBERGIA NOBILIS.—One of the finest of a beautiful genus, and among the noblest of Bromeliaceous plants. It belongs to that section of the genus having erect leaves arranged in a cylindrical form, and producing from the centre of the tuft a long drooping flower-spike, accompanied by large showy bracts which, in this case, are the most beautiful part of the inflorescence. They are numerous, each about 8 inches long, pointed and spreading, and of a lovely clear rose-pink. The flowers themselves are comparatively unattractive, being of a yellowish green. Exhibited by Mr. W. Bull.

AERIDES BALLANTINIANUM.—A beautiful new Orchid in the way of *A. suavisimum*, being like that species in growth, manner of flowering, and form and size of the flower, but differing in colour. A large group of it numbering many plants was shown by the introducers, Messrs. Sander, of St. Albans, and these showed a variation of tint in the flowers from a very pale pink, almost white, to a deep ruddy crimson. In all the forms the sepals are tipped more or less deeply with carmine and in all the spurs are yellow. The odour too is delightful, which enhances the plant's value. Some of the plants bore prettily barred flowers.

SAXIFRAGA LANTOSCANNA SUPERBA.—A variety of a well-known alpine Saxifrage of the encrusted section, remarkable in having long and dense spikes of pure white flowers. The elegance of the drooping spikes so densely covered with blossoms renders this one of the most beautiful of all Saxifrages, and it worthily deserved the distinction accorded it. A finely flowered plant of it, together with one of the original for comparison, was shown by Messrs. Paul, of Cheshunt.

CHIONANTHUS RETUSA.—This is a new shrub, the Japanese representative of the Virginian Fringe tree (*C. virginica*), which has been so long in cultivation. The new species is a pretty shrub having deep green ovate leaves, bearing clusters of pure white narrow-petalled, star-shaped flowers. These are so abundant, as to give quite a glow of white to the branches. It is said to be quite hardy in Messrs. Veitch's nursery, whence it was exhibited.

RHODODENDRON MANGLESII.—A new hybrid variety, obtained by intercrossing *R. Aucklandi* and *R. album grandiflorum*. It is a lovely addition to a rich genus, and worthily bears the name of one who devoted so much study to the *Rhododendron*. The flowers are pure white, large, and open like *Aucklandi*, and produced in dense globular trusses, as in the ordinary hybrid varieties. It was exhibited by Messrs. Veitch.

PYRETHRUM MELTON.—A double-flowered variety, similar to an older kind named *J. N. Twerdy*, which is considered to be one of the finest. The flowers of the new sort are very double and of a deep rosy crimson. Exhibited by Messrs. Kelway, Langport.

PEONIA (MOUTAN) SNOWBALL.—A most beautiful variety having large double pure white flowers, which before they are fully expanded are in the shape of a ball. One of the finest light varieties of Tree Peony that has been exhibited.

IRIS GRACCHUS.—A variety of the well-known *I. variegata*, one of the oldest of garden Irises. It is a handsome sort having flowers with honey-yellow standards, and claret-purple falls prettily pencilled and streaked. The habit of growth is good, being compact, erect, and floriferous. Shown by Mr. Ware, Hale Farm Nursery, Tottenham.

BEGONIA PRINCESS VICTORIA.—This is a single-flowered sort having very large and well formed flowers of a soft carmine with pale centre. One of the most pleasing sorts which the exhibitors, Messrs. Laing, of Forest Hill, have yet raised.

BEGONIA MARQUIS OF STAFFORD.—A double variety with rosette-like flowers of a deep rich crimson. Messrs. Laing.

BEGONIA GLOBOSA.—Also a double variety with flesh-pink flowers, large and full, of perfect globular form. Messrs. Laing.

BEGONIA LILLIE.—A superb double sort with deep pink flowers and, like all the others certificated, of excellent habit of growth. Messrs. Laing.

VERBENA FAIRY QUEEN with massive globular trusses of large blossoms, which are white with a broad pink eye. Shown by the raiser, Mr. Stacey, Dunmow.

VERBENA DISTINCTION.—Truss and flowers large, pure white, streaked and speckled with carmine.

PELARGONIUM VANITY.—A decorative variety having dense trusses of large white flowers of good form, with the petals blotched with carmine. Exhibited by Mr. Clay.

GLOXINIA MARCHIONESS OF ABERGAVENNY.—An erect flowered sort, with large and perfectly formed blossoms with a white ground, copiously spotted and freckled with purple.

TULIPS (show).—**MODESTY**, a feathered rose sort; **SAMUEL BARLOW**, a flamed bybloemen; **MR. BRIGHT**, flamed rose; **PRINCE OF WALES**, flamed bizarre; **ORION**, flamed bizarre; and **W. WILSON**, feathered bizarre. All these were exhibited by the well-known grower of florists' Tulips, Mr. S. Barlow, Stakehill House, Castleton, Manchester.

Other plants exhibited included the following: From Messrs. Veitch came a *Hippeastrum Roezlii*, a Mexican species very similar to the old West Indian *H. equestre*, both as regards the size and colour of the flower, but the shape is finer and the spike more floriferous. They also showed plants of the pretty and interesting *Abelia floribunda*, *Leucothoe Davisæ*, the new Californian shrub in the way of an *Andromeda*; *Mimulus radicans*, a new Zealand plant forming a dense carpet of foliage studded with pretty white and purple flowers; and *Celmisia spectabilis*, also from the Antipodes, with large Daisy-like flowers. A few new seedling *Gloxinias* were also shown, those named *Acme* and *Mrs. Hugo* being the best. Mr. Day, of Tottenham, showed *Cypripedium Godefroyæ*, which more resembled *C. concolor* than the plant shown by Mr. Lee at the Orchid conference, and which was figured in *THE GARDEN*. Mr. Day also sent *Odontoglossum hybridum Dayanum*, very similar to the fine *O. Pollettianum*, and, if compared, may

be found identical. From Sir Nathaniel Rothschild's garden at Tring Park Mr. Hill exhibited one of the grandest specimens of the beautiful and rare *Cattleya Wagneriana* that has ever been seen. From Tring Park also came a plant of *Cattleya gigas imperialis* bearing two spikes, on one of which there were no fewer than six flowers. Such a spike has never before been exhibited, and it showed this wonderful variety to perfection. Quite as remarkable was a three-flowered spike of *C. Sanderiana* which Mr. Ballantine brought from Baron Schroeder's collection at The Dell, Egham. The flowers were of enormous size, fully 9 inches across, we imagine, and of the richest colour we have ever seen in this *Cattleya*, the carmine of the lip being intensely deep. Mr. Buchan showed a plant of *Masdevallia ignea Boddaerti*, one of the choicest varieties of this species. Among a few Orchids from Mr. Smee's garden at Wallington was an admirably flowered *Epidendrum vitellinum majus*, bearing about a dozen spikes, and for which the gardener, Mr. Cummins, received a cultural commendation. *Galeandra nivea*, similar but smaller than *Devoniana*, was also shown by the same exhibitor, and also *Oncidium tricuspidatum*. The New Plant and Bulb Company sent flowers of *Lilium Thunbergianum marmoratum aureum*, an early flowering variety, with orange-red and heavily spotted flowers. It is evidently the same as that certificated last year as *robustum*. Messrs. Heath, Cheltenham, exhibited a variety of *Dendrobium formosum giganteum*, in which a straw-coloured blotch took the place of the orange colour on the lip of the ordinary form. They call it *sulphuratum*. Messrs. Carter showed several plants of the new Californian annual, *Phacelia campanularia*. It has erect bell-shaped flowers of the richest Gentian-blue imaginable. It was much admired. The beautiful new yellow *Carnation Pride* of Penshurst recently certificated was shown in fine condition by Mr. Leopold Rothschild's gardener (Mr. Jennings) from Ascott Park. There were about a score of plants, each bearing quite a sheaf of blossoms. A new *Croton* named *Hooperi* was shown by Messrs. Hooper, Covent Garden. It has broad leaves of a reddish yellow, edged with green and very handsome.

THE *BEGONIAS* from Messrs. Laing, of Forest Hill, were a great attraction, and a finer group has never been exhibited before; it contained the finest sorts that have been raised. The majority were unnamed seedlings having very large flowers, one with blooms measuring $7\frac{1}{2}$ inches across. Among the named sorts that we thought the finest, besides those certificated, were those named *Randolph*, *Coquette*, *Rosa superba*, and *Amy Adcock*. These were all doubles of various shades of crimson and pink. Among the singles were two superb sorts, *Blushing Bride* and *Lady Falmouth*, both as fine as could well be expected. For this group Messrs. Laing were awarded a silver-gilt medal. A silver medal was awarded to Mr. Ware for an extensive collection of hardy flowers containing an infinite variety of Bearded Irises, Pyrethrums, Lupines, Peonies, in addition to a host of other hardy flowers, both rare and common, which are usually shown from the Tottenham Nursery. A silver medal was also taken by Messrs. Barr & Son, Covent Garden, for a group of cut hardy flowers, in addition to a very fine collection of Carnations, plants representing numerous beautiful sorts, the most prominent being those named *Le Zouave*, *Irma*, *La Perle*, *Lucifer*, and *Peter Barr*, the last a beautiful white.

Messrs. Paul, of Cheshunt, showed a large group of hardy plants containing numerous choice kinds, one of the brightest being *Ajuga Brockbanki*, which has spikes of intensely blue flowers. Several other interesting plants were shown by Messrs. Paul, who were awarded a bronze medal. A numerous display of cut flowers came from Messrs. Veitch, including some very fine Stocks, Pyrethrums, hybrid Columbines, Oriental Poppies, and some uncommonly fine blooms of *Iris susiana*. A silver medal was awarded to Messrs. Heath for a large group of Orchids and other plants, and Messrs. Kelway took a bronze medal for cut

blossoms of Pyrethums, Paeonies, and other plants. Messrs. Hawkins and Bennett took a silver-gilt medal for a showy group of plants, composed chiefly of West Brighton Gem Pelargonium, one of the best scarlet zonals that is grown for market. Interspersed with these were some huge specimens of Maiden-hair Ferns about 4 feet through, and perfect examples of skilful culture. Some half a dozen large specimens of Chrysanthemum frutescens were shown by Mr. Brassey's gardener (Mr. Waterman), from Preston Hall, Aylesford. These were enormous globular plants, perfect masses of white bloom. A silver medal was awarded to the exhibitor. A large group of decorative Pelargoniums from Mr. Clay's garden at Twickenham, shown by Mr. Wiggins, and some fine double Begonias from Messrs. Cannell were among other noteworthy exhibits.

TULIPS.—It is long since so choice a collection of florists' Tulips had been seen in London as that sent by Mr. Samuel Barlow, of Stakehill House, Castleton, Manchester, who has doubtless the finest and most valuable collection in the kingdom. But the flowers were very young—too young to be seen at their best, and not a few of them remained persistently closed. In order to have florists' Tulips in all their purity of ground colour and beauty of marking, it is necessary that they should have time to bleach, and a fortnight to three weeks is required to allow the flowers to be seen to the best advantage. If Mr. Barlow's Tulips could have remained in their beds for another week or ten days, they would have been considerably larger, and time would have been afforded not only for the green of the outer petals to have grown out, but also for the outer petals to have grown to the length and breadth of the inner ones. The leading varieties were, of flamed bizarres: Masterpiece, Dr. Hardy (Storer), Prince of Wales, Sir J. Paxton, and Orion (Storer). Feathered bizarres: General Grant, Masterpiece, William Wilson, and Sir J. Paxton. Flamed roses: Mr. Bright (Hepworth), Mabel (Martin), and Sarah Headly. Feathered roses: Modesty, very rich in colour; Lady Wilton, and Charmer. Flamed byblomms: Samuel Barlow, William Parkinson, Friar Tuck, and Talisman. Feathered byblomms: Bessie, William Bentley, Mrs. Jackson, and Maid of Orleans. The breeder Tulips are all self-coloured, and represent seedling Tulips that have not yet broken into character. The best bizarre breeders are Excelsior, Horatio, and Sir Joseph Paxton. Rose breeders: Annie McGregor, Mrs. Barlow, Lucretia, and Lady Grosvenor. Byblomm breeders: Samuel Barlow, Glory of Stakehill, Alice Grey, Nimbus, and Delicata. A silver medal was awarded.

Fruit and vegetables.—A first-class certificate was awarded to Mr. Herrin for a new seedling Melon named La Favorite. It is a large, round fruit with green flesh, very thick, juicy, and delicious flavour. A first-class certificate was also awarded to Mr. R. Gilbert, of Borghley, for his new Broccoli, The Queen, an extremely fine variety, large, close, and white, and stands the test of cooking and tasting admirably. It is considered to be one of the best sorts yet raised. Among other exhibits placed before the committee was a new Fig, Pingo de Mel, from Messrs. Veitch. It is a white-fruited sort and the committee wished to see it again. Mr. R. Dean showed Lettuce White Clavigny, which maintains its high character. Mr. Divers sent well-kept fruits of Apples French Crab, Claygate Pearmain, and Gold Knob, also Potatoes Vicar of Laleham, Uxbridge Seedling, and Ashtop Fluke in good condition. Mr. Corbett sent Melon Royal Regatta, which is considered a fair variety, and Messrs. Harrison, of Leicester, showed a new Broccoli which the committee requested Mr. Barron to test at Chiswick and report thereon.

THE ORCHID SHOW was not nearly so extensive as was generally anticipated, and were it not for a magnificent group from the St. Albans Nurseries and the fine specimen plants from Mr. Cypher, of Cneltenham, the show would have been poor indeed. Messrs. Sander's group was the

finest trade collection that has been seen for many a day at South Kensington, and the exhibitors well deserved the award of a silver-gilt medal in addition to a special letter of thanks from the council, which has never before been granted. The group was composed chiefly of Cattleya Mossiae, C. Mendeli, C. Warneri, C. gigas, and L. purpurata, all of which are now in the height of their season, besides a large number of superb forms of Odontoglossum crispum, Pescatorei, and numerous hybrids, and various forms of Masdevallia Harryana, including one extraordinary variety named Arnoldiana, one of the finest yet exhibited, the flowers being not only large and of fine form, but of an intensely deep carmine-crimson, richer even than such as Dennisoni. There was also a reddish orange variety named aurantiaca, which stood out conspicuous from all the rest. Among the forms of Cattleya Mendeli was a splendid one named triumphans, remarkable for its large flowers and richly coloured labellum. There were also Cattleya lobata, very fine; the true Oncidium Weltoni, Masdevallia Schlimi, with five spikes and twenty-two flowers; many forms of the beautiful Odontoglossum citrosimum, and the finest form of Zygopetalum maxillare that has been exhibited. Messrs. Cypher's plants easily won the first prize for a dozen plants in the nurserymen's class. The group contained excellent specimens of Dendrobium Falconeri, some large masses of Cattleya Mossiae and Mendeli, Oncidium sphacelatum, Masdevallia Harryana, Dendrobium thyrsiflorum and D. Bensonae, Lælia purpurata, Cypripedium Hookeri and Lawrenceanum. Mr. Cypher also showed the best six plants, among them being fine examples of Anguloa Clowesi. The amateurs' collections were all below mediocrity, both as regards size, growth, and quality, except a group of six from Mr. Philbrick, who easily won the first prize in the amateurs' class. He had the finest plant of Phalenopsis grandiflora that has been seen for a long time. It bore two spikes, one with ten flowers, each about 4 inches across. The other plants were Lælia purpurata with a dozen blossoms, Cattleya Mendeli, Masdevallia Harryana sanguinea, a splendid variety, and Odontoglossum vexillarium with nine spikes. There was no competition for fifteen Odontoglossums from amateurs and only one from nurserymen. This was from Mr. James, of Lower Norwood, whose group contained, among others, a fine plant of the rare O. polyanthum, O. cordatum aureum, and O. Lehmanni, which has the petals of crispum and the lip of Pescatorei. The most remarkable among other Orchids shown was an exceedingly fine specimen of Odontoglossum vexillarium from Mr. Hodgson's gardener (Mr. Evans), Lythe Hill, Haslemere. It bore some twenty spikes of bloom of a deep rose-pink, and these hung on all sides of the plant in a beautiful way. Mr. Evans was deservedly awarded a silver medal for this remarkable specimen. There were classes for cut flowers of Orchids, the most noteworthy among them being those sent by Mr. Philbrick and Dr. Paterson from Bridge of Allan, the latter showing the best dozen spikes.

A full list of awards will be found in our advertising columns.

Laurustinus fruiting (p. 464).—This is mentioned as if it were of rare occurrence, and on the common sort it is not usual to see any quantity of berries, but there are one or two of the whiter flowered varieties the fruit of which is much larger and more plentiful, and which in itself is very handsome from the beautiful metallic blue lustre. In the same way some of the Privets fruit much more readily than others, and the long spiky bunches of purple-black berries are very useful for gathering for indoor decoration at a time when plants to cut from are scarce.—C.

Primula Sieboldi (p. 465).—These are invaluable for pot culture, as they stand so well in bloom in the conservatory or house, and require no heat at any time. Having seen great descriptions of the new varieties, I ordered last year a

"choice selection of named sorts" from a leading nurseryman who offered a large stock. Among all the things sent out as "new" (with new names, perhaps!) or "rare" I never saw such a set of rubbish as these turned out to be. I had been looking forward to their flowering, and was, of course, proportionately disappointed. Since there seems to be such bad sorts in the market, intending purchasers would do well to take a note for their order sheets of the strains so highly praised by Mr. Brockbank.—C.R.S.D.

LATE NOTES.

Monstrous Gloxinia (J. Boreham).—Not uncommon and of little interest.

Books (J. B.).—Shaw's "London Market Gardens" will probably best answer your purpose.

Double Rhododendron (Mrs. M.).—The flowers you send us are of the variety known as fastuosum—rather a common kind.

Semi-double Abutilon (W. C. R.).—We certainly do not think that the semi-double Abutilon is an improvement upon the single-flowered sort.

Peach blossoms dropping (A. W.).—No doubt your surmise is correct; the blossoms have the well-known appearance belonging to destruction by frost.—W. G. S.

Peat Moss litter.—Can anyone tell me if peat Moss litter, which is advertised as bedding for horses in lieu of straw, is of much use in the garden, especially for growing Lilies, Azaleas, and similar plants?—J. T.

Ink for zinc labels (S. H. B. P.).—Try from 12 to 16 grains bicarbonate of platinum dissolved in 1 ounce distilled water. Put it in a bottle and keep it well corked. Clean the labels well with fine emery paper before attempting to write on them.

Late Broccoli.—We find Sutton's Late Queen to be the best late Broccoli. We have grown it during the last three years and would recommend all who have not tried it to do so. We have a quantity of beautiful close white heads just now in perfection.—A. HENDERSON, Thoresby, Notts.

Lælia purpurata.—Just now there is a plant of this in Mr. Cypher's nursery bearing thirty-four fully expanded blossoms. Their colours are so rich and beautiful, that it would be difficult at the present time to find a more showy Orchid.—CAMBRIAN.

Renanthera coccinea.—A plant of this in Mr. Cypher's nursery, at Obeltenham, is showing a grand spike of flower-buds, which will be open before long, and all who are fond of Orchids, and can conveniently do so, should see it.—CAMBRIAN.

Calceolarias.—I send you a few Calceolaria blossoms from plants averaging about 2½ feet in diameter, grown in 8-inch pots. The foliage is very healthy and clean, though never once fumigated, and up to the present there has not been a trace of green fly. Grown as these were in a cold frame in a north aspect all winter—in fact from the time they were sown until removed to the conservatory in April—receiving no check from want of pot-room, and keeping up a luxuriant growth assisted by the constant use of the syringe, is, in my opinion, the great preventive of green fly.—EDWARD BARTON, Beechhill Gardens, Cork.

* * * Very fine blossoms, large and well diversified in the way of colour. Calceolarias seem to do well in Ireland; yours must, indeed, be grand, and at Straffan a year or two ago we saw some magnificently bloomed plants.—ED.

Naming plants.—Four kinds of plants or flowers, only can be named at one time, and this only when good specimens are sent.

Names of plants and shrubs.—*Bittern*.—1, *Ioula glandulosa* —T. Cropper. 2, *Narcissus Bulbocodium*; 2, *Polygala Dalmatica*; 3, *Cypripedium*; 4, *Scilla peruviana alba* —E.C.—Both vars. of Red Horse Chestnut (*Æsculus rubicunda*); double flowered Cherry, not *Cerasus serrulata* —W. H. Blair. —*Diplacus glutinosus* —C. A. N. —*Saxifraga aizoon* var. —J. L. —1, *Silene pendula*; 2, *Genista hispanica* (Spanish Gorse); 3, *Convolvulus Neorum* (white) —T. Rudell. *Spiraea Thunbergi*. —*Subserber*.—*Ornithogalum umbellatum*. —C. anell. —1, *Prunus Padus* (Bird Cherry); 2, *Staphylea pinnata*. —C. D. —1, species of *Cratægea* (send again); 2, *Spiraea trilobata*; 3, *Spiraea prunifolia* fl. pl. —C. Davidson. —The large woolly-leaved twig appears to be from *Paulownia imperialis*; other is *Prunus Padus* (Bird Cherry); the double bloom on Apple branch we think must be merely accidental. —T. E. Bright. —*Prunus Padus* (Bird Cherry). —*A. Jenkins*.—We do not attempt to name varieties of *Coleus* or any other sorts of popular plants. —W. S. —1, *Snowdrop Tree* (*Halesia tetraptera*); 2, *Prunus Padus* —W. Elliott. —Next week. —C. Scott. —1 and 2, varieties of *Saxifraga hypnoides*; 3, *S. caespitosa* var.; 4, *Othonna crassifolia*. —J. Haffenden. —1, *Paria quadrifolia*; 2, *Bugle* (*Ajuga reptans*); 3, *Orobancha minor*. —*Anon*. —1, *Azalea pontica*; 2, *Berberis vulgaris*; 3, *Berberis Darwint*; 4, *Cupressus Lawsoniana*. —B. H. —*Weigela hortensis nivea*. —J. Speed. —Appears to be identical with the variety named *Odontoglossum Wilkeanum*, one of the so called natural hybrids. —S. H. B. —A species of *Vaccinium* (specimen too small to name). —T. Turner. —*Sci la campaulata*. —Miss Robinson and Miss Rose. —Bird Cherry (*Prunus Padus*). —K. Penn. —*Ornithogalum arabicum*. —J. McMillan. —1, *Maréchal Niel*; 2, *Fuchsia corymbiflora*.

WOODS & FORESTS.

TRANSPLANTING AND TREE DISEASES.

IN his remarks upon "the evils of transplanting" (p. 431) "S." tells us that all the diseases of forest trees, including rot, may be traced to transplanting. He says, "Much has been written about rot in Larch and Spruce, but no cure has yet been found. Soils, extreme seasons, &c., have been blamed as the causes of rot and other diseases in these trees; but I feel sure that the plan which I propose will be an effectual remedy for rot and other diseases common to forest trees—viz., by the simple plan of raising our forests from seeds dropped in the soil where they are to attain their full growth. Were this plan to be adopted, not only would our forest trees be exempt from many diseases, but they would be in a better position to resist storms." That trees grown from seed in the place where they are to remain will root and fix themselves better in the soil than such as have been badly manipulated in their nursery treatment, and carelessness shown in not spreading their roots properly at the time of planting them into the forest, there cannot be a doubt, and, as far as this is concerned, I think "S." is perfectly right, and it would be well that tree planters generally paid particular attention to this point in early tree culture; but to say that sowing the seeds of trees in the spot where they are to grow, and that such a mode of culture would be a panacea for all the evils and diseases affecting forest trees, including rot, is, I fear, an opinion which few will corroborate.

In the first place, then, it is a well-known fact that some of the largest and best Larch trees ever produced in this country were not only transplanted, but actually grown for some time in a greenhouse previous to being planted out where they were to remain, and from the large size which the trees attained, there can be no doubt that the soil was eminently suited for their requirements, and that the work of planting had been done with great care as regards the spreading of the roots, &c. Again, in cutting trees in planted plantations that contained a variety of soils and subsoils, how does it occur that Larch growing upon such portions as consist of loose, open, friable soil are all sound and free of rot, while trees growing in the same plantation and planted at the same time as the former, upon stiff clay, hard till, poor dry shingle and loose sand, are found to be affected with ground-rot and pumping? Now, according to "S.'s" theory, the trees should either all be sound or all affected with rot—no matter about the texture of the soil; and where he could have gathered such experience as to warrant such a proposition, is a mystery to me. We shall now take a brief glance at trees growing from seed in their natural habitats; and, in the first place, it is well known that Larch growing from seed on their native hills often suffer serious damage from ulceration on the stems, and I have found the Scotch Fir in the natural forest suffer severely from the same disease, while planted trees of the same kinds in the low country suffer comparatively little in this way.

In cutting down Mountain Ash, Aspen Poplar, Goat Willow, &c., in the natural forest I have often found the trunks of such trees at different stages of their growth affected with heart-rot to such a serious extent, that the stems were a mere shell, and although the bark on the trunks of many of these trees was clean and fresh looking, yet the interior was a mass of rotten corruption. Other trees affected in this way generally show symptoms of decay by their general appearance in a more decided way than the former, and the bark is often covered to a certain extent by a growth of Mosses and Lichens, so that one can judge pretty well from the exterior appearance what the interior will be when cut down, but the former class of trees is rather an exception to this rule.

The rearing of forest trees from seed in the place where they are to grow may be prosecuted with

advantage in some parts of the country, and under exceptional circumstances, but, as a general rule, such a mode of tree culture is unsuitable for the majority and requirements of properties in this country, and to say that such a mode of culture would prevent all sorts of tree diseases is absurd.

J. B. WEBSTER.

GROWING AND SELLING WOOD.

THE selling of wood is a question of greater difficulty very often than the growing of it, and it will be the endeavour of these few remarks to show in a brief way how that is. It has frequently occurred to me that the grower of timber does not get anything like value for the crop he grows when disposing of it, or any part of it, in the interim stages of growth. How is this? Why, because there is no competition in many localities, and in most places what competition there is, is without extent or animation. Now, this is a state of matters not so much due to the general inactivity of trade as to the present system of disposing of timber—an old and respected system no doubt, and may have met the requirements of the past very efficiently, but is now almost defunct, and is quite inefficient to meet the requirements of the present. But the system can be amended; it requires to be amended, and it ought to be amended, and without delay. Here, though, the question crops up, how is that to be accomplished? Well, the answer is at hand.

In the first place, timber merchants are not at all indispensable as parties in the transfer-sale of wood. Hitherto they have intervened merely as middlemen, or, in other words, as self-constituted agents between the producer and the consumer, and as such they have had undisputed sway to levy whatever commission they deemed sufficient to reward them for their service; they have taken the nucleus of profit as their share, and have given the husks to the producer as his share. In fact, it is a very difficult matter for proprietors sometimes to dispose of their timber at any kind of a price, and never at a price representing their just right. Why, then, should such a condition of affairs continue? Not for any conceivable reason. But what is the just right of the proprietor? His just right is the full price of the timber sold (when sold to the consumer direct), whether in the manufactured or unmanufactured state. It is not necessary here to enlarge or to advance arguments to demonstrate how a proprietor should not have any intermediate agent between himself and the consumer. Offer a quantity of timber or trees to a timber merchant, and most likely he will answer, "Oh, well, I will give you so-and-so for it if you like, but remember I do not require it, and the offer I make you for it is much more than it is worth; and, withal, I have the offer of a lot there, and another lot yonder, and another elsewhere, all of which I can buy for the same money as I offer you for yours—which, by the way, is 10 miles nearer the railway station or port than yours; therefore the offer I make you is good. Do you accept it?" What other alternative is there with matters so conducted as they are at present? None. Wherefore the proprietor must either sell his wood for such a price as is offered, leave it to lie and rot on the ground, or leave it to grow and die, which is not desirable. But there is an alternative, and one, if once properly started and universally adopted by all proprietors, would be prolific of much common benefit to all. Because in the first place it would dispense with the middleman (or timber merchant), and would give the proprietor his former profit whatever that might have been, together with the profit of the now-dismissed timber merchant.

Every grower of wood ought to have a saw-mill (to manufacture it) either fixed or moving, and the latter would be of the greatest utility on properties with a large quantity and area of wood. In these days of steam and traction engines the labour in conversion and transition of wood is made simple. What a power the traction engine must yet become in saving time and labour, and what a power it might be in the economy of rural traffic! Why, all the exports and imports of

rural commerce might be carried hither and thither at a very cheap rate. What a boon for farmers and all dwellers in the country; lime carried to the field, coal laid down at the doors; in a word, the proprietor's engine could bear away the fruitful produce of the estate and carry back all the necessities of country life. The tons of wood which go to waste (for want of a market, or of proper means to manufacture it for the market) would then be cut up and stored away until it could be profitably sold. This is an important and an urgent question (quite possible of being realised) and very near to proprietors, and well worthy their best and combined consideration. Land, if not yet cheap, is getting cheaper and ever cheaper, and wood is valuable and must be more so in future.

GLENDYER.

Charcoal burning.—I am anxious for a little information as to the mode of making charcoal. I require only a small quantity as a supply during the winter. Any advice upon the subject will be welcome.—A. DONALD.

* * The readiest way of making charcoal is to cut up the wood into lengths of about 2 feet 6 inches or so, and if large, split it into quarters and lay it somewhere to dry, after which it will be in a fit condition for burning. In stacking it preparatory to this, a stake should be driven into the ground, around which a heap of shavings and small sticks should be piled, and against this the wood for the charcoal should be placed close on end in a regular circle, allowing just sufficient room between each piece for the fire to travel freely. The stack may consist of one layer or two, according to the quantity to be burned, but it is better to build it in the latter way than to have the circumference large, as it is not only easier for covering up, but can then be charred with greater regularity. As soon as the stack is formed, it should be covered in with a good thickness of straw, except just 2 feet or so of the middle left open to light it and set the fire going. The straw on, the next thing is to cover it with from 9 inches to 1 foot thick with soil or sand; when all is ready, apply the match and set the fire blazing. When once the fire gets a fair hold of the wood, the middle must be covered in, and holes pierced with a stake through the soil to let out the smoke and draw the fire to the sides till it gets hold of the mass, when smaller holes should be made and the others stopped, the object being to prevent any flame or a too rapid combustion. It often happens that the wind will drive all the fire to one side, to obviate which the holes there should be closed, and encouragement given by opening others in the opposite direction to draw it there, that the charring may be regular throughout. To prevent waste by over-burning, much watchfulness is necessary, as if the fire gets too free anywhere, the wood is soon consumed to ashes, instead of being simply blackened through without losing much of its bulk. When the charring is complete, the fire may easily be smothered out by patting the soil close with the back of a shovel, so as to prevent all escape of smoke, when, after a day or two, the heap may be uncovered and the charcoal withdrawn.—S.

Pine saw fly.—I send you a sprig of Pine covered with small caterpillars. During the season they grow nearly as long as a man's finger and are most destructive, entirely stripping the tree of last year's growth. They do not touch the young shoot. When full grown they are about the same colour as the bark of the tree. All the trees in the plantation are covered with it. I got the branches in Caithness-shire. Can you tell me the name of the insect, and how it may be got rid of?—C. DOWNIE, *Edinburgh*.

* * The Pine shoot sent is attacked by the grubs of the Pine saw fly (*Lophyrus pini*), but they never attain the size of "nearly as long as a man's finger;" their usual length when full grown is about an inch. When the trees attacked by them are not too large, they may be picked off or crushed by a tight squeeze of the hand to the shoot on which they are feeding or sprinkled with naphtha;

larger trees may be syringed with a solution of hellebore, or a quarter of a pound of soft soap and a lump of washing soda the size of a Walnut dissolved in 2 gallons of water, or 1 lb. of soft soap and 1 lb. of flowers of sulphur to 10 gallons of water. Many may be shaken from the trees on a coldish morning. The grubs sometimes make their cocoons in the branches, from which they should be picked; others make theirs under the trees among Moss, rubbish, or loose soil, which should be scraped together and burned, or turned over and well beaten with a spade.—G. S. S.

FORMING OAK WOODS.

As the method of raising Oak woods from stools has been successfully followed in the cases of some large woods that have recently come under my notice, and this is the season for singling out the shoots on the Oak stools, a few words as to the way in which the work is generally done may be of service. Nothing can be done to advantage in singling shoots of less than two years' growth; but as the stools that were cut down two years ago will have produced a considerable number by this time, if they were left untouched, they would unnecessarily exhaust the strength of the roots, and would produce brushwood of little use but for the fire, whilst by a fair amount of attention and at a moderate cost they may be turned to much better account. We must first consider the strength of the stool to be thinned, and, in accordance with this, leave more or less shoots upon it. This number may vary from one to four or five. Whatever number is decided upon, it is important to leave only the straightest and most promising of the shoots, and to be careful that they are as equally disposed round the stool as possible. It is not well, however, at this first cutting to take away too many of the shoots, as if too small a number is left there will not be sufficient channels to conduct the juices away from the roots, and the result will be that these juices will find an outlet by forming new shoots at the points where the original ones were removed. On the other hand, if too many are left, the sap will be too widely distributed and the shoots will become stunted and bark-bound. It will, therefore, require a little judgment on the part of the forester to guard against these extremes. The best way to remove these superfluous shoots is to use a wedge-shaped chisel with a handle some 3 feet long. To push them off by means of this instrument is better than cutting them, as if they are cut the stools will be more apt to shoot at these points. Very little will now be required to be done for another two years, when the stools should again be cleared of all young growths that have risen up during the time. In another two years, *i.e.*, the sixth from cutting, stools which have been treated in the way here recommended should be freed from some of the shoots left at the first thinning. Where five were left it will probably be necessary to remove two, and these of course will be the worst. The three that are left should stand round the stool as equally as possible. Where only four were left, cut out two, and leave the two best as nearly opposite each other as circumstances will admit. Up to this point the treatment would be the same whether intended merely for the growth of Oak poles for cutting at fifteen or twenty years' growth, or for the raising of trees. If for the former, little more need be done; but if the latter, it will be necessary to remove a third part of the stands by the twelfth year after cutting, or say to thin them out as nearly as may be to a distance of 7 feet or 8 feet apart. At periods of five years or so other stands must be removed as the growth of the young saplings require. The length of time this process will have to be continued before the young trees will attain a marketable size must, of course, depend on the circumstances of soil and situation, but that young woods can be successfully raised from stools does not admit of a doubt, as I now know of woods (as previously mentioned) that are returning a good revenue to the owners that have

been grown from stool sticks. One drawback to trees grown on this plan is that the butts just above the roots are somewhat trumpet-shaped, and the wood is often defective for a distance of a few inches, but these are minor matters that do not greatly tell against the usefulness of thus growing the Oak. The cutting and barking of trees for the present year has nearly come to an end, but a word of caution as to the treatment of the stools intended to remain for subsequent growth may not be out of place, and that is that the bark should on no pretence be taken off them. They should be left not more than 4 inches above the surface of the ground, and the edges of the bark where the tree has been cut should be pared, that the rain may readily run off, as if left to lodge upon the stools it will seriously interfere with their subsequent growth and vitality.

J. N. BLUNT.

Selecting Oak timber.—We have to live and learn, and I have yet to learn the lesson respecting the strength of Oak. If "Yorkshireman" carefully reads the paragraph (p. 486) he will see that I did not say that "Oak that is grown fast in good soil is deficient in strength, &c." What I stated was that when Oak is grown on a peculiarly rich soil it is deficient in strength in consequence of rapid growth, and therefore has coarser fibre. That this is the truth about Oak grown on very rich soils I still aver. Indeed, I know instances where on rich loamy soils the Elm grows to perfection, but the Oak on the same estate is always shunned by the timber merchant, as he knows by experience that it will burn his fingers if he touches it, and a "burnt cat dreads the fire." On the other hand, on cold clay land at a distance of some few miles from this estate the Elm does not thrive at all, and the soil is of comparatively little use to the agriculturist. Here the Oak grows to perfection, and the man who wants reliable stuff knows from experience where to find it. When "Yorkshireman" speaks of Ash I am ready to agree with him, as everyone who has had any experience of timber knows right well that, other things being equal, the faster the Ash grows and the younger it is used the better and tougher it is.—D.

"Pipe-stave" Oak.—This is a class of Baltic Oak diverted from the hands of the cooper, one very popular a few years ago, but now little used. These staves, although but 6 inches broad, are cut into boards, and jointed up for carcass work, drawer sides, bottoms, panels, &c. It is remarkable in having the "medullary rays," or "silver grain," on the face, and in being very kind and easy to work. Imported Oaks have never traversed beyond the line of their natural colour. It is fair to suppose that brown, being the first stage of decay, it would, as a colour, be common to foreign work; be this as it may, we have never seen it as an article of import in the wood trade. From this circumstance certain varieties of English Oak bear away the palm in point of colour, beauty, and value, and hence we may say with the old shipwrights, "There is nothing like English Oak."

Oak galls.—According to Dr. Hollis, these are divisible into two classes: one-celled, to which belong the woody Oak galls and the Currant galls; and many-celled, such as the spongy Oak Apple and the Oak-root gall. He believes that most, if not all, are formed during the growth of the leaf, the eggs being laid in the bud; and that the different layers of the leaf can be made out in those of the gall.

The Turkey Oak (*Quercus Cerris vulgaris*), sometimes called the Oak of the Levant, is said to have been brought to this country in the year 1735 (see Johnson's "Gardener's Dictionary"). Its straight and somewhat rapid growth would make it a valuable addition to our forest trees were it not for its liability to be attacked by worms. The specimen sent comes from a tree that was felled many years ago and had occupied the ground on which it stood about five-and-twenty or thirty years. I had the trunk sawn up into inch boards,

and after they had been laid by for a few years I found that both sap and heart wood had been perforated in several places by those destructive insects, and on inquiry I learned that in this neighbourhood the tree had a bad reputation, and was carefully avoided by the wheelwrights and carpenters when they made their purchases at wood sales. But as an ornamental tree, what can be said in its favour will be found in a full and very interesting account of the tree by Mr. George Nicholson, of the Royal Gardens, Kew, in a recent number of THE GARDEN.—B. S.

NURSES IN YOUNG PLANTATIONS.

I DO not think the difference of opinion on this subject between your excellent correspondent "Glendye" and myself will be found to be so wide when we come to understand each other more clearly. I confess, at the outset, that I must have misapprehended the object and meaning of planting Scotch Firs as nurses among deciduous trees, like the Oak, if an Oak is just as good as a Scotch Fir "to shelter and elongate each other," as "Glendye" states, and that the only reason why Scotch Firs are preferred is that they are cheaper and fewer of them required. To quote correctly, "Glendye" writes: "An Oak is in no material way better nursed by a Scotch Fir than by Oak provided all the while that Oaks are sufficiently close planted to shelter and elongate each other;" and in the same column he says, "the question resolves itself into one of economy." Very well! The width at which authorities recommend young trees to be planted does not vary much, all advising tolerably thick planting at a pretty uniform rate per acre, so that the price of the trees should determine the question of "economy"; and on this point the nurseryman's catalogue does not support "Glendye's" plea. I refer to two of the most extensive growers of forest trees in England, and one, I find, offers English Oak of from 1 foot to 2 feet at from 30s. to 40s. per 1000, Scotch Fir of the same sizes at exactly the same figure; and the other offers both at just about the same relative prices; and so I believe do all. This consideration in favour of the Scotch Fir therefore falls to the ground, and as for the saving gained by planting fewer of the Firs, I will wait till I get "Glendye's" calculation of the saving on that point before I say anything about it further than to state that I think it will not be worth mentioning when we come to set the value of Oak thinnings against those of Scotch Fir. Unless, therefore, my statements are wrong as above given, I submit that "Glendye" corroborates what I wrote entirely. As to Larches being used as nurses, I approve of them—that is to say, I prefer them to less valuable trees where the ground for any reason cannot be planted with one kind.

YORKSHIREMAN.

Timber of the Horse Chestnut.—Notwithstanding its possessing valuable properties as a landscape tree, were its timber as useful as that of the Elm, I should not like to see the latter tree banished from our hedgerows to make room for it. If it was as widely distributed as the Elm, its general effects would be too dense, and in a sense oppressive. This need not worry us, however, as so far as I know its timber is of but little value, and it will never be very extensively planted. With regard to the propagation of this tree, London says, "The nuts if wanted for seed should be gathered up as soon as they drop, and either sown or mixed with earth, because if they are left exposed to the air they will lose their germinating properties in a month." He also adds, "Some nurserymen cause the nuts to germinate before sowing them in order to have an opportunity of pinching off the extremity of the radicle, by which means the plants are prevented from forming a tap-root, or at least if a tap-root be formed, it is of a much weaker description than it otherwise would be, and the number of lateral fibres is increased. When the tree is intended to attain the largest size in the shortest time, the nut ought to be sown where the tree is finally to remain, because

the use of the tap-root is principally to descend deep into the soil to procure a supply of moisture, which in dry situations and seasons can never be obtained in sufficient quantity by the lateral roots, which extend themselves near the surface in search of nourishment and air.

SELECTING AND SAWING WOOD FOR FENCES ON ESTATES.

As the selection and sawing of wood for fencing forms no inconsiderable part of the forester's duties, a few words on the subject may be of interest. According to the different positions they are intended to occupy, the purposes for which they are employed, and whether erected for permanent or only temporary utility, the form of fence and the kind of material used in construction would vary greatly. When a really effective and durable park or other fence is wanted, there is nothing equal to a close paled one constructed entirely of Oak. This form is expensive, and care should be taken in selecting proper material and also in sawing it into the required dimensions. On estates where Oak grows plentifully there should not be much difficulty in fixing upon the most suitable trees. After the trees have been chosen, the next important point is that each part of them is allotted to its proper purpose. Although the posts will be the first thing required, this is not the order in which the materials should be prepared. For a fence where Oak pales are to be used, the pales should be first seen to, as it is of paramount importance that wood of the straightest grain and of the best quality only should be employed for the purpose. This, indeed, can sometimes be obtained so clear in the grain, that they may be cleft with but little waste. When this is feasible, it should be done in preference to sawing, as not only is the effect of the fence heightened by the cleft surface being naturally rough, but the strength of the pales is much greater from their being split with the grain of the wood, and consequently better able to stand a transverse thrust. It is not always that such wood as this can be obtained when the pales are required some 5 feet or 6 feet in length; therefore the next best thing is to have them sawn from straight trees and butt lengths only. When this is carefully done from wood of good quality, the heartwood only being used, these pales may still be considered as practically everlasting. As each pale for a close fence is required to lap over its neighbour, the pieces require to be cut in the way technically known as feather-edged. This may be done as shown in fig. 1.

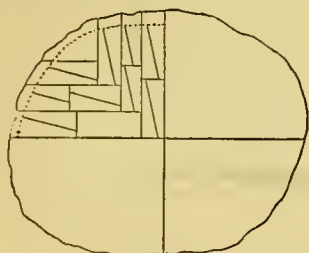


Fig. 1

Here we have the section of a clean butt of Oak cross-cut to the length required. This round log must first be reduced into quarters, as shown in the diagram. This is best done (where such machinery is employed) on a bench similar in construction to the large rack bench recently illustrated in THE GARDEN, and, when this is effected, transferred to a smaller bench with a canting fence. Each quarter is here reduced into planks of sufficient thickness to allow of a diagonal cut being afterwards taken to reduce each plank into two pales. They will not generally be needed so thick as this, but we will suppose, as an illustration, that we require pales of 1 inch in thickness at the thick edge and half an inch at the thin edge. All we have to do is to cut the planks fully $1\frac{1}{2}$ inches thick to allow for the

waste by the diagonal cut. This diagonal cut is taken by the saw-bench fence being adjusted to stand the half inch out of the perpendicular. It is important that the planks, in order to be as much as possible in the line of the medullary rays, should be taken off alternately, viz., each plank at right angles to the last. After these planks are sawn, and before the diagonal cut is taken, all the sap wood should be removed from the outside edge and only the heartwood used, and if the plank as it comes from the saw should be too broad, a flat cut before the diagonal cut is made will be found to overcome the difficulty by reducing it to half the width. In cutting up it will be observed that the pales will not be of a uniform width, but this is relatively unimportant, as by being prepared in this way the most is made of the timber, and, what is a great consideration, the sawn wood will effectually resist the action of the sun and the wind, which it would not do if cut in any approximate degree parallel to the concentric circles. The rails now demand our attention. The best form for these is that known as the "arris." These, next to the pales, require the best timber, and only the heartwood should be used. The actual size, of course, must be regulated by the strength required in the fence. The section of the rail, which is really an isosceles triangle, is shown in fig. 2.

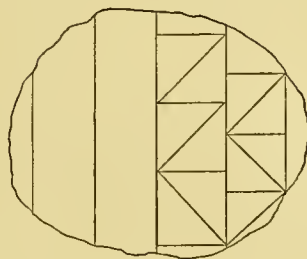


Fig. 2

The greatest advantage of this shape of rail is that it presents an inclined surface to the weather; consequently there is no lodgment for the wet. The way in which the rails are cut will be understood by referring to the figure.

The tree is first sawn into planks, the saw cuts being represented by the vertical lines. These planks are next sawn into square scantlings, as indicated by the short horizontal lines, each of these squares being ultimately divided into two rails by the diagonal cuts. Lastly, in considering the material for this fence, we come to the posts which have to support the whole erection. These, when possible, should be sawn from the trees large enough to cut at least four posts in order that a line may pass through the centre, and no complete concentric circle be contained in any one post, otherwise they will be liable to be torn about by the weather, as explained in the case of the pales. If these directions, which I trust I have made clear, are carefully followed, we shall have material for a fence that is practically imperishable. Where a temporary erection only is needed for protecting young hedges and for similar purposes, there is nothing better than the common four or five-rail fence. Larch, when it grows on an estate, should always be used in preference to any other wood, but when this is not to be had, a fence that will answer for some years may be made by using small Oak saplings or even limbs of the Oak for posts, and Scotch or Spruce Fir for rails; indeed, Elm will make good rails, but may generally be turned to better account. The use of Elm for posts should never be attempted unless there is absolutely no other wood within reach. Whether Larch or Oak is used for the posts, a very good size in the log is about 8 inches in diameter, a centre cut being taken to make two half-round posts. In using up Larch it will generally be more convenient to use the larger pieces for rails, as where they have to be squared, which they should be, it will be found that the large stuff cuts up more economically. A good length

and size is 10 feet long by $3\frac{1}{2}$ inches deep and a trifle under 2 inches thick. In erecting "bays" of this length it will be necessary to have a "stay" driven into the ground at the centre of each "bay" and nailed to the rails. The posts may be about 7 feet in length to have a good hold of the soil, but this, of course, will be subject to variation, as where the subsoil is rocky much less hold will suffice than would be the case with clay. These main posts should always be morticed and the rails inserted, as nailing is a clumsy and unsatisfactory way of fixing. Where steam machinery is used, it will be found useful if a boring apparatus is attached to the saw-bench for boring the holes; but for finishing the mortices, a quick handy man with a chisel and mallet or a small axe will be found better than the further use of machinery, as so long as the core is properly taken out no very great finish is necessary. D. J. Y.

WOOD OF ENGLISH ELM.

THE wood of the English Elm (*Ulmus campestris*) is generally of a rich brown colour, hard, tough, and crooked in the grain, being consequently difficult to split or to work up. Its medullary rays are either altogether wanting, or else very difficult to distinguish. This tree may easily be known by its alternate habit of growth, each succeeding year's shoots springing in alternate order from the sides of those of the previous year. It is common to the central and southern parts of Europe, and particularly to France and Spain, and it is also found in the western parts of Asia. When the timber has to be kept unused for any length of time after felling, it is better immersed in water. The strength of its lateral fibre causes it to be much sought after for making blocks for ships' rigging. It was formerly used for keels of ships and as gunwales for men-of-war. Now it furnishes naves for wheels, furniture, coffin boards, pumps, and piles, and is used by carpenters and wheelwrights generally. The timber is but little liable to shakes of any kind, and its sapwood proves to be nearly as durable as the heartwood. Without great care, Elm plank warps very considerably after sawing. The pruning of Elm trees is generally followed by rapid decay of the stumps, and when these are of large size the timber soon becomes injured. In some of the midland counties the trees are kept closely pruned up from the time they are young, and though they are thus rendered very unsightly, the practice is supposed to be favourable to the growth of tough and gnarled nave timber. The timber should be winter-felled, and is best cut down between November and February. It was formerly extensively used as weather-boarding in the construction of houses in Kent and Essex, and wherever fuel for burning bricks was scarce. B.

The Larch in America.—The profit of growing the Larch is not yet understood nor its value for fence posts, Grape stakes, &c., after seasoning one summer. It does best when planted closely in rows 4 feet apart and 3 feet in the row. Planters should procure small plants from the large growers. Keep them in nursery rows two years, and, most important of all, set them where they are to remain at the earliest possible moment in the spring. Mr. J. H. Masters, one of the largest planters in the State, says: "Plant in rows 4 feet by 2 feet, which will give a large profit in posts and poles." He urges very early planting. Mr. Samuel Barnard says: "The Larch which I think will prove of great value on rough and broken lands where they are found on a farm, and on the hills of Western Nebraska, has done well with me. Trees planted ten years are 20 feet in height, and measure 9 inches to 15 inches 1 foot from the ground. It does best when planted in rows 4 feet apart and 18 inches in the row, 8700 to the acre. Its own leaves will soon cover the ground, keeping it moist and entirely prevent weed growth." The much abused Cotton-wood (*Populus*) has been a blessing to the poor settler whose means would only allow his planting the outtings or seedlings pulled upon the sand bars of the rivers. These soon gave protection from the

fierce winter storms which sweep over the treeless prairies and an early supply of fuel. As soon as he is able to secure the plants or nuts, the Cottonwoods are only left to protect the second planting of Walnut, Ash, Catalpa, and the better kinds. The Catalpa speciosa promises to be the leading tree for forest planting. One man the past spring planted 80,000 on lands of his own 250 miles west of the Missouri River.—*Gardeners' Monthly*.

WOOD OF THE WILD CHERRY.

As an ornamental as well as a valuable timber tree the wild Cherry is but too little known, at least in this country. Many points in favour of it might be adduced, such as immunity from disease, rapidity of growth when planted in suitable soil, closeness with which it can be advantageously planted; and last, but by no means least, value of the timber obtained.

When thinning the patch of woodland in which these trees occur we had occasion to remove several, the timber of which was of excellent quality and remarkable for the large size of its medullary processes, which give the longitudinal section a bright satiny lustre and rendered it well suited for ornamental cabinet-work.

As an ornamental tree the wild Cherry is also valuable, for, during early summer, when laden with its pure white flowers, or again in autumn, when myriads of the shining black fruit hang in clusters from its branches, it will be readily admitted that few woodland trees have a more lovely or conspicuous appearance. In Scotland, on the banks of the Findhorn, and in Devon many fine examples of the wild Cherry may be seen, ranging in height from 30 feet to 43 feet, and girthing at 3 feet about 7 feet in circumference of stem. This is, however, about the largest size to which they attain in that district, although in many other parts of Scotland much finer specimens may be seen.

In a low-lying and rather damp piece of woodland, near the junction of the Conway and Carnarvon roads, may be seen some of the finest specimens of the Gean, or wild Cherry, to be found in this country. The soil in which these trees are growing may best be described as gravelly loam lying upon slate rock, with an alluvial surface from time to time deposited by the Ogwen River during floods. As will be seen from the following figures, several of these trees have attained large dimensions, and are still in a very healthy, thriving condition: No. 1: height, 70 feet; girth of stem at 3 feet and 5 feet, 6 feet 4 inches and 6 feet 3 inches respectively. No. 2: height 70 feet; girth of stem at 3 feet, 6 feet 1 inch; and at 5 feet, 5 feet 10 inches. The boles are remarkably clean and straight, and with a very gradual taper.

A. D. WEBSTER.

Penrhyn Castle, North Wales.

PRESERVATION OF TIMBER.

OVER 200 years have elapsed since a patent was taken out to preserve wood from decay; but the means employed by the inventor of that period were cumbersome as well as costly and inapplicable, except on dry land. The idea was to plaster constructions of timber with a coating of clay. To speak modestly of the progress which had been made in the same direction in the interval, it has not been great. Successive inventors have struck out plans for arresting rot by permeating the wood with creosote or chemical solutions of different kinds; but none of the methods adopted answered either the need or the expectation. The process of creosoting timber is decidedly antiseptic; the vegetable germs are destroyed, but then the moisture is driven into the centre, and the material rendered more inflammable. Then we have had Burnetising (so called after the name of the inventor) and kyanising; but though both have good qualities they are open to objections, which are claimed not to lie against a system, the inventor of which was the Rev. Dr. Jones. Dr. Jones made several experiments to show that his

patent will not only avert dry-rot, but absolutely cure it, and render timber considerably less liable to the action of fire. The first experiment was tried on two pyramids, constructed by placing a large number of pieces of wood together, one being "pickled" with the preparation and the other unprepared. A pint of petroleum was placed on each other, and whilst all that remained of the unprepared timber was the usual residuum of ashes, that which was soaked with the preparation remained almost intact.

The next experiment was that tried on a barrel of the usual Government size, under the head of which was placed a quantity of gunpowder, wrapped in a piece of tissue paper, and then enveloped in brown paper prepared with Dr. Jones's solution. Though subjected to the heat caused by petroleum being poured over unprepared shavings, the gunpowder did not explode even when the flames were directed to the interior of the barrel. When taken out the gunpowder was found in precisely the same condition as it was prior to being subjected to fire. The third experiment was that of setting fire to two wooden houses, one being prepared by the process and the other not so treated. In the instance of the former, though subjected to the heat caused by a large fire being placed in the centre of the basement, the floor was but slightly charred; in the other, as might have been anticipated, the flooring was completely burnt, and, had time been allowed, the whole structure would have been destroyed.

A fourth experiment was that of subjecting a wooden box, of several inches thickness, to the flames of a fierce fire for some fifteen minutes. When taken out the exterior of the box was but little charred, and, on it being opened, a parchment deed, to which a large seal had been attached, was found unharmed, the sealing-wax itself not presenting any appearance of having suffered from melting. After these tests of the efficacy of the treatment had been concluded, those present were shown a piece of timber taken from her Majesty's ship "Lord Clyde," which had been restored from a state of almost pulp to its normal condition.

NOTES ON RECENT NUMBERS.

Spruce Fir timber (p. 532) is stated to be "not of much value," and as a rule the timber merchants will not give much for it, but for home use, in some parts of England, it is scarcely to be dispensed with, unless indeed foreign deals are to be bought as a substitute. In some places where the Scotch Fir is practically useless, and the Larch, if not altogether a failure, is required for out of door use to stand the weather, and in cases where the extra labour of working Oak would cost more than the job was worth, it is chiefly on Spruce that one must rely for all work which will be permanently under cover—such as rafters, doors, &c., both in houses and farm buildings. For ladder poles, Spruce is almost the only home-grown tree, as a rule, that one can use, and where Weymouth is not much grown it comes in handy for shelves, light boxes, and tables. The tree itself is quick growing, pleasing in appearance, and affords good shelter; and on the whole possesses merits which must prevent it from disappearing from the list of our timber trees for some time to come, at all events in some parts of England.

Nurses in young plantations (p. 532).—The necessity for these will, of course, depend to a great extent on the position and aspect of the new plantation. In some open and exposed situations it would be almost impossible to get the young trees to grow unless planted thickly together to protect each other. Evergreens are often put in to shelter deciduous ones, but there is this disadvantage in planting as nurses a different sort, that although very nice schemes may be laid out at first as to the thinning, they "Gang aft a gley, and leave us nought but grief and pain for promised joy," because it does not follow that numbers three, six, and nine in the

row, which are the deciduous ones, grow so well as their evergreen neighbours, and it results that a good growing tree has to be cut down for the sake, perhaps, of a poor sickly one. If, on the other hand, the plantation is all of the same sort, with the exception, perhaps, of a protecting belt of hardy and strong growers round the outside, it is not necessary to follow any strict rule as to the thinning, but the worst may be taken out and the best left as far as possible. "Glendye" has so well indicated both the name and functions of "nurses" which were assailed, that it is unnecessary for me to defend their use, but what I wish to point out is that when a special crop of timber is required, it is so much better to have the nurses of the same sort, then the thinning afterwards may be carried out so much more easily, and with such much better results.

A load of bark (p. 533).—We all agree, I am sure, with "Wilts" in the desirability of having our weights and measures the same, but unfortunately neither the provisions of Magna Charta, nor a good deal of subsequent legislation on this point, have entirely removed the evil. I used the term "a load," but took good care to add that it consisted of 2½ tons. A curious list might be made of all the variations and anomalies in weights and measures, many of which it takes some time to learn and become accustomed to. Nearly all farm and garden produce is disposed of on a special scale peculiar to itself, and the different markets also vary. The remedy as pointed out lies chiefly with the large buyers, and one would have thought that for their own sake they would have endeavoured to simplify matters.

Sussex.

C. R. S. D.

Hay from woodlands.—The cutting of Grass for hay in young plantations and on the drives and margins of the woods is a very common practice. Whether the proprietor gets the hay, or the value of it, in all cases I do not know, but when he does it is questionable if it be worth the trouble to him, while there can be no doubt about the injury done to the plantations by robbing the soil of its produce without giving any return for it. The crop of Grass is sometimes very heavy and rank, and ought to be cut down while the trees are small, but should not be removed. In dry seasons like the present it affords invaluable protection to the roots, and keeps the ground moist—acting as a mulching of manure, in fact.—Y.

Soil for Larch.—The note in THE GARDEN (p. 434) reminds me that Mr. Michie in his book on the Larch says, "If any general term can express the quality of Larch-producing soil, it is that adapted for growing Barley. The soil adapted to Larch, minus the manure and cultivation, is that which Barley delights to grow in." Another writer reviewing the book does not think this practical, and quotes as an instance chalk downs where Barley will grow, but Larch will not. Which of these two writers are right? The former definition may be too wide, but the latter is wrong in saying Larch will not grow on chalk, as I could point to instances in my immediate neighbourhood where quantities of Larch are growing on the chalk formation.—D. J. YEO.

Price of bark.—"C. R. S. D." states (p. 510) that bark is now selling at £13 a load of two tons and a quarter, which is something like £5 15s. per ton. Is this not a misprint or a mistake in some shape? If not, I, and I am sure many other land agents in these times, would be glad to know where such prices can be obtained for bark.—A PERPLEXED LAND AGENT.

The timber of the Ash.—The timber of the Ash is in good demand for many special purposes. Nothing has yet been found to compete with it as oars for boats.

Mr. Glads one considers Yew the most difficult tree to fell; next come Beech and Ash. Oak, though very hard, fells well; but the easiest of all is the Spanish Chestnut.

Larches in Galloway.—Mr. Webster has misunderstood me. I spoke of the Larch tree at Galloway House as the biggest in the county (of Wigton), not in the country. I will try and obtain the measurements for him.—SALMONICEPS.

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"This is an Art
Which does mend Nature: change it rather: but
THE ART ITSELF IS NATURE."—Shakespeare.

ROSE GARDEN.

SOUVENIR DE LA MALMAISON.

NOTWITHSTANDING the fact that this Rose is well known and appreciated in private gardens, its value as a market Rose is not everywhere understood. To make this clear, it is necessary to say that every Rose has its season of flowering, and there is not one that demonstrates this truism so plainly as the Souvenir de la Malmaison, because, do what you will with it, one can hardly get a perfect flower on the strongest of plants before the end of August, and it is this character which makes it so valuable for market purposes, because it is capable of producing a large number of flowers at a time when most other varieties are nearly, if not quite, over. I have noticed that one or two large growers of market flowers in the neighbourhood of Bristol have recognised this trait in the character of this Rose, and have treated it accordingly. It was not until I saw it growing in warm and sheltered positions in the form of huge bushes that I understood its full capacity for furnishing flowers during the autumn months. Standards of it or small bushes give but a poor idea of the number of flowers which it is capable of bearing; on more than one plant early in the month of September last I counted between twenty and thirty buds just ready to open, although quite that number had been taken from the same plants only two days before. Still, there was every prospect of their going on flowering for some weeks longer, but not quite such numbers of flowers could be expected. Most of the plants, but not all, to which I am alluding were growing upon their own roots; the others were on the Manetti. If the own-root plants were not the best, they were quite equal to the others. The largest was between 4 feet and 5 feet high, and as many yards in circumference. The chief fault in this Rose is that it is not a good white, but in the bud, a state in which it is always used, it is so nearly white, as to be a very good substitute when other white varieties are scarce. As a matter of fact the colour does not appear to be an objection, for no difficulty is experienced in obtaining a sale for it, and at a season when the demand for Rose-buds is quite as brisk as at any other part of the year. To have plants the size of those alluded to requires a deep and rich soil; no one knows better than market growers how to provide for such subjects; they neither spare labour nor manure; they know that if proper preparation for growth is not made, the results will not be satisfactory. In regard to pruning, those who wish to obtain flowers in abundance must to a great extent ignore it, especially during the first five or six years; a long branch may occasionally require to be shortened in order to bring the plant into something like form, and a few inches of the shoots which have flowered may be cut off early in spring, but not until the plants have developed into good sized bushes must any branches be removed, and only then when getting too much crowded. To sustain vigorous growth the soil should be annually enriched with a good dressing of manure forked in about the roots.

J. C. C.

Fortune's yellow Rose.—On a plant of this Rose I counted to-day 160 flower-buds open and opening. It is trained under the glass of an unheated house, and only covers a space 8 feet long and 4 feet wide. Every small twig has borne a flower, which gives the plant a singular appearance, owing to the coppery colour with which the petals are shaded, and which renders

this Rose distinct from every other kind. As it has now got somewhat crowded, as soon as the flowers are all over some of the young growth will be shortened and the weakest shoots cut away; those cut back will break again and furnish flowering wood for next year. This is all the pruning it must have until the same time next year comes round, as every shoot cut off in autumn will cut away a bloom. From the freedom with which the plant flowers, it is quite plain that this Rose requires a good and deep soil for its roots; then, as a climbing Rose, I am sure it will make growth enough to please everybody.—C.

Rose Devoniensis.—I do not think that "J. C. C." (p. 547) understands one of the principles on which the National Rose Society's catalogue was drawn up, or he would not have written as he has done. These were to furnish a catalogue of the flowers without reference to their habit or growth, so that two flowers precisely similar should not be shown on the same stand, on the ground that their growth or foliage was different, instances having occurred where three and even four Roses were shown precisely similar, but sent under different names, and with probably some little variation of the foliage. Surely the very fact of the catalogue mentioning Climbing Devoniensis shows that they recognise two Roses as to their habit, but that they were similar in flower, and, in fact, it is well known that Climbing Devoniensis originated in a vigorous shoot on a plant of the ordinary Devoniensis with Mr. Pavitt, of Bath, and is certainly one of the most remarkable abnormal growths one recollects. All that the National Rose Society's catalogue decides is that, however distinct in growth, they are one and the same in flower, and cannot, therefore, be exhibited on the same stand.—D.

HYBRID PERPETUALS ON WALLS.

It is surprising how few who admire Roses have availed themselves of the many strong-growing and highly-coloured Hybrid Perpetuals for covering walls of medium height, and for training against pillars and other odd spaces, which nearly every garden affords; and which, if covered with brightly-coloured Roses, would not only add to the attractions of the place, but show off to advantage the many good qualities that some of these Roses possess for that purpose. The idea that none of the Hybrid Perpetuals make sufficient growth to warrant their being planted as climbers is a mistake. To measure their adaptability for this purpose from their behaviour when growing in a poor soil, and subjected every year to severe pruning, is to display a want of knowledge of what they are capable of doing when grown without restriction. If we want to find out the capacity of Hybrid Perpetuals to fill up space and to insure them long life, we must have plants on their own roots and planted in good soil, and then leave them alone—i.e., not prune them; then it will be found that they will grow as well trained to walls as they do when standing singly and allowed to grow in the form of bushes. It is also a mistake to suppose that it requires years of patient waiting to see them reach the top of a wall 6 feet high, because if strong plants are planted, and the soil and situation are suitable, they will make shoots 6 feet long in the third or fourth year after planting. We have had such varieties as Anna Alexieff and Maréchal Vaillant reach a height of 7 feet in five years, and we have quite recently removed a plant of Madame Lacharme which had grown up a wall 6 feet, and which for several years flowered abundantly. No one, therefore, need be afraid to use any of the Hybrid Perpetuals (except those with very dark coloured flowers, such as Xavier Olibo, which are known to be weak growers) for covering warm walls 6 feet high; and, with a little patience and judicious selection, they may be induced to grow even higher than that. To insure vigorous growth, it is necessary to provide a good border for the roots, but its preparation need not be more elaborate than for Roses grown in any other form. The following varieties will be found to grow vigorously

on their own roots—viz., Edouard Morren, bright carmine; Duke of Teck, bright crimson; Camille Bernardin, dark crimson; Charles Lefebvre, crimson; Emily Laxton, rose; François Levet, pale rose; Elie Morel, rosy lilac; Magna Charta, bright pink; Perle des Blanchés, white; Anne de Diesbach, deep rose; Duchesse de Vallombrosa, pale pink; John Hopper, rose; Maréchal Vaillant, red; and Marchioness of Exeter, light rose. These will be sufficient for a beginning. J. C.

REINE MARIE HENRIETTE.

I HAVE had a plant of this Rose growing on a warm wall for three years, and it appears to me that it is about to prove a very valuable addition to the red-flowered section of climbing Roses. That it will make vigorous growth and flower freely, I have not the least doubt; it sends up vigorous shoots from the crown, and as the plant gets older these shoots will doubtless get more numerous as well as stronger. A well-established plant of it produces great numbers of large, full, well-formed flowers, the colour of which is charming. Trained to a pillar, or on wires under glass, this Rose is quite at home. Its ample leafage, too, enhances its value. If it can be obtained in pots, now is a good time to plant it, but it will be useless to put it in a poor soil and expect it to thrive; therefore, where the staple is not good it should be made so. As a guide to the inexperienced, I may say that any soil that will grow good vegetables will do for this Rose, or, indeed, for any of the better class of climbing Roses; but near a wall is just where the best soil of the garden is not always to be found. It may, therefore, be necessary to make a fresh border for the roots; if so, let it be 2 feet deep and 3 feet in width, and as much more up to 8 feet as space will allow. If new soil has to be provided, a good turfy loam should be selected in preference to anything else. Before planting, disentangle a few of the roots that have got together round the bottom of the pot and spread them out. Press the earth firmly about them, and if the soil is dry, give it a good soaking of water. See also that the roots do not suffer from want of moisture during the autumn. For the first fortnight after planting, hang a mat up against the plant for a few hours on very bright days. Such little attentions as these make all the difference whether a plant gets established quickly or not. C. E.

Rosa rugosa as a stock.—Mr. G. F. Wilson asks for information on the use of this Japanese Rose as a stock. I do not think that it has been so used as yet, at any rate with us, but in a letter which I received some time ago from a correspondent in Boston, Mass., he says that they are going in for it largely in America. I do not know what advantage it will possess; it is certainly hardy, but not more so than the seedling Brier. Perhaps Mr. Wilson will kindly say why he considers it desirable to try it. It is hardly worth multiplying stocks unless there be some good reason for it.—D.

—Having read in THE GARDEN (p. 547) that Rosa rugosa is recommended as a stock for Roses, allow me to inform your readers that it, at least with me, emits considerable numbers of suckers, and is, therefore, in my opinion less adapted for a stock than the seedling Brier. I think that the best of all stocks for Roses would be Polyantha, which throws out no suckers at all. It has also the advantage of being very hardy and of being continually growing while the others are at rest in summer. But as Polyantha produces from seed a good number of very dwarf varieties, it would be advisable to select one of the strongest for use as a stock and propagate it from cuttings, which strike freely.—JEAN SISLEY, Monplaisir, Lyons.

Large Rose bushes.—The practice of pruning Roses severely has led many to suppose that the Rose is incapable of forming a large bush. They have to go to the cottager to be undeceived in this matter, as he, leaving his Roses to grow as they like, can usually show Rose bushes not much less in size than Lilacs. As an example of

a Rose bush, we must go to the wild Brier of the woods and hedgerows, which generally forms a large mound, the living branches growing upon the framework formed by the dead ones. We have many large old Brier bushes of this kind here, and I notice that the earliest growths generally consist of tall gross shoots from 4 feet to 6 feet in height, such as nurserymen use for stocks. These the following season produce abundance of small shoots, which flower freely, and they go on producing flowers for a year or two, but they soon grow feeble, and are one and all replaced by strong shoots from the root, which grow over the dead ones till quite a thicket of dead Brier wood is formed, the Rose bush showing but little signs of exhaustion. Some of these wild Rose bushes are of great size, and are very pretty objects in the hedgerows. The cultivated Rose, especially the rambling sorts, behave in exactly the same way when planted in good soil and left to themselves, and none surpasses the Gloire de Dijon, which grows exactly like the Brier. All the strong-growing Hybrid Perpetuals and others, however, also make large bushes, and constantly throw up great shoots from their roots, which take the place of the old branches and bloom with the utmost freedom. While I do not, therefore, seek to dissuade growers from growing their Roses in the orthodox way where prize blooms are wanted, I advise them to plant freely any varieties of the Rose that seem to do well with them, and let them grow as much as they will, and I guarantee that they will make handsome objects in their gardens by-and-by.—J. S. W.

Rosa pyrenalca.—Will you allow me to dissent from your recommendation of this charming little alpine Rose as suitable for a small rockery? I planted one some years ago on my small rockery, and the result has been that it has worked itself in and out under the stones, smothering up a good many plants, and that I am now compelled to take up that end of the rockery and make it up afresh. I do not want to discard it altogether, for it is pretty both in flower and berry, but I must be careful as to where I place it.—DELTA.

PARKS & PUBLIC GARDENS.

SHEEP IN HYDE PARK.

THERE are now, I am told, nearly or about 2000 sheep in Hyde Park, and on hot and still mornings the result is by no means pleasant to those who cross the park on foot. It may be said that they manure the ground, but they take more from it than they give. They graze down the Grass, it is true, but that could be kept in better order still by the simple strong mowing machines of recent years, some of which are well adapted for cutting rough Grass. Perhaps the best way would be to cut it more frequently, and treat it more like a well-kept lawn; the cuttings might be kept on the ground in some way. The few pounds per week derived by the State from the grazing of such a large number of animals need not be mentioned. The clearing of the walks is made more difficult by the presence of so many animals. There is quite enough refuse to remove apart from theirs. Whatever may be thought of the present arrangement, I doubt very much that we shall always go on covering our public parks and gardens with the ejecta of many animals. Our public parks are kept up at very great cost and in the most liberal way, and I question very much if it is right to make them in any way like the butcher's paddock. I need not go into the matter here, but it is well known that the excreta of the animals is by no means free from danger to other animals and to men, and certainly it is wrong to allow such material over a beautiful garden in the very heart of London. On the downs or the open sheepwalk, where the creatures get about over wide, airy spaces, one does not notice it at all in the same degree that one does in this park.

J. H. H.

Niagara Falls.—Canadian journals state that the Dominion Government is to be invited by

the Legislature of New York to co-operate in the plan of establishing a free park on both sides of the river at Niagara Falls. The New York Assembly has passed a resolution calling the attention of the Canadian Parliament to the fact that the State of New York has just appropriated a million and a half dollars for the purchase of lands and the establishment of a free park on their side of the Falls. Parliament is "respectfully requested to take such action as shall, in connection with what has been done by the Legislature of the State of New York, for ever insure to the civilised world free access to the Falls and the scenery, which together constitute the greatest wonder of the world."

NOTES ON RECENT NUMBERS.

Apple trees and Cherries (p. 540) are not very often planted for effect in woods and pleasure grounds, as many of the larger flowered and brighter fruited sorts well deserve to be, and a tall standard Pear is not at any time an unpleasing object in an isolated position or grouped with other trees. One of the most ornamental of our fruit trees in general beauty is the common Medlar, though it does not flower in such profusion as the others above mentioned; the individual blooms are pretty and the foliage also is handsome, especially in the autumn. Being only a slow grower, it is well suited for choicer spots, and it has this advantage over Apples and Cherries when planted about, that it is not liable to so great an extent to what is commonly called "finger blight," if in too accessible a position.

Kalmias (p. 549) are somewhat uncertain as to flowering; some years they are covered with bloom, and then again for a year or two they will not have a flower on them. Still, they well deserve to be grown, for the foliage is good, and the flowers when they do come never fail to attract attention. Doubtless some seedlings are more free blooming than others, but position and shade seem to have a good deal to do with it in many cases. We have a plant which I believe to be the variety *angustifolia*, but it is a big upright growing bush, with the flowering tops of the branches not far off 8 feet from the ground; whereas in most of the accounts of this family the only variety given as growing more than a foot and a half or 2 feet high is the common *latifolia*. Is it likely to be a hybrid sort?

Arbutuses (p. 552), when doing well, are so handsome, that one feels that one could not do without them; but in how many gardens do we see them really flourishing? Like *Enonymus*, they seem to enjoy the sea air, and do not thrive so well inland; for though they may grow tolerably well for three or four years, when a hard winter comes it does for them. When they die back in this way they generally shoot very freely if cut down, but use may be made of the dead stems and branches to train Roses or climbers over with good effect. The masses of the Strawberry fruit, as seen passing through the neighbourhood of Marseilles in the train, is a sight to be remembered. We cannot, of course, expect the same in our climate, but if *Andrachne*, as supposed, is really hardier than *Unedo*, it is worth taking pains to procure it instead of the common variety.

Sussex.

C. R. S. D.

NOTES OF THE WEEK.

Rare bulbous plants.—The following plants have been sent to us by Mr. Ware from the Hale Farm Nurseries, Tottenham: *Triteleia laxa*, a pretty new early flowering variety with much shorter and more expanded flowers than the type. This variety was sent to Mr. Ware two years ago from California under the name of *Brodiea Bridgesii*, but this is a different and distinct new species. *Bloomeria Clevelandii*, a small slender growing species in the way of *B. aurea*; *Cyclobothra alba* var. *paniculata* differs from *alba* in more vigorous growth and earlier bloom, more branched, and a reddish tint of the flower; it is decidedly better than the type. *Bomarea oculata*, a pretty twining

plant allied to *Alstroemeria*, is hardy at Tottenham, having been grown there for several years. *Lilium columbianum* is doubtless one of the prettiest Lilies in culture; it thrives well in a heavy soil and is exceedingly free blooming. The flowers are small, turban-shaped, rich yellow, and spotted. The Iris (German and Spanish), *Ixias*, *Sparaxis*, and good examples of *Cyrtopodium spectabile* and *pubescens* are also sent, and these are among the prettiest features just now in the Hale Farm Nursery.

A fine Lupine.—A spike of the common perennial *Lupinus polyphyllus* from Mr. Stevens has fully 2 feet of its length covered with pale purplish blue flowers. It is the largest spike we have seen, but perhaps some of our readers have spikes that can surpass it. If so, we should like to know.

Pancratium illyricum.—This South European bulb proves to be quite hardy at Munstead, Godalming, where it is now in great beauty in a warm border at the foot of a wall. One plant of it which we noticed had about half a dozen stems, each crowned with a cluster of large flowers as white as those of a *Eucharis*, and of the same waxy texture and fragrant. Its broad handsome foliage, too, being glaucous, adds to its beauty. The flowers are starry and the cup toothed in a peculiar way. In warm districts this plant is well worth one's attention. What it wants is a warm sandy loam and an open sunny spot, such as a border at the foot of a south wall. It is best to plant it deep, so as to be out of harm's way in winter.

Mitraria coccinea.—So seldom is this old-fashioned Chilean plant grown well now-a-days, that some examples of it which we saw the other day in Baron Schroeder's garden at Egham may be worth notice. They were trained in balloon form and were completely smothered with flowers, which had a most beautiful effect, being not only brilliant in colour, but graceful. They are about 1½ inches long, urn-shaped, and rich scarlet-red; being large and heavy and the stalks long and slender, they hang in an elegant way all along the slender shoots. The plants of it growing here are in an airy greenhouse, which is doubtless the best place for them, although it is hardy in some parts. It rarely flowers well, however, except when grown in pots, probably because its roots want confinement.

German Irises.—A wonderful collection of Irises, numbering about a hundred different sorts, comes to us from Mr. Joseph Stevens' garden at Byfleet, which must at the present time be exceedingly interesting. It would be a difficult matter to describe even the best dozen out of this large gathering, so indefinable are their colours. We imagine that every type of what are commonly, though erroneously, called German Irises is represented, and one may easily trace out the originals—such, for instance, as *I. variegata*, *plicata*, *aphylla*, *lurida*, *germanica*, *pallida*, *neglecta*, *hybrida*, and *squalens*. Numberless forms of these kinds have, of course, received fancy names, and in not a few instances the differences are so slight, that it would be hard to separate them if they happened to become mixed. The fine growth of Mr. Stevens' Irises points to the fact that they delight in a warm, light soil; many of his plants are 4 feet through.

Spiraea astilboides.—This new *Spiraea* proves to be a most desirable plant, distinct from all the rest of the species, and especially valuable for greenhouse decoration. In Baron Schroeder's garden it is thought highly of as a pot plant and it figures prominently in one of the greenhouses, where its long plume-like branching flower-spikes of soft creamy whiteness stand out conspicuously among more gaily tinted flowers. It was, we believe, put in commerce as a hardy plant, but no doubt its real place is the greenhouse, as it is singularly well adapted for pot culture, being of moderate growth and very light and elegant. It grows about 18 inches high, carries a number of feathery spikes, and, the flowers being arranged so as to form a cylinder, renders it distinct from either *S. japonica* or *S. Aruncus*, of which, strictly

speaking, it is, we understand, only a variety. As we saw it at Baron Schroeder's we were much pleased with it; no one need hesitate to add it to their stock of greenhouse plants. We have no experience of it out-of-doors, but probably it may prove to be as hardy as the common *S. Aruncus*, or, at any rate, as *S. japonica*.

Rush-leaved Iris (*I. juncea*).—This is quite a gem among the bulbous Irises, combining most elegant growth with richness of colour. Its Rush-like leaves reach about a foot high, and its flowers are nearly as large as those of the common Spanish Iris and of a rich clear yellow. It is one of the most uncommon kinds of Iris, though an old introduction. This is owing to its being rather tender and of less robust constitution than its congeners. It is a native of the warm African shore region. Mr. Ware has sent us some blooms of it during the week.

New Sweet Pea.—Flowers of a Sweet Pea, named New Invincible Carmine, have been sent to us by Messrs. Hooper, of Covent Garden. It was raised by Mr. Laxton and was selected for a first-class certificate from among large numbers of other sorts shown at one of the meetings at South Kensington last year. It is, without doubt, the finest of its colour, the flowers being large, of a brilliant carmine, and without the least trace of the purple tint so common among Sweet Peas. It is a charming companion for the light coloured sorts, but it does not so well harmonise with the purples.

White alpine Aster.—The first flowers of the white variety of *Aster alpinus* that have reached us come from Messrs. Stansfield, of Todmorden, who send it with a numerous gathering of interesting alpine plants, which they grow abundantly and well. It is a very pretty plant, a real addition to both the rock garden and the choice herbaceous plant border, no other flower at this season being like it. Being compact and dwarf in growth, it has a neat appearance, and if the white and purple kinds were planted together, an exceedingly pretty effect would be the result.

Pæonies.—A magnificent collection of herbaceous Pæonies, representing about two dozen distinct sorts, has been sent to us by M. Ant. Roozen, of Overveen, near Haarlem. Than these no more beautiful Pæonies could be desired, and their delicate fragrance is as delightful as the soft colours and tints of their huge flowers. For a June garden we cannot conceive any class of plants finer than these Pæonies; indeed, they are quite a revelation of new beauty. Unhappily, they are not plants for all gardens, but only for those in which the soil is light and warm, as they are a little tender and more fastidious than common Pæonies. Where, however, they do thrive—and in the majority of gardens on light soils south of the Trent they do so—they grow and form luxuriant masses, which at this season are far more beautiful than anything with which they are associated. Their flowers are so noble, that they are worth any amount of labour and attention to secure. The collection, as a matter of course, includes the cream of the Overveen varieties. Amongst them are Madame Vilmorin, a very large and full flower of a deep rosy pink; Madame Calot, bluish, almost a white; Lucrèce, a loose, shaggy flower, but very pretty, the colour being very delicate; L'illustration, deep rose, a large, full flower; Poiteau Antoine, creamy centre, bluish guard petals; Henri Demay, rosy pink, fading to a lighter shade in the centre; General MacMahon, deep satiny crimson; Charles Gosselin, sulphur centre, white outer petals; Comtesse de Bresson, large and extremely pretty pink; Papaveriflora, pure white, with inner petals edged with crimson; Lady Ann, soft rose, with pale centre; Magnifica, delicate bluish pink, one of the best; Princesse Galiton, straw coloured centre, pink guard petals; and Charles Binder, bright rose, with deeper tinted guard petals.

Peruvian Squill.—A huge flower-spike of *Scilla peruviana*, measuring fully a foot across and carrying hundreds of pale blue flowers, has

been sent to us by Mr. J. Stevens. The stem is fasciated, hence its large size, but other normal spikes sent with it show how well this Squill thrives in the light soil in the Byfleet garden perfectly unprotected, though in some places it is not hardy. When grown large, as these specimens are, *S. peruviana* is really an attractive plant. It is one of the oldest of garden plants, having been figured in the "Botanical Magazine" in 1804. This name *peruviana* is misleading, as it is really a native of Portugal and Algeria.

Rhododendron shows.—Two very fine exhibitions of Rhododendrons are now on view in London. Mr. Anthony Waterer has an extensive display in the Regent's Park Botanic Garden, and Mr. John Waterer has a similar show in Cadogan Gardens, in Sloane Street. It need hardly be added that these two firms exhibit the Rhododendron in its highest perfection, and in great variety.

THE CONGRESS VANITY.

WE see that another elaborate botanical congress is in preparation—this time at Antwerp. In the art of gardening, as in many other arts, there is no doubt an enormous amount of work to be done and much of it badly in want of being done; but these fussy congresses, in which numbers of subjects are discussed that have but the faintest relation to the art of gardening, are of very doubtful good. Such congresses owe their origin to persons who think a good deal more about their own "fads" than of gardening. If a congress is wanted at a great public flower show, it ought to have a subject worthy of discussion. In our own country, for example, there is the hideous circumstance of many seed houses naming every good strain of a vegetable after themselves, causing endless confusion and loss to the gardening public and the trade. The authority of a great congress would perhaps be useful in dealing with a vast nuisance of this kind, but the majority of the subjects brought before such congresses could easily be dealt with in a paper by any gentleman so disposed. But in truth they are in most cases not of the remotest consequence to gardening. The use of the pretentious name "congress" makes the whole business the more disappointing, if not ridiculous.

TREES AND SHRUBS.

SHADE AND SHELTER TREES.

TREES for shade and shelter—the first signifies protection from the rays of the summer sun; the second, trees to screen or protect cultivated grounds from the cold winds, especially in respect to gardens and fruit orchards, and serving as well for wind-breaks for homesteads and grounds contiguous thereto. Trees that furnish desirable shade for dwellings should, in their selection, be chosen also with reference to their beauty and adaptability to soil as well as for shade, in order that they may be decorative as well as useful. In the summer a humble, modest dwelling with a Grass plot before it, shaded by an Oak, an Elm, or a Maple tree, is more attractive than a showy mansion wholly unprotected by trees. Trees should, likewise, be planted by roadsides as well as about dwellings. Groups of trees should be provided, too, in pastures frequented by live-stock. "What are the species of trees most desirable for shade and shelter, and the soils best adapted thereto?" The first tree I shall name is

THE OAK. This has not inaptly been called the "King of the Forest." The size and age to which it attains are noteworthy. Humboldt mentions an Oak near Berlin which measured nearly 90 feet in circumference near the base. A tree in the same neighbourhood was blown down in a storm in 1857 which measured 66 feet in circumference. Their ages have been estimated at from 1000 to 2000 years. Gilpin, in his "Forest Scenery," mentions a few old Oaks. Of the most venerable of these monarchs is one in Norfolk,

reputed to be the "Old Oak" during the reign of William the Conqueror, and said to be 1500 years old, a plate being attached to the tree bearing the following inscription: "This Oak in circumference at the extremity of its roots is 70 feet, in the middle 40 feet." This was in 1820. The King's Oak, in Windsor Forest, is represented as having been a favourite tree of William the Conqueror and the largest in the forest, and is reputed as being upwards of 1000 years old, measuring some twenty years ago 26 feet in circumference at 3 feet from the ground. An Oak in Dunnington Park ran up 50 feet before a limb appeared, the base squaring 5 feet. An Oak in Holt Forest, in Hampshire, measured, in 1759, 34 feet in circumference 7 feet from the ground. An Oak felled at Norbury, as stated by Dr. Platt, was of the enormous size of 45 feet in circumference, so that when it was lying upon the ground two men mounted upon horses on opposite sides were concealed from the view of each other. He also mentions an Oak in Keicot, beneath whose branches it was computed that 4374 men could have stood. The largest sum ever realised from the sale of one tree was that of the Gelonas Oak, a few miles from Newport, Monmouthshire, felled in 1810. According to the "Gentleman's Magazine" for 1817, it was sold, standing, for 100 guineas, under the belief that it was unsound, and was resold for £405, and subsequently was sold again for £675, and was found to contain 2426 cubic feet of timber. Its bark was estimated to weigh 6 tons. The Wadsworth Oak in Genesee N.Y., near the River Genesee, was a giant of the forest. It grew in one of the most fertile valleys of the Middle States. Its trunk measured 36 feet in circumference, and the tree was a marvel to all who saw it. In Flushing, Long Island, formerly grew a rare specimen of the Oak. It measured a little short of 30 feet in circumference. The Oak is acknowledged to be the most picturesque of trees. As a shade tree it cannot be excelled. Of the Oak family there have been enumerated by botanists more than 130 species. Michaux the elder described twenty, and Michaux the younger twenty-six, species of North America; and Nuttall, thirty-two. Emerson found twelve species growing in considerable numbers in Massachusetts. De Candolle, in his "Prodromus," described 281 species of the Oak. The first to be named for planting is the White Oak (*Quercus alba*). This tree needs little description, as it is well known. Emerson said of the White Oak that it is beautiful in every stage of growth, and is, therefore, a most desirable ornamental tree, and concludes with these words, "Let everyone who has an opportunity to do so plant a White Oak." He measured one of this species in Bolton that was 19 feet in circumference just above the surface of the ground, and one in Greenfield that was 17½ feet in circumference. The soil suited to their growth is a strong tenacious loam. There is ample room to suit the most fastidious taste in the Oak family.

ELM.—The next tree to be named is the Elm (*Ulmus americana*), a great favourite, or was formerly, among the people of New England, especially of Massachusetts and Connecticut, where there are still many trees of magnificent beauty and of great size and grandeur. They are among the early bloomers of spring. The sturdy trunks and graceful boughs are unequalled, as all will readily admit. The memorable Old Elm of Boston Common, recently blown down, as measured in 1844 by Emerson and Prof. Gray, was at the ground 23½ feet in circumference, and 3 feet from the surface 17 feet 11 inches. The Elm is more easily transplanted than the Oak, as its roots nearer the surface of the ground. Some of the most magnificent specimens are still growing along the valley of the Connecticut River in the States of Massachusetts and Connecticut. It is found in a great diversity of soils, but never, or rarely, in its most gigantic form and greatest beauty, except in rich moist ground, such as is found along the banks of large rivers, between the 42° and 45° of north latitude. No other shade tree has been more frequently planted, unless it be the Rock or Sugar Maple (*Acer saccharinum*).

THE SUGAR MAPLE, like the Elm, has long

been a favourite shade tree in Massachusetts. It is the most notable tree of the Maple family. It is found from 48° north to Georgia, and from Nova Scotia to the Rocky Mountains. Its foliage is a dark and beautiful green and clean from insects or parasites, which is more than can be said for the Elm. It is indigenously common in the Eastern, Middle, and Northern States and is less common in Eastern Massachusetts than in Western. In Blandford, Massachusetts, a Rock Maple is mentioned that was 4 feet through near the surface and 108 feet high, and when cut, produced 7½ cords of wood. This was an indigenous forest tree. In Stockbridge, Amherst, Deerfield, Sunderland, and Belchertown are planted double rows of Rock Maples, which are magnificent decorations of the principal streets. The soil suited to their growth varies. The Sugar Maple is indigenous to sweet, rich mountain soils, which, when the forests are removed, produce the richest pastures. The Japanese Maples are decorative, and deemed hardy. The Norway Maple is a fine tree. Wier's Cut-leaved Maple is a beautiful tree, and may be planted for decorative purposes as well as for shade; it is known by botanists as *Acer dasycarpum* var. *Wieri laciniatum*. The species is called White Maple. It grows rapidly and is a handsome, clean tree, like all the species of Maple. The Red Maple, called also Swamp, Scarlet, or Soft Maple, is a tree desirable for its beauty in early spring and autumn. Its early crimson or scarlet leaves in late summer and early autumn render it very attractive to lovers of autumn leaves. Whatever may be the cause, the æsthetic effect of the decay of autumn leaves is that of infinite beauty. Bryant must have been thinking of Maples when he said:—

And when the autumn comes, the kings of earth,
In all their majesty, are not arrayed
As ye are: clothed the broad mountain side
And spotting the smooth vales with red and gold.

THE LARGE-LEAVED MAPLE (*Acer macrophyllum*) is a superb tree. It varies in height from 40 feet to 90 feet, and its graceful form, with widely spreading branches, serves to give it a place among the most desirable shade trees.

THE WHITE WOOD, OR TULIP TREE (*Liriodendron Tulipifera*), is a tall, upright tree. It is common in Western Massachusetts, in several towns on the Westfield River, particularly in the town of Russell. Michaux says that, in favourable situations in a deep, moist soil, it attains great size, and is one of the largest trees indigenous to the United States east of the Rocky Mountains. The flower is likened by Pickering to a chalice:—

Through the verdant maze
The Tulip Tree
Its golden chalice oft triumphantly displays.

THE LINDEN, OR LIME TREE (*Tilia*), as an ornamental shade tree, is to be recommended to planters. Its growth is rapid, and it is a good species for shelter planting as well as for shade, whether about the homestead or in the pasture. The European Linden is a beautiful tree, superior to the American. The Lindens, when in bloom, attract honey-bees, particularly the American species, called the Basswood tree (*Tilia americana*), from which they gather honey of the finest quality. The Linden grows to the height of from 80 feet to 90 feet. Its foliage is beautiful at all times, and particularly so in autumn.

THE BEECH, the Horse Chestnut, the Acacia, the Chestnut, the Ash, the Black Walnut, the Catalpa, the Larch, and other species of trees will suggest themselves to the planters of trees for shade. There is no department of outdoor work more generally overlooked than that of planting trees for shelter or wind-breaks, to protect plants, shrubs, and fruit trees from cold winds, where they are not sheltered by hills, as is sometimes the case.

The evergreen tree best adapted for this purpose is the White Pine (*Pinus Strobus*), called also Weymouth Pine. The bark is smooth and the trunk straight, growing to the height of from 80 feet to 100 feet, and being sometimes from 5 feet to 7 feet in diameter. When young, its branches are whorled from the surface of the ground

upward. It is indigenous all over New England. The late Rev. J. L. Russell described a tree of this species in Hingham "which, thirty-two years after it was planted, had grown to the height of 62½ feet and measured 7 feet in circumference." The Pitch Pine, the Scotch, and the Norway Pine should be named; also the Hemlock, the Black or Double Spruce, and the White Spruce, the American Arbor-vite, the American Holly, the Juniper, the Silver Fir, and the Larch. The last, though not an Evergreen, is yet a rapid grower, and should be included among the trees desirable for screens and wind-breaks.

Mr. W. C. Strong said there is no doubt that climate is disastrously affected by cutting down trees. There is a forest in New Hampshire so dense, that the thermometer is higher in it than outside. The thermometer is higher in the vicinity of Evergreens than away from them. Moist land is best adapted to the growth of forests. He sells more Rock Maple trees than of all other shade trees together, but does not think it desirable to the extent to which it is used. It is clean and free from insects, regular in outline, and dense in foliage, but the uniformity is objectionable, and the sun does not penetrate the dense foliage and the ground underneath remains wet. In this respect it is only less objectionable than the Horse Chestnut, which is entirely unfit for an avenue tree. The Elm, with its graceful gothic arches, so lofty, light, and airy, is vastly superior to either; but it feeds greedily, and we must be careful not to plant it where it will extend its roots into our gardens. Though the Elm is so superior to the Rock Maple as an avenue tree, it may also be planted in groups. The Oak is very desirable. The White Maple (*Acer dasycarpum*) and its cut-leaved variety are more rapid in growth than the Rock Maple and less dense, but more liable to be broken and not as long lived. The Red Maple is desirable for variety, but the Norway Maple is the best of all the family; it takes a fine golden colour in the autumn. Mr. Strong is partial to the Black Walnut, with its open, graceful, Palm-like foliage. We do not want density of foliage, and the Maple and especially the Horse Chestnut are objectionable immediately around a house. We should be very careful what trees we plant very near our dwellings. The Cut-leaved Birch and the Linden are desirable.

Mr. Brigham did not think the Horse Chestnut so objectionable as Mr. Strong, and spoke of the magnificent avenue of four rows of these trees two miles long in Bushey Park, planted by Cardinal Wolsey. The shade of the Horse Chestnut is not so dense but that Grass will grow under it. The Lombardy Poplar is still cultivated in Italy. A cutting planted in 1867 is now a foot in diameter, and as high as the third or fourth storey of a house, and shows no signs of decay. It is suitable for city planting, as it will grow on bare gravel.

Mr. J. W. Manning spoke of the Edwards Elm, at Northampton, which measures 27 feet in circumference, and of others measuring from 18 feet to 20 feet. The Lyfield Elm measures, at 3 feet from the ground, 27 feet. He showed Chestnut posts from a fence in New Hampshire more than 100 years old and still sound, and Silver-leaved Maples, two years from the seed, which grew from 6 inches to 2½ feet the first year, and 5 feet the second year, some of them being at the end of the second year an inch in diameter and 7 feet high. He had gathered and planted seed of Wier's Cut-leaved Maple and from a quarter to a third of the seedlings were cut-leaved, some being much more finely cut than the parent; the remainder were normal.

Mr. D. W. Lothrop would plant the American Elm in streets, yet not exclusively, but would intersperse it with Maples. They should not be less than 40 feet apart. The Silver Poplar, or Abele, grows very rapidly, a tree thirty years old being 50 feet high and 7 feet in circumference; but he generally dislikes it, though he might plant it for immediate effect. It will grow in gravelly situations, where few other trees will, and soon makes a dense shade. The Horse Chestnut is

handsome in spring when making its annual growth, but becomes brown and dingy in autumn. Maples are so varied and beautiful in the autumn, that he felt an interest in the question whether or not the poorest could not be grafted with the finest. The Norway Spruce is the best tree for protection, and the White Pine comes next; the former grows rapidly, two on his place having grown 60 feet high in thirty-two years.

Mr. J. M. McCullough, of Cincinnati, thought the Norway Spruce the most valuable of all trees for shade and roadsides. He would abandon the Abele or Silver Poplar. The Rock Maple is the most graceful tree, except the Tulip Tree, and is also valuable for timber. The Red Maple makes hard timber. The Ash grows slowly, but makes good timber. Blistered Ash is from trees exposed to the sun, and, like Bird's-eye Maple, is valuable for veneering. The Tulip Tree is the most beautiful of all, but has only a narrow geographical range.

The Hon. Marshall P. Wilder said, in planting, we must give attention to the location and what we need the trees for. The Horse Chestnut is beautiful, but it destroys all vegetation beneath it. The Tulip Tree is one of the most beautiful on his grounds. He has one with a Wistaria climbing over it. The Linden is one of the best shade trees. He has a Cut-leaved Weeping Birch 60 feet high. It is a very beautiful tree, and is becoming more and more popular; but he would not plant many, as the white stems have an effect like monuments in a cemetery. The Catalpa is a very desirable ornamental tree. The Ash-leaved Maple is a tree of fine form, and as rapid in growth as the White Maple, and has pretty flowers.

Mr. B. Moore agreed with Mr. Strong in regard to the choice of roadside trees. The Elm is the best of all; its liability to be eaten by canker-worms is no objection, for it can easily be protected from them. As a general rule, with different soils we must have different trees; the Scarlet Maple is good in soils adapted to it, but it requires a moist soil, and will not grow everywhere, while the Elm is not circumscribed by the limits of a particular soil, but will grow in wet places or in sand-banks. It sends its roots to a great distance, and he believed it would find water if there was any within half a mile. He has an Elm tree near his barn which, at 3 feet from the ground, girths 11 feet. No wind will break the limbs of a Weeping Elm except when they are loaded with ice. Where Maples would be torn to pieces, the Elm will make a good tree. The Abele is the meanest of all trees; he would rather have a Lombardy Poplar, but would rather have both out of sight. Evergreens are best for shelter, but should be several rods from the point to be sheltered. He cannot make Grape Vines grow within two or three rods of a wood. The White Pine is one of the best for this purpose; it makes a dense shade, and Grass will not grow under it. The Hemlock is the most beautiful of Evergreens; he has seen them in pastures in New Hampshire and Massachusetts wonderful in size and beauty—5 feet or 6 feet in diameter, and of perfect shape, with limbs to the ground—more beautiful than any he had ever seen in cultivation.

President Hayes recommended the Nordmann's Spruce as most lovely and quite hardy, and spoke of the beautiful Tulip Trees at Parsons' nursery, Flushing, Long Island, as worth a journey there to see. They rise to the height of 40 feet or 50 feet without a limb.—*Massachusetts Horticultural Society's Transactions*.

Ledum buxifolium.—This and the other two or three kinds of *Ledum* grown in our gardens (through all of which runs a strong family likeness) are very pretty little flowering shrubs, succeeding best, in common with many of their class, in a fairly moist situation, such a spot, indeed, as the hardy Azaleas and *Rhododendrons* delight in. The Box-leaved *Ledum* forms a dense, rather erect habited shrub, each shoot being towards the end of May terminated by an umbel-like cluster of small white blossoms, which before expansion are of a pinkish hue. The flowers are very delicate

appearance, and this, combined with the proportion in which they are borne and the length of time they remain in perfection, serve to render it most desirable little under-shrub. It is a native of North America, and is also known under the names of *Leptophyllum buxifolium* and *L. thymifolium*. A larger growing kind rather earlier in flowering its blossoms is the Labrador Tea (*L. colinum*), which is scarcely so neat a bush as the first named, and the undersides of the leaves are thickly covered with a rusty tomentum, so that it bears rather a dull appearance when out of bloom. The flowers of these *Ledums* last a long time in water, especially if cut just before they expand, a remark which applies to nearly all woody plants. From the mass of dense wiggly fibres, the *Ledums* can be moved at almost any time without much injury, provided the operation is performed carefully, and the plants kept supplied with water.

The white Wistaria.—The white-flowered *Wistaria* is rarely seen, as far as I am in a position to say, judging from young plants, it is as floriferous as the purple-leaved and a fac-simile of it, except in the colour of the blossoms being white. The white-flowered variety agrees with me to open its blossoms properly, and, far from that great objection, it seems very shy of the production of many buds. It appears to me up to the present time worth growing, being only inferior in point of beauty to the single-flowered kinds. While on the subject of *Wistarias* I be allowed to ask, is anybody in this country flowered *W. moultonii*? and if so, does it agree with the description which is circulated with it. It is said to bear flowers in exceedingly long racemes.—H. P.

The purple-leaved Wistaria.—Darwin's *Barberries*. A charming combination came under my notice recently, in which the two *Barberries* had been planted near each other, and both having grown well, the bushes became intermingled one within the other, so that just as Darwin's *Barberries* were out of flower and the foliage of the purple-leaved one was freshly added a very pleasing effect was produced, the tinted hue of one being apparently heightened by association with the golden blossoms of the other. This purple-leaved variety of the common *Wistaria* is a really handsome shrub, especially during the earlier part of the summer, for the foliage is at its best when fresh, and not like that of another purple-leaved shrub—*Prunus pissardi*, which early in the season is of a rusty hue, and then in tint as the summer advances, so that it is seen to the greatest advantage from about the beginning of August till the leaves drop. In the case of both of the foliaged shrubs above

mentioned a sunny spot is necessary to ensure depth of colouring.—ALPHA.

Olearia Haastii.—Till recently this Australian Composite shrub could only be found in botanical gardens, but now it is becoming more widely known, since it has proved to be thoroughly hardy, at least in the south of England and in Ireland. It is unquestionably a most valuable shrub, flowering, as it does, in late summer, when flowering shrubs are most wanted. It has much to recommend it, being dwarf (from 2 feet to 4 feet high), and, moreover, very neat and compact. Throughout July and August bushes of it are

planted for ornament. What should be encouraged in planting is the selection of plants that bloom late and do not drop their early leaves. Spring and summer-flowering shrubs are plentiful enough. *Aralia spinosa* bears its huge paniced inflorescence on the points of its principal shoots of the current season's growth. It is seen to the best advantage on a sloping grassy bank.—G.

The Spanish Furze (*Genista hispanica*).—This is one of the brightest of low-growing shrubs that flower at this season, forming as it does a dense mass which, at the present time, is completely covered with

bright golden pea-shaped blossoms. It is quite distinct from any of the *Genistas*; indeed, it more resembles a dwarf-growing Furze, and on that account is often known under the name of *Ulex hispanicus*. Like its allies, it is easily suited as to soil or situation, for it will thrive almost anywhere except in too damp or shaded a spot, and such positions are oftentimes difficult to find even for moisture-loving plants, while bright sunny spaces such as the *Genista* delights in are to be found in plenty in most gardens. From its dwarf habit and by no means rampant style of growth, the Spanish Furze is well suited for planting on the sunny parts of the rock garden, where it will stand out very conspicuous. Cuttings of the partially ripened wood strike root readily enough if taken towards the end of the summer and dibbled firmly into good open soil in a cold frame. According to London it was introduced in 1759, but is even now quite uncommon, though it promises ere long to be more freely distributed, as several nurserymen seem to be working up a stock; indeed, I was told by one that the demand increased year by year, and no wonder, for so beautiful a plant would, when seen in flower, be noted by all who did not happen to possess it.—Q.

The pyramidal Locust Tree.—Under unfavourable conditions *Robinia Pseudacacia* var. *pyramidalis* does not make a particularly handsome tree, but where it thrives well, the delicate green of its foliage makes a very agreeable contrast to that of any other tree of similar habit. In some localities it is certainly preferable to the Lombardy Poplar, which it resembles in habit; it, however, never attains anything like the height of that tree. A fine specimen in the Botanic Garden at Liege is one of the most attractive trees in that establishment. Unlike some of the garden forms of the common Locust tree, which never or very rarely flower, this blooms almost as freely as the ordinary type with the spreading head.—N.

Good and bad Laburnums.—One cannot fail to be struck with the superiority of some Laburnums over others when in bloom. This is



Cistus on sandbanks among Heath in a Surrey garden. (See "Garden Flora," p. 570.)

dense masses of white Daisy-like blossoms, produced in large flat clusters at the tip of every twig. It lasts for several weeks in perfect bloom, and when out of flower its small leathery foliage makes it a handsome Evergreen.

Aralia spinosa.—This handsome-foliaged shrub or dwarf tree deserves notice on account of its late blooming, and also for retaining its large compound leaves until autumn frosts warn it that winter is approaching. I consider it far superior to its near relation, *Dimorphanthus mandshuricus*. This latter sheds its leaves a month or six weeks earlier than the former, which is, to my thinking, a faulty property in trees or shrubs that are

easily accounted for from the circumstance of many being raised from seed, the result being an endless number of forms, varying in a greater or lesser degree from each other, the majority inferior to the parent plant, while, on the other hand, some may be superior to it. There are several recognised varieties in gardens, some of which, such as aureum, pendulum, quercifolium, fragrans, and involutum, may be classed as distinct and interesting varieties, but if only a single kind be needed, then a more showy one must be sought. In that case I should say plant either Parkesi or Watereri, both of which are remarkably free flowering, with very long racemes, and of a deeper hue than the ordinary form. Even if plants of these varieties, which must be grafted or budded on the common kind, are rather dearer at first, they may be depended upon to give satisfaction far more than cheaper, but untried, seedlings.—ALPHA.

Styrax serrulatum.—This Japanese Styrax forms a much-branched spreading shrub with pointed foliage, and bears drooping pure white blossoms. These remind one somewhat of those of the Snowdrop Tree (*Halesia tetraptera*), itself a near ally of the Styrax, and which has been this season unusually floriferous. *Styrax serrulatum* is now in flower in the temperate house at Kew, and seems to be if not the same at least closely allied to *S. japonica*, which is to be found in most hardy tree and shrub nurseries. From their much-branched bushy habit of growth, and the fact that they flower freely even in a small state, these species of Styrax would probably be valuable for forcing into bloom early in the season, or, at all events, if allowed to come on in a natural manner, they would form handsome decorative plants. *S. japonica* is quite hardy here (in the neighbourhood of London), and grows freely when established. It does not strike readily from cuttings taken in the autumn or winter months; so last season I took a number of the young shoots about midsummer and placed them in a close frame, with the result that nearly every one struck root and are now sturdy little plants.—T.

Mespilus Smithi.—This is very different in appearance from the common Medlar (*M. germanica*), and more resembles some of the Thorns (*Cratægus*), and, like them, forms a handsome lawn tree where a medium-sized specimen is desired. It flowers after most of the Thorns are over, and though the blossoms are solitary, they are borne in such numbers as to make a goodly show. The blossoms are an inch or more in diameter and pure white in colour. The fruit is but small and not fit to be used in the same way as that of the common Medlar. *M. Smithi* is also known as *M. grandiflora*.—T. L.

Tamarisk in flower.—The Tamarisk (*Tamarix gallica*), so common along the sea coast, where it is one of the best of shrubs to withstand the salt spray, is now flowering beautifully. It is not exclusively a seaside plant, however, as it will thrive almost anywhere, providing the conditions are at all favourable, and it flowers more freely where the situation is at least fairly dry. There is a large mass of it here in light sandy soil, which the roots can penetrate readily so as to derive a certain amount of moisture from below, which has every shoot completely studded with pretty pink blossoms of a deeper tint before expansion. The flowers are borne in small crowded spikes, and at a little distance are, except in colour, scarcely to be distinguished from the leaves, but on closer inspection the cause of the beautiful pinkish hue is made apparent. The blossoms, too, last a considerable time in perfection. As it can be readily increased by means of cuttings, one would suppose the Tamarisk to be a common shrub in our gardens, but such is not the case, though it is both distinct and beautiful.—H. P.

Evergreen Cotoneasters in flower.—Evergreen Cotoneasters appear to be unusually full of bloom this year, as large masses of *buxifolia*, *microphylla*, and *Hookeriana* are all covered to such an extent with flowers, as to promise well

for a fine display of their brownish crimson fruits in the autumn. These evergreen Cotoneasters are a pretty and interesting class, as they form handsome, low-growing shrubs for the fronts of borders; are always attractive as isolated specimens; may be employed for hiding unsightly banks; are capital wall plants; and for the larger arrangements of rockwork they are well suited. For this latter purpose, besides those above mentioned, the still smaller growing creeping-habited *C. congesta* may also be included, and very pretty it is when allowed to drape the front of a perpendicular rock or in some such a position.—H. P.

The Hungarian Lilac (*Syringa Josikæa*).—Though not so handsome as the common Lilac (*S. vulgaris*), this is worth growing because of its distinct appearance, and also because it is at its best just as the other Lilacs are over, with the exception of the Himalayan *S. Emodi*, which is still later. *S. Josikæa* forms a stouter, more upright-habited bush than the common Lilac, with larger and rougher leaves. The spikes of flowers, too, are much narrower and erect, or nearly so, on the branches, their colour being pale lilac. It seems rather more particular than the common kind as to soil and situation, for here on light dryish spots, where the other thrives perfectly, this does not grow in a satisfactory manner. In a moister and cooler spot it is, however, thoroughly at home.—L. T.

Viburnum plicatum in pots.—For forcing early into flower, this species, like the Guelder Rose or Snowball Tree (*V. Opulus*), can be recommended; small bushes of it are very desirable for conservatory decoration when in bloom. It will not bear severe forcing, and should be allowed to come on naturally till the flower-buds show themselves, when, if the plants are then removed under glass, the blossoms expand of a purer tint than if left to open outside. We have some bushes here of this *Viburnum* that are so treated every year, and about May they are very useful for indoor decoration, being then laden with blossoms that last in beauty a long time. It is very floriferous even in a small state, as young plants in 6-inch pots bear each four or five of their *Hydrangea*-like clusters of flowers. As an outdoor shrub this *Viburnum* is here not equal to the old Guelder Rose, the blossoms lacking purity, but under glass that defect is remedied. Our plants are confined to pots all the year round, and are not repotted very frequently, the nourishment being supplied by means of liquid manure during the growing season. *V. plicatum* does not strike readily from cuttings, and is best increased by means of layers.—H.

Transplanting Thorns (*J. W. T.*).—Thorns, in common with most trees and shrubs that form long, straggling roots with comparatively few feeding fibres near the stem, require more care in taking up, especially when they have not been transplanted for a good many years, than things that produce a mass of roots near the base, as if dug up in the way too often practised indiscriminately with plants of all kinds, few of the small active roots are secured. Thorns such as described by "J. W. T." should, in taking up, have as much length of roots secured as possible, removing the soil and following them for 3 feet or 4 feet in each direction from the stem. In replanting, make the hole large enough to admit of the roots being laid out straight, being careful not to cover them too deep. At once secure the head with two or three stout stakes. When in removal the roots of Thorns, such as named, are cut off short, there is so little left to support the head until there is time for the formation of new feeding fibres, that many of the branches die back the greater part of their length, and it takes two or three years before the plants begin to move freely. Transplant in autumn as soon as the leaves are off.—T. B.

Loropetalon chinense.—This is especially interesting as being a member of that curious group of plants, the Wych Hazel family, of which the species of *Hamamelis*, the Sweet Gum (*Liquidambar*), and *Parrotia persica* are the most familiar examples. *Loropetalon chinense* is not unworthy

of general cultivation from a purely garden point of view. It is a free-flowering shrub with the flowers, clustered in small heads, terminating the branches, the calyx being pale green and the long linear petals pure white. When better known this shrub will probably become a favourite; quite small specimens flower freely. It was first introduced in this country a few years ago by Messrs. Veitch. It is a native of China, from whence it was sent by Mr. Charles Maries.

Elæagnus macrophyllus.—This is one of the most distinct and striking of the hardy Evergreens from Japan, a country to which we are indebted for some of our most popular garden plants. It has larger leaves than any other cultivated species of the genus, and although the flowers are inconspicuous, the large leaves, which, when mature, are a deep glossy green above and at all times a bright silvery white beneath, renders it a very desirable bush, either grown as a single specimen on a lawn or in company with the ordinary inmates of the shrubby border.

Prunus tomentosa.—This is one of the handsomest of spring-flowering hardy Japanese shrubs. It is also one of the earliest to bloom, commencing to do so in the beginning of March, and producing a succession of flowers up to some time in April. The flowers are large and white, with a very slight tinge of flesh colour at the base, and are so numerous, that they completely cover the shrub, which is little more than 3 feet high, and forms a very branching, compact, and roundish bush. It is propagated by cuttings and seeds, which it yields freely.

FRUIT GARDEN.

OUR HARDY FRUITS.

APPLES are a grand crop this year, nearly every blossom having set, and the fruit is swelling rapidly; thinning out the clusters ought to be attended to without delay, and where a good washing with the garden engine can be given to dislodge all matters likely to shelter insect pests, that attention should be given. I find American blight to be very prevalent this year, and as it spreads rapidly, it must be attacked without delay; on the stems and main branches a good stiff brush will destroy much of it, and a washing with soft soap dissolved in warm water, so as to form strong soap-suds, with paraffin oil added, in the shape of half a pint to the gallon, and worked into the affected parts, will destroy this troublesome pest. Caterpillars and grubs must be picked off by hand. Espaliers, cordons, and dwarf bush trees should now have attention, in the way of stopping their shoots, by pinching out the points as soon as they have made five or six leaves. I would also strongly urge all who have heavy crops of early kinds of Apples, such as Keswicks, Lord Suffields, &c., to try successional gathering—viz., begin by picking the finest fruits as soon as large enough for use. The tree will thus perfect a larger number without being exhausted.

PEARS.—I have seen many a good crop of Pears, but never anything like that of this year; all kinds are alike; free setters, such as the Chalk and Lammas Pears and others that figure in market gardens, are not more heavily cropped than Jargonelles, Beurrés, and all the tender wall Pears. In short, both on walls, bushes, and, in fact, on any form of tree, Pears hang like ropes of Onions; thinning the fruit and pinching the shoots are therefore operations of the highest importance, for, owing to a very late spring and heavy rainfalls in May, the trees are making an exceptionally ample leaf growth, and now every ray of sunlight should be utilised to hasten the crop.

PLUMS are a good, but by no means so regular a crop as Apples and Pears. There will be a full average. They will require the same attention in the way of summer pinching as Pears and Apples. I find the Victoria to be as usual the most heavily laden of all kinds, and as the green fruit makes excellent tarts, thinning will be an

advantage. I may add that it is particularly well suited for culinary purposes, having thick flesh and a thin stone or kernel. Another fruitful sort this season is the Early Orleans, a useful variety either for walls or as bush trees.

CHERRIES of nearly all the leading dessert kinds are a fair crop, but they are all eclipsed by the Morello, the trees of which, both on walls and bushes, are loaded with fruit; as bushes, its long, pendulous branches hang down, and form one of the most graceful trees in the fruit garden. Black fly is becoming prevalent, and washing with tobacco water should be no longer delayed.

STRAWBERRIES will be a magnificent crop. The beds have been a level sheet of bloom, and now they are equally full of fruit just ripening. Dry, fine weather is now needed for this crop, as the beds being mulched with litter and the soil well moistened by heavy rains, there need be no fear of the crop suffering from drought, as it did last year.

CURRENTS, both Black and Red, are good crops. They require totally distinct pruning both in winter and summer in order to get the best results. Black Currants bear best on the long shoots that spring from the base, and these must be left entire, but Red and White varieties bear best on spurs, and I find it decidedly best to shorten the young annual growths in June so as to let sun and air into the centre of the bushes. The fruit not only ripens better under such treatment, but the buds for next season's crop are decidedly very much benefited by timely attention to this too frequently neglected part of culture.

UNPRUNED GOOSEBERRY BUSHES.—I have for years been under the impression that Gooseberry bushes are pruned too much for ordinary purposes. Where one grower sets a high value on a few monstrous berries for exhibition, a hundred grow Gooseberries for culinary and dessert purposes; and as the crop can be thinned out to any extent for the first named purpose, the remainder left to ripen will, if the bushes are liberally treated at the root, swell up to a good average size. There need, therefore, be no fear of the crop failing, as is the case with Apples and Pears; in fact, I have never known Gooseberries to fail on bushes left thick with wood. Looking round a fruit garden a few days ago, where crops of every kind were exceptionally good, I remarked to the grower that he had a grand lot of Gooseberry bushes; they were models of fertility and shape. He said "Yes; they are just as Nature formed them; we never cut our Gooseberries at all. We plant young bushes 6 feet apart each way, and allow them to grow until they get too large to get amongst them; and as we have never failed to have all the Gooseberries we can use, we are well satisfied with the result." I am certain that in districts where small birds attack the buds the bushes can hardly be too thick of wood—small berries being preferable to no berries at all.

Gosport.

J. GROOM.

WATERING VINES IN SUMMER.

VINES now and onwards till September require a great deal of water at the roots, and where the borders are well drained and properly made it is almost impossible to give them too much. Some of the finest Grapes I ever saw were produced on Vines that were watered thoroughly every ten days from May until August. In the early part of the season care should be taken that the water used is of the same temperature as that of the atmosphere of the vinery, but just now and throughout the summer water from any ordinary cistern or pond may be given without adding any warm water or heating it in any way. We have a large basin attached to one of the fountains in the pleasure grounds from which we obtain our water for the Vines throughout the whole of the summer. On a sunny day it becomes quite warm and suits the Vines well. In modern vineries where there are large water-tanks and heated pipes passing through them, the water is always genial, and need give no trouble or hesitation in applying it. In some places where

the garden is supplied with water in a proper way the hose can generally be turned on to any Vine border or quarter desired, but for the Vines the water should be drawn from a source exposed to the sun if possible. When shut up under ground it is chilly even in summer, and we would be very unwilling to drench our borders with such water at this season, or indeed at any season. Just now no mere surface waterings should be tolerated. They are bad enough at any time, but now when it is so necessary that the Vines should be supplied with abundance of water, dryness anywhere is ruinous. In using manure water do not stint it. Shallow borders and such as are well elevated will take any amount of it. In the case of new borders mistakes are often made. Many seem to think that they do not require more water than old borders consisting of close soil, but when the new borders are composed of large lumps, as they generally are or should be, the water passes down and away quicker than many suppose. Attending properly to this is one of the main points in young Vine culture. Many wonder how they shall get on with watering when the fruit is ripening and after it has matured. I would say go on as before, so long as the weather remains summer-like. No manure water need be given after maturity begins, but clean water should not be withheld, as damp borders in summer do not deteriorate flavour, and they certainly keep the Vines in a healthy condition. In reference to manure water, I may say that I think many do not begin with it early enough. To secure the best results from it it should be used before or immediately the fruit is formed. If not applied until the fruit is nearly full grown or maturing, its advantages for the season are to a great extent lost.

CAMBRIAN.

FRUIT TREES OVER WALKS.

A FEW miles from where we are writing there is a farmhouse garden, from which many of us might learn a useful lesson in reference to hardy fruit culture. The garden in question is in front of the residence, which, we should mention, stands a good way back from the highway. The width of the garden is perhaps a little over 30 yards, and through this strip of ground runs a rather wide walk leading up to the house. It would appear that at one time, probably as many as twenty years ago, espalier fruit trees lined both sides of this walk; they look, too, as if for a few years they had been tolerably well cared for, because the branches had evidently been trained in a horizontal direction for at least 8 feet or 10 feet on each side of the stem; then they seem to have been neglected and allowed to grow as they liked. They now therefore form a hedge-like growth on each side of the walk, and in a few years the branches will meet together overhead and form a bower 10 feet in height. A good amount of bearing surface is thus presented, sufficient, indeed, for each tree to furnish from six to eight bushels of Apples. Than this bower when in full blossom nothing could be more striking; the trees have had just enough of their own way to possess a sort of happy freedom; there is an absence of all stiffness, and yet a combination of the ornamental and useful that is quite charming. The lesson to be drawn from this is that where space is limited and a certain number of walks indispensable, it is quite practicable to plant fruit trees by the sides of them, and, instead of allowing them to grow out over the cultivated ground, to compel them to grow over the walks. This must not, however, be understood as advocating stiffly trained bowers, requiring a lot of labour and yet only giving poor results; but it is quite possible with a little judicious pruning to grow Apples, Pears, and Plums in any direction.

Were we about to adopt this plan, we should thoroughly prepare the soil by first trenching it up to a depth of 2 feet, and incorporate with it sufficient farmyard manure to make it fairly rich. The character of the staple must, however, decide if any or how much manure must be used. In strong deep soils fruit trees will grow quite vigor-

ously enough without anything else to stimulate them. Our next step would be to select strong maiden trees and plant them in November, and in the following February we would cut them down to 3 feet from the ground. We would plant Apples and Pears 4 feet apart and Plums 3 feet; all of them should be 2 feet from the edge of the walk. We would not allow any side-shoots to be nearer the ground than 2 feet, as they would not bear much at a lower level, and the branches would only afford a harbour for vermin; besides, it is important to leave sufficient space for the air to circulate under the trees to keep the walk dry. Plum trees are always the most difficult to manage when grown away from a wall, unless they have their own way and are allowed to grow in whatever direction they like; but as this cannot be termed a restrictive system, they may be made to answer in a satisfactory manner. The best sorts of Plums to plant for this purpose are the Dymond, Magnum Bonum, Duke of Edinburgh, and Victoria. The most reliable Pears are Williams' Bon Chrétien, Autumn Bergamot, Louise Bonne of Jersey, Seckle, Fondante de Charneu, Jersey Gratioli, Windsor, Swan's Egg, and Beurré de Capiaumont.

Anyone desirous of planting in this style for ornament, especially Pears or Apples, should plant double or single horizontal cordons. On a double cordon the branches might be allowed to grow 3 feet long, and on a single cordon 4 feet or 5 feet. After these have been planted long enough to get furnished with spurs the whole length, they might be allowed to grow in their own way for one season. At the end of that time the most suitable shoots should be selected and left to form upright branches, and these vertical shoots should be as nearly as possible 1 foot apart. When they have grown to a height of 4 feet or 5 feet, they should all be cut back to one uniform height of 4 feet from the ground. This will cause them to branch out, and ultimately to form several shoots, which, if left unpruned (except where they extend over the cultivated ground), will soon develop into a fruit-bearing state, and be ornamental at the same time. It is possible that for the first few years the upright shoots may require some support, but a good deal will depend upon the taste and requirements of the cultivator in this respect. A little training may perhaps add to their attractiveness, but it will not do much towards increasing fertility.—*Field*.

Extension-grown Vines.—In reply to "L's" further enquiry (p. 524), viz., whether it takes longer to ripen Grapes on shoots with many joints left beyond the bunch than it does when only one or two joints are left, I have to say that my impression is that it does take longer to ripen the bunch when the shoot is not stopped till six or eight or more leaves or joints have been produced beyond it. I have often noticed, at least, that the bunches on the shoots that are stopped soonest and shortest open their flowers sooner and set sooner. I may say I am sure of that; also that the fruit ripens as well without any leaves whatever beyond it as it does with two, six, or a dozen—provided the bearing shoot does bear ample and good foliage behind the bunch and up to that point. I have proved this often, and the fact has been corroborated by others on several occasions. One circumstance which I think tends to prove that early stopping accelerates the ripening process is the fact that Vine rods or shoots that are stopped early and kept stopped, always ripen their wood first and produce the largest and best eyes at the axils of the leaves.—J. S. W.

Laxton's King of the Earlies.—We are gathering here nice little dishes of this Strawberry, which belongs to the May Queen and Black Prince section. It is a prodigious bearer, of fairly good size, and in flavour both rich and refreshing. Ours are grown under a bough ley, and we find them most useful.—R. GILBERT, *Burghley*.

Vine leaf excrescences (H. G. A.).—The spots are caused by a very minute spider, the Vine mite (*Phytomyces vitis*). The eggs are contained in the spots. The Vine mite does not as a rule cause extensive mischief. All the worst of the spotted leaves should be gathered together and burnt; the eggs of the new brood will then be destroyed.—W. G. S.

FLOWER GARDEN.

BORDER CARNATIONS.

I CANNOT agree with Mr. Douglas's assertion (p. 538) that the difference between a border Carnation of the ordinary type and a Tree Carnation is that in the first the flower-stem "dies down to the base" when it has flowered, whereas the Tree Carnation produces a stem that lives several years; nor do I believe that the Tree Carnation "was originally the result of a seminal variation." The difference between the two appears to be only one of degree, and if this be once admitted, then the early flowering of border Carnations under glass must also be granted. Some border Carnations are longer legged than others or more tree-like in habit, but mostly all are more or less woody, and if protected and trained will grow on just like Tree Carnations. In proof of this I send you a four-year-old limb about 2 feet long from an old red Clove that has been on the border for years quite unprotected, and I could send you abundance of others like it. The limb in question shows each year's growth from which blooms were cut, and is now furnished with a fresh tussock of shoots at its extremity. The reason why the shoot is not furnished with green shoots its whole length is because it is one of a broad patch growing from a common centre and was overlapped by those behind it; but if it had been staked and grown under glass, it would have been a Tree Carnation. The flower-stems of border Carnations do not die back further than a woody node, from which they break again. I have never been able to discover from books how the so-called Tree Carnations originated, but I venture to assert confidently that some shrewd person simply took advantage of what is and has always been the habit of the Carnation to grow woody, staked it and trained it under glass in the "tree" form, and sent some of the best of this kind out as Tree Carnations, but which were simply Carnations of the common border type and nothing more. Not only do all Carnations grow in the tree form more or less, but the common dwarf early summer border Pinks do the same, and I send you limbs of these, also several years old, just like a Tree Carnation limb. If seed of the common border Carnation is sown, ever so many varieties will appear—some single, some double, some early, and some late flowering, and if the latter are lifted and potted, they will bloom freely during the winter and spring.

Since the above was written I have measured limbs of an old scarlet Clove (that existed before Tree Carnations were introduced), and I find them to be over 3 feet long. They have five years' growth upon them, and the stems are nearly as thick as my finger at the base and quite woody. These shoots have fulfilled their functions every season, but have not died down further than the shank of the flower-bud, and the annual growths start, as can now be seen, from the base of that shank—not from the base of the stem at the ground. Had I trained this old Clove carefully to a trellis, instead of leaving it to trail all over the ground, and treated it like a Tree Carnation, I should have had a tree specimen perhaps 4 feet high and as much across. Be it understood, these long stems have not rooted anywhere, but entirely depend on the original root at their base. They are Tree Carnations pure and simple, only not tied to stakes.—J. S. W.

* * The examples sent by "J. S. W." fully bear out his assertions in the case of both Pinks and Carnations.—Ed.

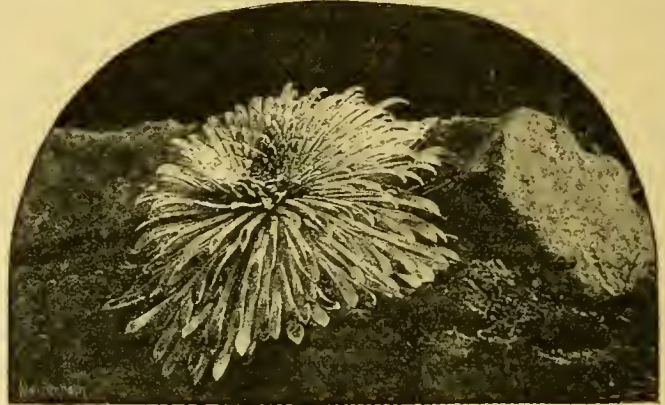
— It used to be understood that border Carnations belonged to the summer-blooming section, such as is represented by the Cloves and border forms of the florists' varieties, regarding the normal time of flowering of which it might have been supposed there could not well be any difference of opinion. Needless to say, the Cloves and the florists' section, in common with what have been hitherto called border varieties, except in the rare occurrence of a stray shoot that forms flower-buds out of season, are summer bloomers; whilst

the perpetuals flower all the year round if subjected to warmth enough to enable the buds to open. Plant the perpetuals in open borders, as many are now growing them, and there is no reason why they may not be called border Carnations. So treated, they show their continuous blooming disposition even in winter, as far as the weather lets them. An instance I can name proves at once the marked difference that there is in the natural time of flowering of the two sections of these plants. Mr. Howard, of Southgate, who, it is well known, grows thousands of Carnations, mostly perpetual flowerers, has now for three years had quantities out-of-doors; the mildness of the winters has caused their flowers to keep almost constantly moving, so much so that there has always been some with buds showing colour. Mr. Howard has sent quantities of flowers from these outdoor perpetuals to market in early spring before a single bloom-stem had begun to push, in the case of the border kinds grown side by side with the perpetuals and under similar conditions. In dozens of cold pits and frames, through the spring, he has had perpetual flowering kinds, and also border sorts in pots. The former, when big enough, full of buds; the latter, without so much as a flower-stem appearing. And this is

one. This might mean in winter-time a difference in temperature of 20° or 30° as between his heated structures and the unprotected cold frames in which Carnations are ordinarily placed—the difference, in fact, between a state of unnatural activity and perfect rest as regards the plants. Carnations are not placed in frames to protect them against frost, but to shield them from the winter rains, which to young plants but just rooted are apt to be injurious. They need all the air possible, even in frosty weather, to keep them sound, healthy, and clean. To have such plants confined in frames with the frost carefully kept off them is to put them under abnormal conditions, in which abnormal results, no doubt, may be expected. What Carnations may do under milder climatic conditions in the south of England, or helped by hot-water apparatus in the north, is beside the matter. What is certain is that Carnations of the ordinary type grown through the winter—say anywhere about London—in cold frames of the ordinary sort will not bloom in April or May.—M. R.

SAXIFRAGA LONGIFOLIA.

THIS, the largest and grandest of the encrusted Saxifrages, is best seen when grown in rather



The long leaved Saxifrage (*S. longifolia*) on a low wall. From a photograph.

just what I have always found in my own experience after growing both sections of Carnations as long as I have grown anything. For the last few years border Carnations, as represented by the Cloves, have been forced in considerable quantities by several of the London market growers; but they show their marked difference in habit by requiring to be very differently treated in matters of time and warmth from the perpetuals, as if an attempt is made to get them in early, such as the perpetuals submit to, the flowers go blind. It is not unlikely that, in the quantities of border Carnations that are now annually being raised, the continuous flowering habit of the perpetuals will appear in some of them, or possibly may have already shown itself; just as in the opposite direction some of the sorts that are sent out as perpetual flowerers have no claim to being such. But, so far, the difference in the time of the flower-stems appearing and of their blooming in the two sections of these Carnations when under like treatment has so markedly and persistently shown itself, that it seems strange there could be two opinions on the subject.—T. B.

— "J. S. W.'s" statement that Carnations would bloom readily in pots in spring if grown in cold frames during winter, was one calculated to further the hopes of intending cultivators of the flower and to make old growers smile. Challenged by Mr. Douglas, "J. S. W." explained. His "cold frames" were "structures in which Lettuces are grown in the winter and the like." He turns hot water on to keep the frost out, but insists, for all that, that frames thus heated by hot-water pipes "are cold frames in the correct sense of the word." "J. S. W.'s" remark, that he "only keeps the frost out by his heating apparatus," is a curious

upright, wall-like rockwork that raises it a few feet from the ground. The plant which is the subject of this engraving has the root almost jammed between two pieces of rock, and the handsome silvery foliage (at its best throughout the winter) spreads over both. The flower will be thrown up next year.

NOTES FROM NORTH DERBYSHIRE.

IT has been a backward spring here, but nearly everything is healthy. The foliage of the Roses is clean and bright, and in August we shall still have plenty of bloom, and our friends from more favoured regions will express surprise at our Roses at a time when the first bloom is generally over. There is an advantage in this in some ways, though we do not get a full second bloom. The beautiful *Oenothera Youngi* has seeded freely with us, and a healthy lot of seedlings round the parent plants promise a nice stock of this flower. If I were doomed to possess but one yellow flower, this would be my choice. *Veronica longifolia* subsessilis came up very strong. Out of six plants, two are very vigorous, and the other four have died away. They have been protected from slugs, so that some other cause must be looked for. All the varieties of Campanula that I have tried thrive exceedingly. What a weed *Campanula glomerata* dahurica is! I think it must be a good wild garden plant, and I shall try it as such. Talking of the wild garden, we are busily engaged in getting out objectionable weeds. We shall succeed with the Nettles and Mercury, but what is known as the Bee Nettle, and also the Crowfoot, are terrible things to exterminate. The former smells most objectionably in a place suggested by one not altogether unknown to the garden. I can count

sixty-six blooms of *Trillium grandiflorum* strong and healthy, but, of course, on the wane. They are in almost complete shade in leaf-mould that is never dry, although there is no stagnant moisture, as the ground is on the slope. I only hope that they may thrive and increase, for the beauty of this flower, when not scorched by the sun, is extreme; its purity of colour and broad foliage are happily associated. I send a few blooms, but past their best. How beautiful a few of them look arranged in one of the Munstead glasses! Query: Will cutting these gems be hurtful to the root, as leaf and flower have all to come away? One thing strikes me, and perhaps sadly, while endeavouring to naturalise exotics, and I see that "L," in last week's GARDEN, alludes to the subject: "Whatever we may do or attempt, we cannot make a more lovely and happy combination in a wood than Bluebells where they luxuriate." As "L." says truly, they must be under trees; then indeed they will grow 18 inches or more in height

yet. Snowdrops never look so well as when met with in clusters, in which the bulbs touch or almost touch each other. Much has been done to improve Snowdrops by careful selection in the way of seed from the largest and best formed flowers; and as they hybridise easily, we may soon expect to have endless variety amongst them, and, let us hope, improvement on those already in cultivation. Raisers of seedlings should keep a faithful record of their crosses and the results obtained, so as to prevent confusion.

From the nursery to the bed or border is easy work when we come to plant. We make a large hole with a trowel or dibble, put in fresh soil, and insert the bulb, never shallower than from 6 inches to 9 inches below the surface. This allows for planting other things nearer the surface, and if possible plants that flower as soon as the Snowdrops are over. G. Elwesi, the subject of the annexed illustration, was first discovered by M. Balausa in 1854, in the Gamaladagh Mountains,



Galanthus Elwesi.

Clematis belonging to the Jackmanni and lanuginosa type has nearly driven older varieties into the background, yet in their respective seasons there are few more lovely climbers than the old well-tried sorts of *Clematis*, such as *C. montana* and *C. Flammula*; whether as wall or pillar plants, or allowed to grow as they like over some old tree or building, they are a sight that always arrests attention. One of the prettiest things I have seen lately was some wire arches overrun with *C. montana*, which was a complete mass of ivory-white flowers, such as it would be impossible to get from any of the newer and larger flowered varieties. I am sure that those who banish the old *Clematis*es from their gardens to make room for new ones adopt a very doubtful practice. Not the least of the merits of *C. montana* is its early flowering; in this locality it is very much grown for covering the walls of villa residences in exposed positions near the sea, as its tufts of flowers stand the wind better than those of any of the varieties with long footstalks that get bruised by the continual buffeting to which they are subjected. It flowers freely, either sown in closely or on the young wood of the preceding year, but, like most other climbers, the finest blooms are produced by the young wood. I find it best to treat them as vines frequently are treated, viz., to train up a certain quantity of young shoots in summer and remove an equal amount of old wood at the winter pruning.—JAMES GROOM, *Gosport*.

Violas for summer bedding.—These useful plants have of late increased very much in public favour; we get in them a great variety of colours, combined with a very dwarf habit. There is a general belief that *Violas* are only suited for the northern portions of the kingdom, and doubtless they grow best where the summer temperature is not sufficiently high to keep such plants as *Alternantheras* alive; but I find that if given a good depth of soil, well enriched with manure there is no other plant that can excel *Violas* for continuous blooming, even in the hottest and driest of seasons. Last year was exceptionally hot and dry, and in this locality the soil is light and stony; nevertheless, when well treated, *Violas* never failed the whole season, and I find that they are being extensively planted again. Young plants make a good display directly they are put out, and, unlike many of our tender summer bedders, they are comparatively weather-proof. If put out in April, they will be quite gay before it is safe to trust *Heliotropes* out of doors. A few degrees of frost or cold drenching rains that make tender plants look miserable just suit *Violas*, and, with a good supply of these and similar plants, many of the difficulties that beset flower garden decoration would disappear. The proper place for tender plants is under glass; there is really no need for them in the open-air garden, which can be richly stocked with plants that live happily out of doors.—J. G., *South Hants*.

Giant Poppies.—I am in some doubt as to the correct nomenclature of certain of the giant Poppies just now so superbly in bloom. Mine, raised from seed sent under the name of *Papaver orientale*, have flowers of divers sizes, but the largest are monsters some 2 inches across, and rich orange-scarlet. Would that be the true *orientale* or *bracteatum*? I have seen elsewhere giant Poppies producing deep crimson blooms almost the duplicate in colour of those of *ambrosium*, but very much larger. Are those the true *orientale*? Of the two, having regard to the noble foliage, giant growth, and size of flowers, I am not sure that the orange-scarlet one is not the more striking. Still, I should like to have some information as to the correct nomenclature.—D.

Lathyrus Drummondii.—Two large clumps of this early blooming Everlasting Pea are just now full of flower, and very beautiful they are. In very hot, dry positions, and especially when the plants are small, this *Lathyrus* may prove rather disappointing, but when well established the roots penetrate to a great depth, and can well withstand drought, and the top growth is then

and of surprising vigour. Here we have naturalised the Spanish varieties of different colours with the English one. I send with the *Trillium* a few spikes of a *Scilla* (*campanulata*) that is naturalised here in deep shade. It must be an escape from the old garden. It contrasts well with the Bluebell and grows about the same height. In conclusion, I desire to express my admiration for the Munstead Iceland Poppy. G. H. C.

VARIETIES OF SNOWDROP.

OUR pearly noddling Snowdrops have now given place to other and later-flowering plants, but as the time for seed-gathering and transplanting from nursery beds is drawing near, the following remarks may be acceptable to those who make Snowdrops a speciality. Within the last few years we have had undoubted proof that Snowdrops after planting should be undisturbed; beds of them that have not been interfered with for at least twenty years are grand compared with those that contain recently transplanted bulbs. The latter do not flower well for some years. *Galanthus Elwesi* when disturbed seems to suffer more than any of the others; imported bulbs of it planted two years ago have not regained their best form

and was introduced by Mr. Elwes, whose name it bears, in 1874. It is one of the largest and most distinct Snowdrops we possess, differing from all others in having a narrow tube formed by the petals or inner segments. The latter have green spots at their bases and prominent notches at the apex. Patches of it on the lawn or in shrubby borders are very effective. *G. nivalis*, the ordinary garden Snowdrop, is most prolific in the way of varieties. Amongst them may be mentioned *Imperati*, *coccynensis*, *Melvillei*, *lutescens* (having a distinct yellow tinge at the base), *virescens* (streaked with pale green and very distinct), *latifolius* or *Redoutei* (considered a species, and certainly very distinct), *Sharlocki*, *æstivalis* major and minor, and *reflexus*, the latter a very distinct plant with reflexed outer segments. *G. plicatus*, the Crimean Snowdrop, is very distinct, having leaves with a longitudinal fold along their edges and decidedly greenish flowers. This kind planted in pots with the Dutch bulbs in autumn makes a good show in the greenhouse, after which it may be planted in the shrubbery. K.

Clematis montana.—During the last few years the great multiplication of varieties of

correspondingly robust and flowers are abundant. They are produced in clusters like those of latifolius, and are of a deep carmine-red. The average height of this Pea is 6 feet when in full growth here, but probably in more holding soils it is taller. I have a clump of it covering an old Apple tree stem, and the other forms an isolated clump supported by spray. This Pea ought to be one of the most popular of hardy climbers.—A. D.

CROWN IMPERIALS.

I HAVE read Mr. Ewbank's remarks on these (p. 540) with pleasure, and I for one am glad to be able to take note of his experience, notwithstanding the fact that it is opposed to my own. Full and clear, however, as he has put it before us, one cannot forget that he is located in the warm, dry, sunny Isle of Wight—a very different place from wet Yorkshire; shady garden situations with him for bulb culture may equal, and possibly be better than, those in the full sun with us. Then, on the other hand, the moisture which he believes these bulbs to enjoy may do with him, but there are moistures and moistures, and what we call a droughty time never burns up the Grass as it does in the Isle of Wight. Of course I could only mean a "dry and sunny situation" in applying those terms to Yorkshire. As regards calcareous soil of which I wrote (p. 490), and also gave my reasons for supposing that Crown Imperials liked it, I may add that I still think the extra dryness on limestone is favourable here—i.e., what I might term Yorkshire dryness. It would, to my mind, have added greatly to the value of Mr. Ewbank's notes had he given us some idea of the subsoil of the part of Yorkshire whence he had his bulbs which flowered so well, and also the positions in which they grew. This is really what we want to get at, and it is fortunate that Yorkshire grown bulbs can be pitched upon. This information I hope Mr. Ewbank will give us. Another point of wide difference between us is this (I put it to the reader): Can the Yorkshire bulbs "plunged in a heap of sand in a shady, cool corner" be said to be in moist quarters? or can their first year's produce of bloom, after removal from the home where possibly they were bred, indicate much? Further, can those bulbs which Mr. Ewbank set "in light, moist, rather rich soil composed of sand and leaf mould" be said to be in moist quarters? because this light compost cannot at all be compared with what we mean when we speak of moist quarters or stitfish land. At p. 490 I spoke of the injury often done by late frosts to the early growths of these bulbs. No one can deny that such damage does not affect the bulb development, and consequently the following season's produce. Are such late frosts experienced in the Isle of Wight? if not, I fear that acclimatised bulbs of it will not answer as examples in this case, for this condition alone can rule all the others referred to. In Mr. Ewbank's Yorkshire bulbs we have material more likely to be generally accepted, and I hope that he will kindly oblige us with the information just asked for. J. WOOD.

Kirkstall, Yorkshire.

Iris susiana.—Mr. P. Grieve goes rather far in calling a practice which is recommended by Herr Max Leichtlin and Prof. Foster unnecessary and even injurious (see p. 541). He forgets that last summer was very hot, and that the baking process went on of itself. It is not at all likely that he would have had his 300 blossoms of this Iris if the plants had been exposed to rain last year. His note may have a very misleading effect. Besides this, what one person can do under one set of conditions is not always open to another where they are different. The late Mr. Williams, of Ormskirk, a very experienced gardener indeed, used to lift Iris susiana out of the ground and to dry it off for some months. This may be a faulty practice in some cases, but it does not at all prove that it was so for him. It may have been his only method of blooming it. Notwithstanding all that Mr. Grieve says to the contrary, I still be-

lieve, as a general rule, that Iris susiana does best in this country during the summer months under a frame.—S.

Chrysanthemum Coquette de Castille.—Noticing in a contemporary a statement to the effect that this new Chrysanthemum had bloomed in Mr. Owen's nursery, at Maidenhead, I wish also to record that it is coming into bloom in my garden at the present time, and it may also be of interest to state that the plant, which is only in a 5-inch pot, was not struck until April, being therefore only ten weeks from the cutting stage to that of flowering. It may, therefore, I think, be regarded as a valuable addition to the early-flowering Japanese section. I have likewise another of the same set showing colour; it is called M. Ghys. I look forward to the time, which I fully believe is not far distant, when we shall have as fine flowers and as many varieties of Japanese Chrysanthemums in flower in July, August, and September as we now have in October and November.—W. CLARK, 55, Ferme Park Road North, Hornsey.

IRIS OLBIIENSIS AND IRIS PUMILA.

THE Irises I described were sent me by Mr. Ware, of Tottenham, as varieties of Iris olbiensis and Iris pumila. The white Iris pumila was the first to flower. Its blooms were almost pure white; there was only a little greenish and purple tinting at the base of the standards, yellow on the heads, and some faint purplish lines on the falls. Of those I had as Iris pumila all were nearly alike in shape of flower, only the very small variety seemed to have a rounder, more ball-like flower than the others. I cannot, of course, be quite certain as to the variety I described as Iris olbiensis tristis being true, as the labels may have got mixed, but it was the only one I received which at all answered to that description; the others were yellows, purples, and whites, all nearly self-coloured. It was not biflorous or any different species, and it differed in no way from the others; all carried from four to eight blooms on a stem. The white Iris olbiensis I did not recommend, as it is not a good white. I saw it in bloom in the Regent's Park on Friday, June 5, and there it was still worse, the blooms looking quite dirty. My white Iris pumila unfortunately succumbed to a combined attack of damp, slugs, and builder's scaffolding. I am almost certain I have seen it described as familiar, and did not consider it a rarity or possessed of any special value. I have always understood that the natural distribution of these dwarf Irises was from Hungary eastward, Iris Chamæiris being the most westerly, Iris pumila next, and Iris olbiensis in the Caucasus, but as I trust to memory for these things, I cannot quote any particular authority. Of course, these botanical questions do not affect the value of a plant as a useful subject for garden decoration, and I only recommended them as readily procurable plants easy to grow. It is useless to recommend for decorative purposes plants which only exist in a few private gardens and cannot be purchased in quantity. J. D.

SHORT NOTES.—FLOWER.

Zonal Pelargonium Albert Delaux.—This curious Pelargonium, sent out this season by Messrs. Delaux, of Toulon, is now in flower in my greenhouse; it is certainly quite a new departure and peculiarly striking. The flowers, which are of medium size, are pale Carnation or white, with a rosy tint, and completely powdered all over with small carmine dots.—W. CLARK, 55, Ferme Park Road North, Hornsey.

Narcissus Mary Anderson (p. 465) may possibly be the single of Orange Phoenix, but I have doubts on the subject; the flower is too small. I also have found double Orange Phoenix with Mary Anderson, and I have called upon the supplier of it to make good what I consider a mixture and not a reversion. The stock was no doubt unclear.—OBSERVER.

Double v. single Stocks.—Doubtless the majority of your readers know how to get double Stocks of the Brompton class. Judging from what we buy and what we see, little attention seems to be paid to the subject. I should therefore advise all the four-petaled flowers being clipped off and the five-petaled ones left. This I have proved in the secret as regards doubling—no doubt known to many, but practised by few.—R. GILBERT, Burghley.

Eremurus robustus in London.—We were greatly pleased and surprised to see this handsome and vigorous hardy bulb in flower in London on Saturday last in Colonel Stuart-Wortley's garden in the Grove End Road. It is a bulb that shoots up a great Hyacinth-like stem to a height of 6 feet, and probably much more in the case of very vigorous and established plants. The flowers are pale flesh-coloured, closely set round the great spike, and produce a distinct and fine effect. The individual flowers are somewhat like those of the old border Asphodel, but far handsomer and larger. This Central Asian Eremurus is decidedly the most striking hardy bulbous plant that has been introduced for many years. It has what we did not expect—a most delicate scent, not strong, but very grateful.

Meconopsis nepalensis.—All the winter through the leaves of this handsome Himalayan Poppy have been lovely clustered together as a rosette above the dark wet ground, the night dews or morning raindrops, caught in the soft brown hairs with which they are clothed, glistening like pearls. Now, since warmth and sunshine have returned, it has pushed up a noble column of pale yellow bells, and how delicate is their texture! Insensibly one stretches forth the hand to raise with the finger tips one of these frail blossoms and to see what treasures lie within. How rich the reward! how exquisitely pretty is the bunch of golden stamens! and, as if a nob of colour were yet needed, the pistil is tipped as with a ruby. The plant does not seem particular as to soil; it grows freely in a mixture of peat or in loam, but it enjoys having the ground around it covered so as to afford moisture and coolness at flowering time. The Mimuli, with bronzy leaves and large blossoms of pale lemon colour, blotched and flecked with deep red and brown, look well spreading around it.—L.

Sowing Primrose seed.—Permit me to correct an error into which "J. S." (p. 540) has fallen. He states: "'A. D.' says that if Primrose seed be held over till next year, its chance of growing is very small." This I did not say. I remarked (p. 489) that "I had found seed sown when new to make from 20 to 30 per cent. better growth than when sown in the following spring." Again, I said, "Primrose seed saved ever so carefully includes some that is well matured and some that is small and imperfect. Very often this latter has been obtained from the finest varieties; yet if such seed be held over till next year, its chance of germinating is very doubtful, especially when sown in a cold frame or house"—a statement the meaning of which ought to be obvious. It is all very well for "J. S." and others who, like him, have plenty of Primrose seed of their own saving to sow when and how they like, but my advice was intended for those more luckless people who have to purchase their seed in small packets ere they sow it, and who want every seed to germinate. The assumption that new seed germinates more irregularly than older is absolutely an incorrect one as far as Primroses are concerned.—A. D.

Planting out forced bulbs.—So many inquiries are made as to what is the best course to adopt with bulbs that have been forced or flowered in pots, that the following remarks on the subject may be useful. Looking round a bulb garden not long ago that was quite a blaze of bloom, beds of Gesner's Tulip being in full beauty, and also Parrot Tulips, I asked for information as to the effect of "lifting and drying off the bulbs" compared with letting them remain in the soil the year round. I was told that there was ample proof of the superiority of leaving the bulbs in the soil, and that bulbs that had been flowered in pots one season will, if planted out, after being gradually hardened off, produce blooms nearly equal to those of the year in which they were imported, but that if kept hanging up in dry bags until the beds are cleared in the autumn for their reception, they are not nearly so fine. I think this will be easily proved to anyone's satisfaction who puts the plan into practice. When left in the ground, the bulbs commence to make fresh roots

several weeks before it is usual to plant bulbs, and it is certain that, although they do not make their appearance any sooner above the surface than bulbs planted later, they are none the less gathering strength that will, when the blooming season arrives, tell strikingly in their favour. Bulbs withstand drying off, but they are by no means benefited by it.—J. G., *Hants.*

HARDY GARDEN FLOWERS.

AURICULAS in the rock garden, in flower borders, or in frames are now maturing seeds; let them be gathered as soon as they are quite ripe. Sometimes the capsules will burst; at other times they do not. The seeds may be sown at once, or they can be kept until early spring. I generally attach a label to the stem and keep them in a dry place until spring. I save the seeds from careful crosses, but it must not be forgotten that good results have been obtained from chance saved seeds, as, for instance, in the case of the fine self Ellen Lancaster, which I believe Mr. Pohlman raised from a chance seed-pod, containing one solitary seed, on a plant of Othello in a neighbour's garden. The alpinas are very fruitful this season; they flowered late, and a spell of hot weather set in when they were in full beauty. The seeds of this section vegetate freely in damp shady places out of doors. Those planted out in the rock garden have not required any water this season, but if very dry weather sets in they must be freely watered, as they suffer from excessive heat and drought. All the choice kinds grown in pots must be repotted without delay.

CHOICE CARNATIONS raised from seeds sown in April, must not be neglected, or they will not grow into large flowering specimens. They should be put out where they are to flower in a week or two. They will do well if planted on the Tulip bed as soon as the bulbs are lifted. Plant them 18 inches apart. They may also be planted in groups in flower borders, where they add very much to their attractions in July and August. Accompanying a plate of a scarlet bizarre in the second volume of Curtis' *Botanical Magazine*, published in 1788, are the following useful remarks: "To succeed in the culture of the Carnation we must advert to the situation in which it is found wild, and this is observed to be dry and elevated; hence excessive moisture is found to be one of the greatest enemies which this plant has to encounter. On this account it is found to succeed better when planted in a pot than in the open border, because in the former any superfluous moisture readily drains off, but in guarding against too much wet we must be careful to avoid the opposite extreme." These remarks have reference to the named sorts; and I may add that the variety figured Tartar (Franklin) would stand a chance to win a prize even now; it is excellent as regards form, bright, and well marked.

CHRYSANTHEMUMS may be classed as hardy flowers, and very beautiful they are when planted out in good positions. The most effective I have yet seen were in a garden of small size; green-leaved shrubs lined the margin, and in front were Dahlias and Chrysanthemums flowering together as late as the middle of November last year. It was, of course, an exceptional season, but as a rule the best Chrysanthemums flower well planted out. The best developed blooms must, however, be obtained from indoor plants, which should now be in their flowering pots. Chrysanthemums are gross-feeding plants, and require richer composts than other hardy garden plants. Place two of them in 9-inch pots, and one in 8-inch ones; these should be kept to single stems for the production of large blooms. Specimen pompons are grown and flowered in 8-inch pots, and the large-flowered varieties in 11-inch.

THE DAHLIA is claiming more attention now than it did a few years ago. In the northern districts it is even more popular as an exhibition plant than it is in the south. It is now quite time that all plants of it should be in their places for the season. I do not plant them out before the second or even the third week in June, but

the plants are grown up to that time in 6-inch pots, and, by exposure to the open air, are stout and short-jointed. Careful cultivators do not allow their plants to receive any check, even during the process of planting out. The stakes should be put into the ground first; a spadeful of earth should then be taken out in front of the stakes and replaced by some compost, such as that used for potting. The plants, being carefully placed in this good soil, start into growth at once. They should also be tied to the stakes to prevent injury from high winds or heavy rains.

GLADIOLUS BULBS will now be all planted out. It is well, however, to keep a few until June, as by planting out so late as that month, a corresponding late bloom may be obtained. Doubtless the corms suffer injury by being kept out of the ground for any considerable length of time. Evaporation weakens them and so does sprouting, which takes place to a great extent in April and May. The hoe should be kept at work amongst them; not a weed should be seen. They have not required any water this year since being planted out, and if a mulching of short manure is applied, the soil will be kept moist for a long time.

PINK BEDS will be in beauty during the next few weeks. They are very late this year, and the lacing does not seem as if it would be very perfect. Better laced flowers are obtained from plants established before winter sets in than from those planted in spring. The pipings should be put in about the end of June.

RANUNCULUSES are now beautiful. The first blooms were open on June 6; a few of the later of the late Tulips were also then at their best, so that the two were in together this year. It is also worthy of note that the Auriculas lasted until the first Tulips were open. Now we will have the Ranunculus and the Pink in flower together. The recent cool and damp weather has suited Ranunculus well; the leaves soon become yellow in very hot, dry weather. The tubers must be dug up and stored away whenever the leaves change from green to greenish yellow. If left in the ground a warm shower will start them into a second growth and spoil their flowering for next year.

TULIPS have seldom flowered better than they did this year, the blooms being large and well marked. Those who grow them should break off the seed-pods when the petals drop, as these rapidly swell and exhaust the bulbs. The ground where they have bloomed is generally planted with Asters or some other pretty autumn-flowering annuals. Growers are, therefore, anxious to clear them off as soon as possible. They may be dug up when the stems can be doubled together without breaking. The bulbs should be dried in an airy room, and not by exposure to the sun.

PANSIES.—Questions continue to be asked about Pansies. A matter of complaint is the degeneration of the blooms. The plants soon flower themselves into a bad state during the summer. The only way to keep them in good condition is to constantly raise fresh plants from the small cuttings obtained from the bases of the plants. The thicker hollow-flowering stems do not readily form roots. Grow them in rich, deep soil and water them well in hot, dry weather. J. D. E.

Notes on a few desirable plants.—The Meadow-rue (*Isopyrum thalictroides*), with its pretty Maiden-hair-like foliage and small white flowers, is well worthy of a prominent position on rockwork. It is quite hardy and of the easiest culture. *Dianthus alpinus* is another rare and beautiful plant, and one that is readily distinguished from any other by its bright green leaves. At the extremity of each stem it produces a deep rose, solitary flower. In *Eremurus robustus*, a beautiful Central Asian plant, will be found a good addition to our garden borders. Its flowers, which are rosy pink, are borne in great profusion on stems fully 3 feet in height. *Onosma stellatum*, although somewhat rare, will not bear comparison with its near relative, *O. tauricum*. It is of similar size, but inferior in foliage. Both these plants delight in a warm dry soil and in elevated

positions. A mass of *Cypripedium parviflorum* bearing fifteen flowers, occasionally two on a stem, is at present very attractive owing to its deep yellow labellum and curiously twisted, dark brown sepals. Associated with this is a noble specimen of our native *C. Calceolus* now well in bloom. The flowers, although individually larger than those of *C. parviflorum*, much resemble that species, the latter being of the brightest yellow. *Orchis Copani*, a small-growing ornamental plant sent me for experiment from Italy, is both attractive and well suited for our climate. I have never seen it offered in any nursery list, not even in that of its donors, Messrs. Damman, of Naples. The spotted-leaved variety of *O. undulatifolia* (*O. undulatifolia foliis maculatis*) is both distinct, beautiful, and easily grown. Here it has been established for five years, and although it has not increased in numbers, still it is stronger and more floriferous than when imported.—A. D. W.

DIANTHUS GLACIALIS.

THIS is at once a delightful and disappointing plant from the manner in which its charming flowers are almost immediately succeeded by the death of the plant. So common is this the case, that many have begun to think that it is scarcely worth while to replace it, especially as it is somewhat costly; others have come to the conclusion that it is of only biennial duration; whilst yet others, amongst whom is Mr. Wolley Dod, believe that its flowering habit is so free, that it blooms itself to death in this country. I think I can "show cause" for its general and sudden collapse, and I am of opinion that it is perfectly perennial under cultivation in this climate when kept clear of its enemies. Moreover, what I have to state can be tested at once, this being just the time to make observations by those who have plants and are inclined to do so. Owing to some remarks made by Mr. Wolley Dod about two years ago respecting plants of this Pink dying, which struck me forcibly from exactly corresponding with my own experience, I began to watch my plants closely; the first season I found that a batch, both bloomers and non-bloomers, all died about the latter end of the summer; this cleared up the point to my mind that other causes existed for their death than free-flowering. In early summer some plants had been divided, and the young offsets grew healthily. The supposed vacant pots were examined, and they proved to be anything but minus living contents; three or more grubs, small, tough, and most lively, were found at the nearly consumed crowns of the roots. This year I placed four plants in pots under precisely the same conditions as plants of *D. alpinus*, neglectus, gelidus, sylvestris, viscidus, cæsius, petraeus, and one or two other Pinks. This was done with a view to testing whether my mode of culture was generally in the right direction, and to see whether the grubs attacked other Pinks in the same way as *glacialis* and with similar deadly results. Three pots before they flowered showed signs of grub-boring; also the one when in flower. Three have already been examined, and one is being left for the grubs to complete their business. Each little tuft of leaves contained one grub, and as they ate their way down the foliage died leaf by leaf; a half corrupt state of the dead parts soon caused the whole of the top to die. Those having plants looking unhealthy should seek for grubs in the short stems; if the plants are in pots and can be got near the eye, all the better. A toothpick is as handy as anything to poke down with, and sometimes it will be found that the grubs have bored close to the root. Plants may be saved when badly eaten by taking them up and thoroughly freeing them of the pest and repotting them. The young stock from offsets, it may be usefully observed, do not become infested until the season following; at any rate, no damage accrues. I cannot say what will secure them against grubs, but I know that neither tobacco powder, wood ashes, nor soapy water have that desirable effect. None of the other species of *Dianthus* above named, with the exception of *syvestris*, showed any signs of grub, and, so to speak, one comes to

feel that this grub pest is typical, a fancy possibly worth noting apace the fact that by some glacialists is thought to be only a form of neglectus, which is not attacked. I wish "K." (pp. 539 and 540) had included *D. gelidus* in his remarks on the character and identity of alpine Pinks; it closely resembles glacialists, but the flowers are larger, longer in the stalk, and not erect; in fact, the flower-stalks rest on the ground and only at the base of the calyx do flowers erect themselves.

J. WOOD.

Woodville, Kirkstall.

KITCHEN GARDEN.

KITCHEN GARDEN NOTES.

Thinning young crops.—This is very important work just now. Thick seeding is a mistake practised by all. Of such as Turnips, Carrots, Parsnips, &c., generally ten times more plants come up than are required to form a crop. When these and others are allowed to grow until the rows or beds of young plants are mats of stems and leaves, it is difficult to thin them without doing harm. Those left generally fall over and become so much twisted, that their growth for a long time, if not permanently, is retarded. If thick seeding must be practised, early thinning should be insisted on. It is the only way of giving the crop a chance of doing well. Thinning should begin as soon as ever the plants can be handled. They may be left 2 inches apart by the time they are 2 inches high or less, and when once they have an unfettered beginning it is an easy matter to thin them out to a greater extent afterwards. I need not name all the plants which ought to be thinned, but I may say nothing whatever is benefited by being crowded while young. During or soon after rain is a good time to thin. The plants come up readily then, and those left soon settle down into a free-growing state.

Treading the soil.—This does no harm; indeed, it is of benefit to all young vegetables. Where there is not much walking between the rows or around the plants we purposely firm the ground by treading. All kinds of roots bulb freer by having the soil very firm around them than where it is loose, and Cauliflower and similar crops are seldom attacked by the grub or blown over and twisted at the neck when the soil close to them is trodden as firm as it possibly can be.

Transplanting Parsley.—This may be done very successfully now where only a small patch of seed was sown and the young plants are numerous on a very small space. Make the soil in which they are growing very moist, draw them up, dip their roots in a puddle of soot and soil, and then dibble them into a good piece of soil, 6 inches plant from plant and 12 inches or 15 inches from row to row. As a rule, I think nobody has ever too much Parsley from an all-the-year-round point of view, and many would find it an advantage to transplant it extensively at this time.

Early Peas.—My experience coincides with that of Mr. Gilbert's (p. 449) respecting these. Amongst established sorts William I. is still the earliest. It not only flowers first, but pods soonest, and growers of early Peas will do well to include it in their seed orders.

Milan Turnip.—I sowed seed of this, obtained from Edinburgh and Reading, and both came up true to name. We have been using bulbs in the open garden since before Whitsuntide. It is the earliest Turnip we have ever tried. The bulbs are very handsome in form, not over large, and of excellent quality. All who wish to have Turnips as early in spring as possible should not fail to grow this sort.

Late Queen Broccoli.—This is one of the best varieties of Broccoli and one well taken care of, as year after year it comes as true to name as at first, and it is absolutely unique as the latest Broccoli. We have been cutting it since April, and many heads of it are still in fine condition.

Sown about this time every year, the plants remain dwarf and compact throughout the winter, and never fail to head superbly when the time comes round late in spring or early summer. Anyone who grows this need never be without choice Broccoli until Cauliflowers come in.

Tomatoes without manure.—This is the surest way of fruiting Tomatoes in a dwarf compact state. Those who approve of cutting armfuls of superfluous growths from their plants during the season can grow them in manure if they like, but it is a great waste not only of the manure, but also of the energies of the plants. I do not think we have ever gathered more Tomatoes than we have done this spring. They have been fruiting in 10-inch pots, and their rooting compost consisted wholly of loam; some of the plants formed clusters 6 inches from the base, and all the way up they were crowded with fruit. The side growths were so few, that cuttings could hardly be got for the open-air stock of a special kind which we have in hand. When the pots became full of roots, we sprinkled a little of Thomson's vine manure over the surface of the soil, and this constituted all the extra feeding which they have received. As it will ruin no one to try a few plants without manure, all interested in Tomato culture should give the non-manure system a trial.

Margam.

J. MUIR.

PEA FUNGUS AND THE WEATHER.

IN THE GARDEN of June 6 reference is made to Pea failures, and at the meeting of the scientific committee since reference is made to the same subject, concerning which Mr. Worthington G. Smith writes as follows: "Everyone familiar with garden literature must have noticed reports of extensive failures of garden Peas owing to non-germination. The failure is often laid to the weather, and sometimes to the depredations of birds. The seed merchant, too, is often seriously blamed for selling old or dead seeds. All that the planters appear to observe is that apparently sound Peas are planted and very few or none come up. I have many times pointed out that parasitic and other fungi often grow inside the pods of Peas and upon the Peas themselves when within the pods. I am convinced that the same fungi commonly invade the Peas and destroy the embryo by gaining an entrance to the interior of the seed by the micropyle. The fungi commonly grow with greatest luxuriance round the edge of the micropyle, and on making careful sections the fungoid growths may be easily traced to the radicle and plumule of the germ within the Pea."

One gathers from this that Mr. Worthington Smith attributes the "non-germination" of the Peas to the fungi, and not to the weather, but I will venture to say that not one Pea grower of experience in a hundred will agree with him. It is true that complaints have been more than usually life during the past spring of Peas not germinating, and it is equally true that the weather during the same period has been the most unfavourable to Peas germinating that has been known for years, the ground being unusually cold. Peas have rotted in it, and the fungus has made its appearance upon them as well, but it is equally well known that the same Peas out of the same bag sown a few weeks later under more favourable circumstances of weather have germinated perfectly freely, and such things happen more or less annually in every gardener's experience. In other words, although the existence of the fungus, whatever it may be, is not denied, it has practically nothing to do with the Peas not germinating. The constant low temperature and wet have done the injury. Decay is particularly observable in the wrinkled marrow section, and reference has often been made to the subject in THE GARDEN. I will undertake to say that if the Peas are proved under glass before sowing, they will all germinate perfectly well; the fungus under such circumstances neither "invades the Peas," nor "destroys the embryo." In Mr. Worthington Smith's communication on this subject, the improbability of the fungus causing failure is inadvertently admitted when he states that "when,

therefore, a crop is very bad or a total failure (from the fungus), it is hard to see how the seed merchant can be free from blame." . . . "Good seed merchants," he says, "never send out Peas without first testing and often guaranteeing their germination." It may surprise him to learn that the samples from the "good seed merchants" have this season fared just as badly as any others, although reported to have borne proving as usual.

J. S. W.

GARDEN FLORA.

PLATE 497.

THE CISTUSES.

(WITH A PLATE OF *C. FLORENTINUS*.)

THE Gum Cistuses, or Rock Roses, for both these names are indiscriminately used for the genus *Cistus*, are amongst the most beautiful of flowering shrubs. Most of the species have been, at one time or another, in cultivation in this country, and with but little trouble they could be easily kept in spite of the recurring severe winters which kill unprotected plants of so many of the kinds. They strike readily from cuttings, and a pot of each wintered in a cold frame would take up little room, and insure the species from being lost in case a very unfavourable winter proved destructive to the parent plants. The wintered stock planted out in spring would soon attain a considerable size and flower freely the same year. All the *Cistuses* are Old World plants, most of them being natives of South-western Europe; some extend to North Africa and Asia Minor, and one to the Canary Islands. According to different authors, the number of species is made to vary considerably. Nyman, in his "Conspectus Floræ Europæ," enumerates fourteen; Willkomm, in his "Monograph of the *Cistus* Family," makes twenty-four; and Loudon, in the "Arboretum et Fruticetum Britannicum," describes thirty. Many of the species vary a good deal in colour, size, &c., of leaves, and not a few appear to hybridise freely. Putting to one side the innumerable seedlings of garden origin, which in horticultural publications and in gardens have been accorded specific names, the estimate of Nyman seems a reasonable and correct one. In spite of the fogacious character of the flowers (they do not last more than one day), their bright colours and the profusion in which a succession is kept up for a considerable time render the *Cistuses* amongst the most welcome and beautiful of garden shrubs during the early summer months. They prefer a dry sandy soil, and, although they grow freely enough in almost any garden soil, they are much more likely to suffer during winter in rich moist ground than in a dry poor one.

C. ALBIDUS.—This is now and then met with under the name of *C. pulverulentus*, and there are several hybrids intermediate in general character between their parents. The best known of these are *C. crispus* and *C. albidus* and *C. albidus-monspelienis*. The specific name of this is owing not to the colour of the flowers, for these are a fine rose, but to the whitish tomentum which clothes the leaves and young shoots. It forms a compact bush 2 feet to 4 feet high; the old branches are covered with a brownish or almost blood-coloured bark. The three-nerved, sessile, firm-textured, netted-veined leaves vary in outline from ovate-oblong to obovate-oblong; the rose-coloured flowers are nearly 2 inches across, and the style is longer than the tuft of golden yellow stamens. It is a native of Southern France, Portugal, Italy, Corsica, &c. A fairly good figure is given by Sweet in his "Cistineæ," tab. 31, and a better by Willkomm in his "Monograph," tab. 77.

* Drawn at Munstead, Surrey, in June.



CISTUS FLORENTINUS

C. BOURGÆANUS bears a considerable resemblance to *Helianthemum umbellatum*. It is a native of the Pine woods of Southern Spain and Portugal, where it flowers in the month of April. This species scarcely attains more than a foot in height; it has somewhat prostrate branches, covered with Rosemary-like dark green leaves, smooth above and clothed beneath with a short whitish tomentum. The white flowers are about an inch across, and the viscid peduncles, pedicels, and calyx bracts are glabrous and glossy. This is a charming plant for pot cultivation in a cold frame, or for a sunny, sheltered spot in the rockery. Unlike the last named, the style in this is much shorter than the yellow stamens. A good figure is given in Willkomm's "Monograph," tab. 99.

C. CLUSII in general aspect comes near *C. Bourgæanus*, from which it differs at first sight in the hairy peduncles, pedicels, and calyx bracts. It is a native of Southern Spain, Portugal, and Sicily. In habit it is more erect than the last named, but the flowers are the same colour and size, as are also the leaves. As a rock plant, or grown in pots for cool house decoration, it is sure to be admired. We remember seeing it in beautiful flower at Chiswick a year or two ago. In some gardens it is met with under the names of *C. fastigiatus* and *C. rosmarinifolius*. Sweet gives a rather poor figure of this species in his "Cistineæ," tab. 32; and Willkomm a much better one in his "Monograph," tab. 98.

C. CRISPUS.—This forms a compact bush 1 foot to 2 feet high, with procumbent, ascending, tortuous, often interlacing, branches and broadly sessile, three-nerved leaves, varying in outline from lanceolate to oval. The deep rose-coloured flowers are nearly $1\frac{1}{2}$ inches across. The style overtops the tuft of golden stamens. There are some hybrids between this species and *C. albidus* which are much nearer the seed-bearing parent than they are to *C. albidus*. Unfortunately, too, one of these has been named *C. crispo-albidus*, a name which has been also applied to another hybrid of the same parentage, which is mentioned under *C. albidus*.

C. FLORENTINUS.—This plant, of which a beautiful illustration accompanies this paper, is, according to Nyman (and there is every probability he is perfectly right), a hybrid of *C. monspeliensis*. It is a dwarf-growing very floriferous plant, one of the best of all for a sunny spot in the rockery or for a well drained dry border. It is fairly well off for synonyms. Nyman enumerates as identical with *C. florentinus*, *C. olbiensis*, *C. porquerolensis*, *C. salvifolia-monspeliensis*, and *C. valentinus*.

C. GLAUCUS.—A much-branched bush 1 foot to 2 feet in height, with reddish brown bark and viscid, stalked, lanceolate or linear-lanceolate three-nerved leaves with undulated margins; the upper surface is dull green, glossy, and glabrous, the lower strongly veined and clothed with a heavy down. The peduncles, pedicels, &c., are hairy; the flowers are rather large, white in colour, with a yellow blotch at the base of each petal, and the very short style is much exceeded by the stamens. A native of Southern France. It is well figured by Willkomm in his "Monograph" under the name of *C. Ledon*.

C. HIRSUTUS is an erect or procumbent shrub, from 1 foot to 3 feet in height, with sessile ovate-lanceolate or oblong-flat three-nerved leaves, 1 inch to $2\frac{1}{2}$ inches long by about 1 inch in width. Sometimes the largest leaves are from five to seven, nerved at the base. The young shoots and flower-stalks, &c., are hairy, as are the leaves on both surfaces. The flowers are whitish, smaller than those of *C. glaucus*, and the style is shorter than the stamens. A native of South-western Europe. A good illustration is given in Willkomm's "Monograph," tab. 90.

C. LADANIFERUS.—This is one of the most beautiful of all the Cistuses; it has lanceolate, very shortly-stalked, three-nerved glutinous leaves, smooth and glossy above, clothed with a dense white wool or tomentum beneath. The very large flowers are white, in the more handsome

forms with a large dark vinous-red blotch towards the base of each petal; in others without any blotch at all. It also varies in the size of the leaves, the extreme forms having narrow almost linear leaves. It is a native of Spain, Portugal, and Southern France. The specific name was probably given under the belief that it was this species which furnished labdanum, a resin at one time largely used in medicine. Figures of this *Cistus* are given in the *Botanical Magazine*, tab. 112; Sweet's "Cistineæ," 84; and in Willkomm's "Monograph," 96a.

C. LAURIFOLIUS is probably the hardiest species in cultivation. In some southern shrubberies large plants exist, which have withstood (without



Cistus laurifolius maculatus.

suffering much) the winters of more than a quarter of a century. The flowers are less than those of *C. ladaniferus*, are white with a small citron-yellow blotch at the base of each petal. London speaks of this as follows: "A very robust species, with large green Laurel-like leaves. It produces an abundance of flowers, which, with their light red bracts, are very ornamental before they expand, resembling at a distance the bursting buds of Roses. It requires no protection and may be raised from seeds, which ripen in abundance, and also by cuttings, which, however, do not strike so freely as in some of the other species." This attains a height of about 6 feet; it is a native of South-western Europe. Figures are given by Sweet, "Cistineæ," tab. 52; and Willkomm, "Monograph," tab. 95.

C. LONGIFOLIUS.—A native of Southern France and Eastern Spain; said to be a hybrid between *C. populifolius* and *C. monspeliensis*. A shrub 2 feet to 4 feet high, with slender, twiggy, glandular, viscid, hairy branches with red bark. The leaves are smooth, glossy dull green above, and paler green, reticulately veined, reddish and viscid near the nerves beneath. The flowers are white with a small yellow blotch near the base of each petal; in size they measure about an inch and a half across. What may be regarded as the type is figured by Sweet, "Cistineæ," tab. 12, and Willkomm, "Monograph," tab. 89. A garden form of this, *C. oblongifolius*, Sweet, "Cistineæ," tab. 67, has obtuse leaves; and another, *C. asperifolius*, Sweet, "Cistineæ," tab. 87, has broader leaves scabrid above, with denticulate margins.

C. MONSPELIENSIS, a species rather widely distributed throughout the Mediterranean region, is very variable in size, &c., of foliage and also in

stature of plant; in some spots it hardly grows more than 6 inches in height; in others it attains a height of about 6 feet. The strongly-veined leaves are sessile, three-nerved, linear or lanceolate, obtuse or acute; the flowers are white, about an inch in diameter, each petal bearing a yellow blotch at the base. The common form, with the adult leaves lanceolate or linear-lanceolate, is figured by Sweet, "Cistineæ," tab. 27.

C. PARVIFLORUS, a South-eastern European species, makes a compact bush a couple of feet high. The old branches are covered with an ashy-coloured bark, the younger shoots and the peduncles being clothed with a whitish tomentum. The ovate-pointed leaves are stalked, three-nerved, rugose above and strongly reticulated beneath. The rose-coloured yellow-centred flowers, which measure rather more than an inch in diameter, are borne in a close cyme. A variety of this, with spatulate leaves and rather longer flower-stalks, is figured by Sweet, "Cistineæ," tab. 90, under the name of *C. cymosum*.

C. POPULIFOLIUS is a robust-growing species, with large rugose, stalked, Poplar-like leaves and medium-sized white flowers, tinged with yellow at the base of the petals, produced in lateral, many-flowered cymes. Varieties of *C. salvifolius* are often misnamed *C. populifolius* in nurseries and gardens. Amongst the numerous garden forms of this species may be mentioned *C. narbonneensis* (Sweet, "Cistineæ," tab. 23), with shorter flower-stalks, smaller leaves—altogether a smaller plant than the type—and *C. latifolius* (Sweet, "Cistineæ," tab. 15), another with broader leaves. *C. populifolius* is found in Southern France, in Spain, and Portugal. It is an erect-branched shrub, 3 feet or 4 feet high.

C. SALVIFOLIUS.—This is a distinct, but very variable, species of slender habit, with Sage-like leaves and long-stalked, white, yellow-blotched flowers. In a wild state it is found all along the Mediterranean, and a number of slightly varying forms have received distinctive names; but as these do not appear to have been introduced to British gardens, it is not worth while to enumerate them here. *C. corbariensis* (Sweet, "Cistineæ," tab. 8) is a hybrid between *C. salvifolius* and *C. populifolius*, and is intermediate in character between these two species.

C. VAGINATUS is the largest of the red-flowered section. It is a robust-growing species, with large-stalked, ovate-acuminate, hairy leaves and cymes of large deep rose-coloured yellow-centred flowers. The stamens are more numerous in this than in, perhaps, any other *Cistus*, and form a dense



Cistus villosus.



Cistus villosus creticus.

brush-like tuft, overtopped by the long style. It is a native of the Canary Islands. For many years a fine plant flowered freely against the wall of the herbaceous ground at Kew, but the severe winters of several years ago proved too much for it, and the plant is perhaps now lost to cultivation. In some books it will be found under the name of *Rhodocistus Berthelotianus*; in Sweet's "Cistineæ," tab. 9, it is figured under the name here used.

C. VILLOSUS, a widely distributed Mediterranean species, is a very variable plant as far as habit and foliage characters are concerned. It is an erect bush with stalked, feather-veined, roundish

or oval, firm-textured leaves. The flowers of all the forms are rose-coloured, with long styles. *C. undulatus* (Sweet, "Cistineæ," tab. 63) is a variety with wavy margined leaves. *C. incanus* (Sweet, "Cistineæ," tab. 44) represents what may be regarded as the common typical form. *C. creticus* is another with deeper rose-red flowers than those already mentioned. From this and some other *Cistus* is obtained the labdanum, a resin which is exuded from the leaves and branches, and which is collected by whipping the plants with long thongs attached to a rake-like frame, the resin adhering to the straps; during the prevalence of the plague labdanum was largely used as a remedial agent. G.

WORK DONE IN WEEK ENDING JUNE 16.

JUNE 10.

SPLENDID weather. Made up slight hotbeds on which to plant ridge Cucumbers, all our spare frames being thus utilised, except one or two that are reserved for the propagation and growing on through their earliest stages of various kinds of winter flowering plants, such as *Plumbago rosea*, *Euphorbia jacquiniæflora*, *Thysacanthus rutilans*, and *Poinsettias*, for late use, and slight hotbeds for this purpose are also being made up. Pegged out and pinched the leading shoots of Vegetable Marrows, and gave them a soaking of soot-water to destroy, or rather to check, wireworm that abounds in the soil. As the roots appear on the surface fresh soil is applied, the kind we give them being the clearings-out from potting sheds after it has been run through a coarse sieve to remove crows, &c. Pegging down plants in flower beds and pinching out the points of the shoots of such as grow too luxuriantly; *Gnaphalium lanatum*, *Pyrethrum Gold Feather*, variegated *Mesembryanthemum*, *Leucophyton*, and variegated *Geranium Manglesi* are a few of the kinds of plants in question. Pegs made of Bracken are what we generally use, but the growth is this season so late, that we have to make them of Hazel spray. As pegging is done the surface soil is stirred rather deeply, and a top-dressing of Cocoa fibre refuse is given at the same time to tender plants that develop growth but slowly. Fruit trees on walls now require daily attention to keep them free of blight, foreright shoots pinched, and new growths that are to be retained laid in. Pears are thinned—the fruit—as the work of stopping proceeds. Potted the latest batch of *Chrysanthemums* into the flowering pots. Thinned out the fruit of last lot of forcing Strawberries. The outdoor fruit on south borders is in a more advanced state than are the fruits on this last batch of plants; hence there will be no difficulty in maintaining the supply till the out-door crop is over.

JUNE 11.

Another splendid day, and sunshine so bright, that we again had to have recourse to shading vineries with whitening and water to prevent scorching of foliage. Tied out shoots in late Peach house and re-mulched and watered inside border. *Fuchsias*, *Marguerites*, *Grevilleas*, &c., that occupied space on the borders of this house are being plunged in ashes in the open air to be grown on for indoor decoration in autumn. *Fuchsias* are so arranged, that a slight shade with tiffany fixed on poles can be applied during the hottest part of the day; shade for other kinds of plants is necessary. Clipped Box edgings and sowed a few more Peas, other work being a continuation of the jobs of yesterday.

JUNE 12.

Again very fine. Still pegging bedding plants into position and completing the mulching of *Alternantheras*, *Coleus*, and other tender bedding plants. Put a thicker mulching on Raspberries and pulled up a few more of the weakest suckers or stems, as they were getting overcrowded. Tied up Pinks, *Pyrethrums*, and a few other perennials; these borders are now extraordinarily gay, and deserve all the labour that we can afford in the form of ties and supports. Irises, *Pæonies*, *Columbines*, *Pyrethrums*, *Anemones*, *Ranunculuses*,

early varieties of Pinks, Turk's-cap and Day Lilies are all of them now in full beauty, and which we endeavour to maintain and prolong by frequent, almost daily, removal of bad flowers. Surface-hoed to destroy weeds the plots of Artichokes, Rhubarb, and Seakale. Watered Celery, for though the ground is moist, the plants have been so recently planted, that they have not yet got a firm hold of the soil, and cannot, therefore, benefit from it, at least not so much as by water applied directly to the plants. Picked off flowers of *Dahlias*; the single and bouquet varieties are the only kinds we grow, and they are arranged to produce effect as a whole, and not as solitary plants. *Calceolarias*, *Violas*, *Lobelias*, *Verbena's*, and other plants, the growth of which it is desirable to hasten, are having all their flowers picked off and getting abundance of water. Though thinning of fruit is done, the vineries still give indoor hands plenty of work in the way of stopping and tying out shoots, the two latest houses having had this attention to-day, and the inside borders well soaked with tepid manure water. Prepared soil for potting on succession Pines and for top-dressing the plants that were put in their fruiting pots when last the plants were overhauled.

JUNE 13.

Most brilliant weather; too much so for *Rhododendrons* that are now in full bloom, as it will make their flowering season a short one; but the flower garden season will be all the longer, as the heat is just what is needed to aid the plants to early and full effectiveness. We have again been busy pegging them into position, also staking *Dahlias* and sub-tropical plants. Gave manure water to Rose beds, clipped Grass edgings, thinned out *Mignonette*, and filled up blanks in beds of Stocks and Asters. Planted out Pinks, *Spireas*, and Lily of Valley that have been forced for cut flowers. Borders in kitchen garden where the soil is light and deep we reserve for this purpose, and by giving a good soaking of water soon as planted, they need no other attention all the season, except that of weeding or hoeing. Work in the houses has mainly been of a cleaning-up description. Cut out a few shanked berries in early Muscat house; they are colouring fairly well; atmospheric moisture is still continued, though in a greatly lessened form than before colouring commenced. To discontinue it entirely, as is sometimes done, is to court defeat of finishing off the Grapes well, for, under such conditions, the foliage quickly becomes a prey to insect pests in the form of either thrips or red spider. Gathered all ripe Figs, pinched out points of the longest shoots, and pulled off some of the smallest second crop of fruit. The border requires just as much attention, in regard to watering, as it did through the early stages of growth. My belief is, that an overdose does not in the least injure ripening fruit, provided plenty of air is given to keep the atmosphere comparatively dry.

JUNE 15.

Fine, but cooler; work much the same as during the last two days—clipping Box edgings and cleaning up and weeding the borders; also trimmed up groundworks of *Ilerniaria glabra* and variegated *Thyme* in foliage bedding arrangements, and continued laying in new growths of fruit trees on walls and the thinning out the clusters of fruit. Staked Tomatoes that are planted out on south borders, and mulched them with long stable litter, and afterwards gave them a thorough watering. Pulled up Spinach and hoed between the rows of Peas, and also earthed up French Beans. As Potatoes are dug from south borders, other sowings of these and Lettuce will take the place of the Potatoes. We are now digging fine samples of *Myatt's Ashleaf* and of *Fenn's Early Regent*, the latter a first early round of the very best quality, a wonderful cropper, and short in the haulm, so that they may be planted much nearer together than the ordinary run of early Potatoes. Placed and began to stake and tie *Chrysanthemums*; they take so much water, that to economise labour we aim at having them as near to a water-tank as possible. Each plant is allowed a yard of space; hence there is no

danger of injury to plants from overcrowding, and they are easy to get at for the purpose of watering, tying, disbudding, &c. *Pelargoniums* for winter flowering have also been got out of frames, and are being plunged in ashes in the open air; a few cuttings of the freest flowering kinds have been put in with the intention of flowering them in small pots, for use in baskets and small vases for house decoration during the winter. Sowed another lot of Melons to replace the plants now approaching the ripening stage. Successional fruiting of the same plants was at one time in favour with us, but some varieties not being amenable to such treatment, and there being but little time gained by varieties that would so fruit, we have long ago discontinued the practice, and now sow about three weeks before the crop that the plants are required to succeed ripens off its fruit.

JUNE 16.

Another fine day, but much colder, there being a strong north-easterly wind. Surface-hoed and heeled up latest Potatoes, also hoed over shrubby clumps. Put together and pressed down the mulching of litter that was given to shrubs that were transplanted during winter. Continued the staking of *Dahlias*, &c., as also the pegging down of bedding plants, and picked off the flowers so as to get a quicker growth of plants. Clipped out the points of the shoots of small shrubs of *Rotinosporas* and *Cupressus* that are used as standards amongst bedding plants. By clipping I would not be understood to mean close shearing, but simply the removal of the points of new growths to keep them thick and bushy. Washed Cherries on walls with garden hose and watered Apricots. In hot weather artificial watering is often required by fruit trees on walls to prevent the soil breaking away from the wall to the destruction of many of the best roots by the subsequent fissuring of the soil in other places. Planted out ridge Cucumbers and Gherkins; a slight shade with Laurel boughs will be put over the plants till they are established should the sunshine prove excessive. Except top-dressing of first succession Pine plants, work in the houses has been entirely of a routine character; watering and syringing now take up a great part of each day. HANTS.

FRUITS UNDER GLASS.

STRAWBERRIES FOR FORCING.

ANOTHER heavy rain has fallen on the highly heated surface of the soil, and the maiden plants, divested of their flowers, from which the stock is to be taken, are now throwing out an abundance of strong fleshy runners, which will soon be fit for laying either in 3-inch or the fruiting pots direct. As growth is now unusually rapid and an early start is an important item in successful forcing, it may be well to remind the young aspirant that no time should be lost in making the necessary preparations for getting the first batch pegged down and rooted. Early kinds, like *Vicomtesse Héricart de Thury* and *La Grosse Sucrée*, which are generally forced into fruit before the sun gains power, do not require large fruiting pots, but they should be clean, dry, and carefully crocked, so as to exclude worms. The compost, consisting of heavy sustaining loam, enriched with rotten manure and corrected with old lime rubble, should be firmly rammed into the pots before they are taken out to the quarters—that is, provided it is dry and will stand ramming without becoming adhesive. If wet, it will be well to defer filling until, by exposure to the sun and air and occasional turning, it is in suitable condition. Where worms are likely to be troublesome a little dry soot may be sprinkled over the crocks before the pots are filled, and a small quantity added to the compost will do no harm, as it is an excellent stimulant when used in moderation. Water is a very important factor in good culture throughout all the stages of growth, and for this reason the stock plants should always be grown where this element can be conveniently supplied. Later kinds, which often have to stand about on shelves in the full blaze of the sun during the time the fruit is swelling and ripening, should have larger pots, otherwise it will be impossible to maintain

a moist-growing condition of the soil when the plants need most support. We have lately heard of Strawberry plants being kept in the same pots and fruited more than once; but the endless amount of labour which such management entails must militate against its becoming popular or practicable, unless, as rarely happens, a gardener's duties are extremely limited. Another method recently brought forward as new consists in pricking out runners late in the season and potting them up for forcing in the following summer. This system has most certainly been known to gardeners ever since Strawberry forcing came into fashion; but there is nothing gained from the practice, as the plants become hard and leggy, and lose all the leaves they hold at the time they are potted. For increasing stocks or making outdoor beds the case is different; but for pot purposes weak runners of the preceding year cannot compare with vigorous runners of the current spring. At least, such is my experience, and I have been engaged in pot culture for forty years, the first batch I ever potted in a very hot June having been pricked out during the preceding autumn. Many gardeners still lay their runners in small pots, and when rooted transfer them to the fruiting pots; but where work is carried on under high pressure, and quick unchecked growth is acknowledged as a leading feature in good culture, all this extra trouble, combined with a check at the outset, may surely be dispensed with. Early runners planted out in good fresh maiden loam in near proximity to water give the Strawberry grower the command of the situation, as they throw out early in the following spring runners which may be pegged down at once into the fruiting pots, where they grow to maturity without a check, and ripen up their roots as well as their crowns long before the dark cold days of winter overtake them.

CHERRIES.

As early trees are cleared of their fruit, the syringe must be brought into action to cleanse the foliage and points of the young shoots, which must be kept extending where space remains uncovered. The roots of these particular trees may also require water; if so, it must be supplied in sufficient quantity to moisten every part of the soil in which they are located, care being taken that it does not extend to the roots of later kinds now ripening, as a flush of sap might cause the fruit to crack. If carefully netted to prevent the ingress of birds, which soon find out their whereabouts, the ventilators may be thrown wide open, and allowed to remain so until the last of the fruit is gathered. When, if portable, as the roofs of all Cherry houses should be, the lights must be taken off bodily, not only to keep the house cool, but also to give the trees and borders the full benefit of dew and refreshing rain. These remarks apply to trees planted out in internal borders, while others growing in tubs or pots may be removed as soon as they are cleared to an open but sheltered border out of doors, where, plunged to the rims and well mulched with manure, they will recuperate and not require frequent supplies of water. If any of the trees are in small pots, and a fair shift is thought desirable, this operation may be performed at the time of removal, or, better still, a few days before they are exposed to the action of bright sun and drying winds, which will exhaust the foliage before the roots resume their functions. Older trees in full-sized pots, if in satisfactory order, need not be disturbed until the foliage is ripe, when they may be reduced and repotted into the same sized pots, or only top-dressed, as may be suggested by their healthy or exhausted condition. Where, as was suggested early in the year, the fine late Bigarreans have been treated to what they so justly deserve—a bright, airy, cool house, they may now have all the ventilators, and perhaps the doors, set wide open, not only to retard, but at the same time to insure that perfect ripening which enemies and the elements render simply impossible in the open air.

PLUMS.

Like Cherries, should be removed to the open air as soon as the fruit is gathered from the earliest trees, when their treatment during the

remainder of the season must be identically the same as that recommended for the early Cherries. By the removal of this batch of trees, more room, light, and air can be secured to the fine late and midseason kinds, which may not be ripe for some weeks to come. Unlike Cherries, Plums derive great benefit from regular syringing until the fruit begins to ripen. Pure soft water free from sediment should always be used for this purpose, and if allowed to fall in a plentiful shower, wetting every part of the fruit and foliage, but not striking it with any great force, the bloom will not be injured by the ablation. When re-arranged, the trees left in the house should be well mulched with good loam and manure, and copiously fed with diluted liquid, for, like all other stone fruit trees under pot culture, it likes good feeding when carrying heavy crops of fruit. The pinching and training of pyramids must, of course, receive the necessary amount of attention, and that at the right time, but this does not last very long, as Plums bear so profusely after they have been a year or two in pots, when it becomes difficult to stimulate them into the formation of young wood. Unless late kinds like Golden Drop are wanted early, the house should be left quite open throughout the day, and partly open through the night, as very little progress is made by shutting up and trying to force with heat and moisture. Indeed, if two trees were taken from an orchard house and one were placed in a moist highly-heated structure, the other in a cold Peach case against a south wall, the fruit on the latter would be the first to ripen, while that on the forced tree would never colour. If early Plums are wanted, early sorts and an early start are two points which must not be neglected.

PEACH HOUSES.

Early houses containing fruit in various stages up to ripeness will now require all the air that can be given to them through the day, and a constant circulation aided by gentle fire-heat by night, as it is during the hours of darkness that the foliage feeds; and the greater the volume of air that can be kept in motion, the finer will be the flavour of the fruit. Syringing will, of course, be reduced to a minimum, but the stems of the trees and the walls may be freely syringed on fine mornings, and again when the ventilation is reduced; while early trees that have been cleared of fruit will require copious washing and a moderate supply of water to the roots. Let it be borne in mind that Peaches should never be allowed to hang until they are in danger of dropping, as a dead ripe Peach, having lost its sprightliness, is past its best for home use, and of comparatively little value for market purposes. Some kinds will, however, keep longer and travel better than others, but these are not included in the large-flowered or Mignonne section, which contains some of the most tender and delicious Peaches in cultivation. Early morning is the best time to gather fruit, as it is then dry and cool, and the juice is less likely to ferment.

Succession houses will require treatment similar to that which has been recommended for the earliest, but the weather being much brighter and warmer, more air and water and less fire heat will best meet their wants. Where the roots are growing in external borders, the fine rains we have lately had will have placed them in a satisfactory condition, at least as to moisture, and all that will be required is a mulching of manure or litter, rich or otherwise, according to the vigour of the trees and the crops of fruit they are carrying to maturity. Old trees, as a rule, require stimulants, while younger ones make the most fruitful wood under less generous treatment. If not already done, every pendent fruit that can be raised to the surface should be elevated, so as to expose the apex to the colouring influence of sun-heat and light, and the point of the shoot pinched out, where not a leader to increase its size to the fullest extent by the time the fruit is ripe.

Later houses and cases will demand the most active attention to every detail, otherwise the trees now making unprecedentedly rapid progress will

gain the upper hand, when every superfluous growth or fruit will represent a certain amount of force wasted. Thinning to the exact number of fruit intended to remain and disbudding or pinching to an even, but by no means crowded, spread of shoots should therefore receive the cultivator's first care. Close tying, which will of course follow, is not quite so pressing, as Peaches stone and swell best through the early stages when the shoots, judiciously pinched to maintain the balance of the sap, are not tied in too close. When properly thinned and tied down, every bare branch should be surmounted by a young growth whose foliage, while improving the appearance of the tree, will protect it from paralysis or sunstroke, which is more frequent in hot seasons than many people imagine.

FIGS.

By this time the first crop will have been cleared out of the early house and the fruit formed on the wood of the current year, although slightly checked by the dry treatment of the past few weeks, will begin to move forward. That troublesome parasite, red spider, too, will most likely be present and extremely active, but the moist growing treatment which must now be resumed will speedily reduce it to a harmless condition. The first operation will be copious and frequent syringing internally and externally when the lights are, as they always should be, portable and handy for removal during the process of cleansing. Fresh mulching will also be necessary, as the Fig delights in good living and can hardly be overfed during the time it is swelling off its second crop of fruit. Dry soot, guano, and bone dust will also be found excellent stimulants, provided they are applied in moderation and well washed down to the roots with copious supplies of warm water. If heavily cropped, the fruit must be well thinned; beyond pinching an extra strong shoot, stopping must be discontinued for the remainder of the season.

W. COLEMAN.

Eastnor Castle, Ledbury.

GARDENING IN THE SOUDAN.

THE following letter relating to this subject has been sent by Lieut.-Col. Maurice to a friend in England, who has kindly placed it in our hands for publication in THE GARDEN. It is written from Abu Fatmeh, on the Upper Nile:—

As you wish to have some account of my Soudan gardening, I will do my best to satisfy you. You must first of all realise the fact that the cultivated portion of the Soudan, at all events up to and a good deal beyond Dongola, consists of a mere strip of country bordering on the Nile. This varies in width from nearly a mile to almost nothing. Where I am it is only about 40 yards wide. The width does not depend on the natural fertility of the soil, for wherever the rich mud from the Nile can be poured over the desert sand, in a very short time the ground is so enriched that wonderful crops flourish. What the cultivation depends on is the slope of the ground inland. If, in addition to the Nile bank, which is generally a pretty definite one, there are inland from it second and third banks, the cultivation becomes very troublesome, for the water has to be lifted over the second and third banks by native pumps as well as over the first. In some places the natives manage this, but in others, either from laziness or because in the immediate neighbourhood the same result can be attained with less trouble, they do not attempt to pass the second bank, and restrict their cultivation to the ground between the Nile bank and the second bank. That is the case where I am. The little garden, which is about 1600 square yards in extent, runs therefore close along the shore of the Nile just above high-water mark. It is watered by a single native pump, commonly known as a sakyeh, which draws up water from the Nile by means of a vertical wheel and rope, on which buckets are placed, which dip into the Nile, and, as the wheel is made to rotate by the working of a pair of bullocks, discharge their contents into a trough, from which the water is led, by a series of channels, around the different little patches into which the

natives divide the ground by a series of small banks. When the water reaches any patch which is to be irrigated, the workman breaks a small hole in the little bank and lets on the water, which is allowed to cover the whole of the patch for an inch or two deep, and to sink well in before the surface water is drawn off. As soon as one patch has had enough, the water is let off from it on to the next patch, and the same process is repeated. The cultivation depends on the patches being just a little lower one than the other, and a very slight rise in the wrong direction throws it completely out. Such is the general system.

Before I came here my idea was that if at each station one or two of these sakybes could be set to work in our hands, and the natives could be encouraged to plant seeds for us, we should have a crop of fresh vegetables on which we could depend at each station down the line for the returning troops. Unfortunately for the full carrying out of this idea, I arrived here only at the end of November, and it was not till nearly the end of December that I succeeded in getting my first seeds of a general kind. It was, therefore, scarcely possible to calculate that one could have large crops ready in time for the expedition if it returned before the end of April. I therefore restricted my operations to doing what promised to be enough for the station here; and, happily, the results have enabled me to supply a large hospital which has been formed here since the operations assumed their later form. The first seeds that I received were some Melon seeds, which were kindly sent me by some newspaper correspondents from Dongola. They had seen my proposed arrangements when I was at Dah towards the end of October, and Mr. Pearson, supposing I was still at Dah, had addressed them to me there. They were forwarded again by post, and I received them here about the middle of December, and they were immediately sown. They were just beginning to show above the ground, when about the beginning of January I received from Col. Ardagh at Cairo a variety of seeds for which I had written—Spinach, Mustard and Cress, Watercress, Radishes, Lettuces, Tomatoes, Parsley, and Cauliflowers. About the middle of January I received from the National Society for Sick and Wounded an assortment of Peas, Radish, Lettuce, and Mustard and Cress. These were planted soon after they were received successively at about a week's interval.

About February 7 I received from the National Society 5 quarts of Peas and 2 quarts of Mustard and Cress, 1 pint Radish and Lettuce, and about the same time a large further assortment of seeds which I had asked Colonel Ardagh to send me to supplement the earlier supply. My first native gardener was a bad one. He put on too much water over the seeds and seedlings, and, though the practice seemed to me bad, I had hardly acquired sufficient confidence as to what was wanted in this climate to interfere with him. He killed off the first crop of Mustard and Cress, but the Radishes, Lettuces, Melons, Cauliflowers, and Spinach survived his treatment, and such of the Watercress as was not buried flourished.

There is a peculiarity about the air here which affects all gardening operations. From the enormous expanse of desert on all sides and the narrow strip of watered land, the air is not merely negatively dry, but has in it what I may call a positive drying quality upon everything it touches, which tends on any moist surface to produce the most rapid evaporation, and, in consequence, whenever the sun is not so powerful as to counteract it, the most sudden and intense cold. During all the winter months, December, January, February, the cold at night, and especially in the early morning, is so intense, that, though I have slept in open huts in Canada when the thermometer was 20° below zero, Fahr., I have never in my life piled on my body such quantities of clothing as I have done here in the tropical Soudan, and I never so completely failed with all precautions to keep out the cold. The tendency of clothing is, of course, to produce moisture, and the moment any covering became even slightly moist with

invisible perspiration, the air acted on it much in the way in which moist flannel wrapped round a bottle and hung in a breeze will almost freeze water.

Now, it will not be difficult for you to understand how much this effect of the air would tell upon vegetation when the whole system of cultivation depends on artificial irrigation covering the whole surface, and when, during the winter months, a cold northerly breeze prevails, especially at night and in the early morning. It was quite curious to notice the effect of this in checking the growth of young seedlings. I have no doubt myself that it was greatly aggravated by the ignorance and blundering of my first gardener; but I am strongly of opinion that the natives, generally, who themselves grow only corn and the coarser kinds of beans of various types, and follow a lazy mechanical routine, do not know in the least how to deal best with the peculiar conditions of the climate. I feel sure that a scientific and experienced English gardener, who came here and carefully studied the conditions of soil and climate for a year or two, would introduce improvements in culture that would be startling in their results. I do not think that any place can exist where really scientific treatment would be so well rewarded.

My second gardener was a native of the place, who had worked in Cairo and Alexandria, and has had his ideas considerably enlarged in consequence. He began by carefully protecting the young Melon plants from the northerly wind by a screen made of long dry Grass about 18 inches high. The improvement in growth was palpable, and much more than would have been due to the mere exclusion of air, in itself, not bitter wind. No doubt the screen diminished the extreme evaporation caused by the passage of the wind and the consequent chilling of the ground and of the young plants. But I could not persuade him to raise any kind of trellis work or poles to take the Melons off the ground for the months of growth, when the drying effect no longer obtains in the same degree. The Melons were placed much too close together, so that it was easy to foresee what has happened, viz., that when the fruiting time came, the whole ground would be a wilderness of crossing shoots, interfering greatly with one another. By the time I planted a successional crop of Melons, about the middle of February, I had sufficiently, from what I had seen, the courage of my opinion to insist on the construction of a kind of imitation of an English Melon house without the glass, having the Melons trained on poles connected by a trellis work, and then carried over an open trellis roof. I have found that the effect of this has been very greatly to increase the size of the leaves; the plants look much healthier, and as the promise of fruit is very good on these, I think they will yield more per yard of ground, and that there will be no fear of what sometimes happens with those simply covering the ground—the fruit becoming mildewed just as it is fully ripe. However, though the leaves of the plants covering the ground are small, and though the natives have no notion of properly stopping back the plants, and I had neither time nor did I feel sufficient confidence in my own gardening knowledge, especially with plants under conditions so very different from those of England, to do the stopping myself, the Melons, nevertheless, are yielding us a splendid crop. Since about April 11, when they began to come in, I have been able to send up to the hospital two or three Melons nearly every day, and I have lately had not unfrequently a surplus brought me in the afternoon of two or three more, which I have distributed among officers and men at the station, so as to let everyone have some in turn. Most of the Melons are of delicious flavour, and greatly appreciated here. They vary in size and shape, from a very long kind, almost as long as a long Cucumber and large in proportion, to much the size of the round English Melon. Many of the large ones are of as fine flavour as any. I shall certainly bring home some of the seed, as I think in many cases there is a peculiarity in the flavour, which, under English

cultivation, would make them very valuable, and the size is unmistakable.

I have followed through the history of the Melons because it is the only seed of actual native growth that I have cultivated here. I should say that the ground Melon bed, over which the plants are clambering in all directions simply over the bare ground, is 15 yards by 10 yards. It is thick with fruit, but the leaves are beginning to show signs of suffering from the intense heat of the sun; and I think the shade afforded by the trellis-work promises to be very valuable for the later crop, as it does not stop the sun reaching the plants and does break its intense scorching power. Unfortunately, my native gardener has scarcely quite carried out my idea. Instead of a raised bank, kept clear on one side, so as to allow manure to be applied to the plants and a clear pathway under the trellis, he has allowed the plants to ramble over the ground under the trellis, so that I have not been able to carry out this experiment as I had intended. I should say that one peculiarity which was quite unexpected in the cultivation here is the almost entire absence of weeds. Grass of a peculiar kind grows very freely under all crops of corn and springs up in many places, but of other weeds disturbing the crops there are hardly any. I think this must be due to the fact that the soil is almost re-made each year by the mud deposit from the Nile water. On the other hand, a peculiar black fly attacked the Melons under the trellis-work, though it did not appear on those in the open. My gardener, I daresay rightly, thought it necessary to remove all the shade we had put on the top of the trellis, and to leave only the sides till we have to train them over the top.

I have omitted to notice one peculiarity in the growth of the Melons—the rapidity with which they advanced after the leaves began to spread over the surface. I had expected this by watching the way in which the young plants were checked in their early growth. I attribute it to the leaves checking the rapid evaporation from the ground and the rapid movement of the drying wind over it; that the ground was no longer chilled to the same extent, and the cold air was no longer generated by the evaporation round the young plants. I have taken first the Melons, which were the first plants sown. They were naturally by no means the first crops secured.

At first good crops of Mustard and Cress were grown near the hospital itself. The hospital was small, the attendants not very busy, and some of the patients who were getting better were glad with a little help to have the interest of looking after the pans and pots in which the seeds were sown. But as the hospital grew bigger this was not easily managed, and our doctor was glad to hand back to me all the Mustard and Cress seed to use with the others.

The natives do not understand these little plants. The water cultivation, unless very carefully used, does not suit them very well, and though we have had some good dishes they have really been almost more trouble than they are worth. Unless one is on the spot every day, the gardener lets them get too big; indeed, I have used some that he had let overgrow altogether, not unsuccessfully, as a kind of green food cooked like Spinach. The oval and round French Radish did admirably during the winter months, scarcely so well since the great heat has set in, but I never tasted crisper or finer vegetables of their kind. Our most successful crop was, however, Spinach, which, though it has now begun to show signs of suffering from the heat, and I am trying the effect of shading, has for seven or eight weeks yielded the most splendid crops I ever saw. It seems literally to revel in the soil and cultivation. I am glad to say that I had the satisfaction of hearing that several of our sick patients, especially poor Major Pöc, who had lost both his legs, found the unexpected change of getting this vegetable a real relief and comfort.

I have a good deal to tell you about our other plants, Peas, Cauliflowers, Lettuce, &c., but I have run to such length, that, finding you are interested in the matter, I will send you a second letter.

April 30, 1885.

F. MAURICE.

which grows capitally in water; *Orontium aquaticum*, a choice American aquatic, quite hardy; and for floating, the Cape Pondweed (*Aponogeton*), quite hardy; Water Soldier (*Stratiotes*), an interesting native, and either of the American Water Lilies (*Nymphaea odorata minor* or *tuberosa*), which, as a rule, do not grow so rampant as our common kind. There are likewise several other suitable plants which may

who do not know how to set about planting a small pool, we might add that the best soil is turfy loam—the top spit of a Grass plat, for instance. Build the turves up in box-like semi-circles around the tank, not at set distances apart, but irregularly. Fill the cavities with any kind of soil that may be at hand so long as it contains no manure of any kind, as that would make the water impure; then place the plants in this so that their roots are on a level with the water. This applies to the taller fringe plants. For floating plants, such as Water Lilies, build up a heap of turves at the bottom of the tank, so that when the Lilies are planted upon it, they will be about 1 foot or more below the surface. An old wicker basket or hamperful of soil sunk to the bottom will do just as well, and is the best plan to follow if the water cannot be drained off for planting. No further trouble is needed, and if the plants are not planted formally at first, they will soon arrange themselves in a natural kind of fringe round the pool, and if the water which feeds it is hard, the plants will soon convert it into a more suitable state for watering crops. With all this material at hand, one should never see bare ugly tanks and pools, such as disfigure many gardens. W. G.

WATER PLANTS FOR SMALL POOLS.

It often occurs that plants are wanted to embellish a pool or tank in a garden, and the question arises, what are the most suitable kinds for such a purpose? If the place is small, it would not do to plant any very coarse or rapid spreading aquatics, particularly in the case of dipping tanks, which often occur in kitchen gardens, but whatever the character of the tank or pool may be, especially if it contains fish, there is nothing like plant growth for keeping the water sweet and clean and preventing that disagreeable condition into which stagnant water gets when without plant growth of some sort. There are numbers of suitable plants to choose from for furnishing small pools, but instead of having many kinds it is best to have a few of the choicest, and no better could be found than those illustrated in the annexed engraving. Here we have one of those beautiful Irises which delight to have their roots always submerged; then there is the *Cyperus longus*

Linaria bipartita.—This is a capital annual for forming masses from which to cut, its stems being tall enough for that purpose. The flowers, though small, are numerous on the spike, and, being bright purple, are showy. It lasts a long time in bloom, as the buds open in succession from the base of the spike upward. Resembling it, but not so vigorous and scarcely so showy, is *L. maroccana*, which is distinguishable by the spikes being covered with down, and the flowers are often prettily spotted. Both these *Linarias* are good hardy annuals, and grow to their fullest size in light warm soils.

Aristea major.—This handsome, if somewhat fugacious, Cape Irid has been for the last few days nicely in flower in my greenhouse, and some description of it may be of interest to some of the readers of THE GARDEN, as, though introduced as far back as 1794 by the then well-known nurserymen, Messrs. Lee and Kennedy, I fancy it has for many years been lost to European gardens, till some four years ago when Mr. W. Thompson, of Ipswich, again got seeds from the Cape, of which my plants are some of the produce, and for which I am indebted to the kindness of my friend, Mr. J. T. Poë. The plant has somewhat the appearance of a very much reduced form of New Zealand Flax, with narrow, sword-shaped, dark green leaves, out of the centre of which rises the stout flower-spike, which on my strongest plant attains the height of 2 feet 10 inches, though in strong and fully developed plants the flower-spike is said to attain the height of 4 feet. The upper 9 inches or 10 inches of the spike are densely covered with buds, mostly produced on short lateral stems, which do not, however, stick out from the main stem, but give all the appearance of one dense mass of flower-buds. The flowers open in succession, following each other for some considerable time, and when expanded somewhat exceed the size of a shilling. They are of a most lovely shade of deep blue, and from early morning when they open till 1 or 2 p.m., when they close, to open no more, the spike presents quite an ornamental appearance. This plant is well figured in the third volume of Andrews' "Botanist's Repository," plate 160, from a fine plant which bloomed in a private garden in the year 1800. The handsomest of this family is *A. melaleuca*, figured in *Botanical Magazine*, vol. xxxi., plate 1277. I do not think it is now to be found in European gardens, but it is to be hoped it may soon be re-introduced by seed from the Cape.—W. E. G.

Absorption of ammonia by plants from the atmosphere.—Mr. Baines mentions (p. 526) the fact that his plants (Orchids) were

Water Iris Cyperus, Arrowheads, and Water Lilies.

and the Arrowhead (*Sagittaria*), while floating we have the Water Lily (*Nymphaea*). These are quite sufficient to make any small pool beautiful by planting the tall kinds as a fringe and the Lily in the water to ramble as it likes. Another selection for a small pool may consist of the Flowering Rush (*Botomus*), *Pontederia cordata* as the tallest, the Bog Arum (*Calla palustris*) and Water Violet (*Hottonia*) dwarfest; while floating, may be one of the smaller Nuphars, such as *N. kalmiana* or *pumila* (the common *N. lutea* being too coarse a grower) and the pretty yellow *Villarsia nymphaeoides*. A third selection of tall, short, and floating plants may consist of *Lythrum Salicaria* or *Lysimachia thyrsiflora*, the purple and yellow *Loosestrifea*, *Iris sibirica*,

occur to those desirous of making an effort in this direction, but with those just named one may adorn even a big lake in a beautiful way. What one must be careful about in planting small pieces of water is to avoid introducing into them any of those troublesome weeds, such as the Canadian Water Weed (*Elodea canadensis*), any of the Water Crowfoots (*Ranunculus*), or such plants as *Acorus Calamus*, *Rumex hydrolapathum*, *Menyanthes trifoliata*, any of the *Polygonums*, *Sparganiums*, *Typhas*, *Myriophyllum*, Water Grasses (*Glyceria* and others), Horse-tails (*Equisetums*), *Alismas*, and Sedges (*Carex*), all of which grow and spread so rapidly, as to become in a very short time a serious nuisance, difficult to keep within bounds and very hard to eradicate. To those

benefited by the ammonia given off from a heap of manure placed in the house in which they were growing. This is a most important question to be solved. It is the common belief that ammonia is only obtained from the soil by the roots of plants, but I have long held a contrary opinion, and have experienced the same as Mr. Baines that ammonia is absorbed by the foliage from the air. I have placed guano in flower-pots and boxes beneath Vines and Roses under glass with very beneficial results. During the past cold season, nitrate of soda has had little effect on crops in the field, which is, perhaps, owing to the orifices of the leaves being closed. I should like to hear the opinion of others in reference to this question.—H. G., *South Hants.*

INDOOR GARDEN.

SCHIZANTHUSES IN POTS.

AMONGST hardy annuals specially adapted for pot culture few surpass the different varieties of *Schizanthus pinnatus* in elegance and floriferousness. They form branching plants, and under good cultivation grow to a height of 2 feet or more. During May and June they are amongst the best of decorative subjects for the greenhouse, *i.e.*, if they have been raised from seed the previous autumn and grown on with a view to their flowering at the season named. If seeds are not sown till spring the plants will not grow so strongly afterwards under a temperature which is higher than that of autumn, their tendency being to become drawn and to produce but comparatively few flowers. The latter have curiously lobed corollas, which are divided into numerous segments and marked and blotched with various colours, including yellow, purple, and crimson; there are also some varieties nearly or quite white. Plants of *Schizanthus* are easily grown, but a knowledge of their flowering habit, requirements in the way of temperature, and the proper season for sowing are points which are essential as regards attaining the best results. We sow new home-saved seeds in pans of light soil in the latter part of September and place them on ashes in a cold frame. When the seedlings are large enough to handle, they are inserted in 2½-inch pots and returned to a similar position, where they are kept near the glass throughout the winter. Fire-heat is only applied for excluding frost or dispelling damp, which proves destructive to the foliage in foggy or dull weather; plenty of air may be admitted when it is mild or bright. But little water is required throughout the winter, the object being to induce a short-jointed growth and not to encourage it unduly when the days are short. About February we shift on into 5-inch pots and place a stake to each plant to keep it upright. When established in this sized pot, the plants should be transferred to others from 6 inches to 8 inches in diameter, in which they may flower. No fire-heat should be allowed plants of *Schizanthus* in spring, but plenty of air on all favourable occasions and a light position are essential to their well-being. Pinching the young plants to encourage a bushy habit is generally recommended, but this is unnecessary; indeed, it not unfrequently prevents full development. It needs but a moment's reflection to see that in the case of any terminal flowering seedling plant, if the central, and consequently the strongest, leader is removed, others which may be induced to grow are but secondary and weaker shoots. If the proper winter treatment be given, pinching will never be needful. *Schizanthuses* require a rich open soil for the final potting, consisting of loam and about one-third dried cow manure, if procurable. The varieties of *S. pinnatus* may have the sized pots above named given them. *S. retusus* and its white form are dwarf and very distinct in habit from the varieties just referred to; the flowers are also much larger. They are very showy and desirable subjects, which succeed under treatment similar to that recommended for the others, except that 5 inch or 6-inch pots will allow space enough for the final shift. All kinds of *Schizanthus* may also

be sown with other annuals in the open border, but their natural propensity for seed-bearing is much encouraged by the heat of summer outside, and the flowers consequently do not last long.

J. G. K.

Drying off Amaryllis bulbs.—I notice that Mr. Douglas (p. 524) recommends the drying off of old bulbs of Amaryllis. Until lately I have done the same, but having recently paid a visit to Messrs. Kelway's, at Langport, I find that the drying-off process has been abandoned by them, and that the treatment they now adopt is right, the condition of their stock abundantly testifies. They are confident that neither young nor old bulbs of Amaryllis should be dried off, and they feel sure that the bulbs are weakened thereby. It is doubtless of the greatest importance that the roots should be kept fresh, or rather that they should be in the same condition in spring, when growth commences, as in autumn at the end of the growing season, and it is impossible to keep them so if they are kept for three months in dry soil. If the roots do not die, they shrivel up more or less. The gain derived from keeping the roots fresh is an increased number of flowers on a spike. I saw at Langport bulbs just pushing up their growth that had stood in an open border all winter, with a little litter strewn on the surface. The growth, too, was as strong as anyone could desire, and within a few days of being as early as that of bulbs which had been planted out in frames, and which had had protection all winter. It is therefore clear that, although the Amaryllis will submit to have its bulbs dried off, that fact does not demonstrate that it is a necessary part of its management.—J. C. C.

PROPAGATION OF NEPENTHES.

IN reply to a question put to me in reference to this subject, allow me to say that cuttings of *Nepenthes* require more time as well as more heat to get them to form roots than those of the generality of stove plants. As to the time to propagate, in all probability spring would be best, as then the cuttings would have the hot summer before them wherein to get rooted, but I have struck considerable quantities of most of the better-known kinds put in about September. I found cuttings to generally succeed best when they consisted of two joints, removing the leaf entirely at the base, and reducing that attached to the upper joint to about 6 inches or 8 inches in length. When I first began the propagation of these plants, the cuttings were struck ten or twelve together in good-sized pans, drained and filled with sand in the usual way, keeping them moist and covered closely with propagating glasses. I then tried charcoal and crocks, broken to about the size of Peas, in equal proportion to the sand; afterwards I used nothing but crocks, broken somewhat smaller than the size just named, and in this material most of the cuttings struck root, and in less time than in anything else. They should be put singly in small pots; in this kind of material holes to admit the cuttings cannot be easily made; it is, therefore, best to fill the pots about one-third and then put in the cuttings, filling in the remainder round them. It is well to insert a couple of sticks at opposite sides of the pots, bending them together at top, and to these tying the cuttings, otherwise if they have to be moved about at all the young roots in course of formation are liable to be destroyed. The roots of *Nepenthes* in all their stages are most fragile and easily injured. From the nature of the plants it is scarcely necessary to say that the material must be kept constantly wet. Thus treated, cuttings made roots freely through the winter, and the young plants were ready for moving into pots a little larger in spring. The cuttings were placed on the tan in the pit in the centre of the house; but, until new tan was put in in December, there was no warmth in it. The temperature through the winter, about 70° by night, except during severe frosts, was higher than many growers keep up; consequently, as already said, it may be better to put the cuttings in in

spring where less heat is maintained. With me the soft tops of the shoots never rooted so well as the hard, mature wood. There is one thing connected with these plants which it is well that those about to propagate them from cuttings should bear in mind, and that is, that if cuttings are made of any portion of the stems that have produced the long wingless pitchers, the pitchers produced by the plants so raised will retain the same form, never coming with the same flask-like expansion at the base, or with the wings that add so much to their appearance. *Nepenthes* also root freely from layers. The way in which I have succeeded in increasing them in this manner was to remove a couple of leaves from the portions of stems intended to form roots, bending the shoots until they were cracked about half through; then I took pots 5 inches or 6 inches in diameter, and fastened them to the pot in which the plant to be layered was grown; I drained them sufficiently, half filled them with the ordinary material in which the plants were grown, and secured the shoots in their position, filling up with the soil, which should be pressed moderately firm. Thus treated in the autumn, they made roots enough by the following May to admit of being severed from the parent plant without receiving much check. In all cases of this kind it is, however, better to cut the stems half through a few weeks before separating the layered shoots completely.

T. BAINES.

TILLANDSIA USNEOIDES.

THIS graceful and pretty species is most interesting to all plant lovers, though comparatively few perhaps have had the pleasure of seeing it grow in its habitat. I was so much impressed with its beauty during a visit to the Southern States and the World's Exposition at New Orleans, last winter, as to regard it as one of the most charming features of the Gulf coast landscape, if not indeed the great crescent city itself. It certainly was a most conspicuous object of admiration to all distant visitors to the Exposition; and the beautiful live Oak avenue in those grounds, with its immense trees, overhung, festooned, and decorated with this curious plant as no man can decorate, is not surpassed by any other thing found in any of those vast buildings surrounding it on every side. This *Tillandsia* belongs to the Bromeliads, of which about 170 species are known to botanists, all being natives of semi-tropical America, though a few have been naturalised in parts of Asia and Africa. The best known of the family is the Pine-apple, so much valued for its fruit. But *Tillandsia* belongs to the epiphytic group, which grow upon trees and in the air, without being in any sense parasitic, although in the case of *T. usneoides* it requires careful observation to demonstrate that it does not derive its sustenance, at least in part, from the tree to which it clings so closely. The plant is known here as New Orleans Moss, Spanish Moss, also Long Beard or Old Man's Beard. It grows in the greatest abundance in all the States bordering upon the Gulf of Mexico and along the lower Mississippi River. It may be found to some extent even a hundred miles inland at times, but disappears after that. The Cypress, Live Oak, Magnolia, and other forest trees of the South are covered from top to bottom, branch and twig, with this pretty epiphyte. The stem is filiform, pendulous, and branching; leaves linear filiform and curled. In colour the plant is of a drab ashy hue, quite distinct from most other vegetation, though, upon closer examination, the leaves of thrifty specimens are found to present a dull olive-green shade beneath the soft velvety ashy pile which forms the outward covering. Older and unthrifty plants are darker in colour, and almost black in some cases.

This plant is often used in decorating rooms in the North, where it is regarded with much curiosity as well as admiration. When thus used it remains fresh and beautiful for months, and often continues to grow for some time after it is festooned upon the walls. The vast Cypress swamps and other forests peculiar to the Gulf States are everywhere completely shrouded with this beauti-

ful Moss. I never shall forget the impression made upon my mind by this peculiar aspect of Nature as it presented itself for the first time. It was early morning, and as I looked from the car window the sun was peering over the edge of the dark gulf. Our train was in the midst of a vast Cypress swamp, in which every tree and shrub was literally covered by this charming Moss. Aurora seemed to be rising from the waters in her chariot, and, with her rosy fingers, painting a prism on the surface of each tiny dewdrop as it glistened and scintillated in effulgent splendour from every twig and leaflet throughout that sombre and cinereous forest. On another occasion the train was passing through a magnificent grove of Live Oaks, for which this region is so justly famous—this time in the parish of St. Bernard, in South-eastern Louisiana—the track for a long distance being lined with these immense trees. The upper branches had reached over and formed a complete network of interlacing limbs; from this the pendulous Moss was hanging in long, swaying, filmy streamers in the greatest profusion, which brushed the tops and sides of our car as we passed beneath the unique and charming natural archway. From the rear platform of the train this was an enchanting scene; and the president of the road, who was with me, slackened the speed of his train at this point that I might inspect more closely and enjoy it longer. Then in paddling up and down the winding rivers and bayous of this coast region, this long, streaming Moss everywhere depends from the overhanging branches of the luxuriant arborescent growth, often brushing your boat and face as you pass.

Such are a few of the ornamental aspects of this curious plant which naturally impresses plant lovers. But in addition to all this, like most other things in this practical and matter-of-fact country, *Tillandsia usneoides* has been found to possess distinct economic value, the importance of which is increasing annually. The Moss is gathered in piles near the swamps, and allowed to rot for ten or twelve months; 90 per cent. in weight is thus lost. It is then taken to New Orleans, where it is cleaned, dried, and ginned, losing in this last operation 35 per cent. of its weight. It is then ready for market, a prepared Moss used by upholsterers either alone or mixed with curled hair, which it greatly resembles, except that it is darker in colour. It is very much cheaper than hair, though not so good. New Orleans is the centre of this industry, there being six Moss factories located there, though there are small establishments of the kind at other points in Louisiana and at Pensacola, Florida. The amount of Moss gathered varies from year to year. It can be most profitably collected during seasons of high water and floods when the swamps are navigable for boats. At other times it is difficult to get about where it grows most abundantly. It is estimated, however, that Louisiana is now producing over £100,000 worth of this prepared Moss annually. Of late it is being shipped to Europe to some extent.

It is interesting to observe concerning the genus to which this plant belongs that the distinguished naturalist, Linnæus, gave it the name *Tillandsia* because of its aversion to water. He says he named it after a professor at Abo, who in his youth having an unpropitious passage from Stockholm to that place, no sooner set his foot on shore, than he vowed never again to venture upon the sea. He changed his original name to *Tillands*, meaning on or by land. Afterwards, having occasion to return to Sweden, he took a circuitous journey of 200 Swedish miles through Lapland to avoid going eight miles by sea.

Tillandsia usneoides, however, while averse to immersion in water, must have a moist atmosphere in which to grow, or it will not thrive for any length of time. It also grows in the West Indies in abundance as well as in the southern portion of the United States. H. HENDRICKS.

Kingston, N.Y.

Seedling Amaryllises.—Mr. Douglas appears to doubt whether I was right in recommending amateurs to buy seedlings instead of named

varieties, giving as his reason that it costs as much to grow cheap sorts as dear ones. This no one, I think, will dispute; but why give a long price for named varieties when almost if not quite as good kinds may be had for a tenth, or perhaps a twentieth, part of the money? So many are raised now, that only a very small percentage are named, and as these take a long time to increase, the charge for them must be high. As to the time of sowing, I maintain that spring is the best season, but those who miss getting their seeds in then, or have plants that ripen some afterwards, will do well to sow even now, as by doing so they will save a few months. The next objection which Mr. Douglas makes to my remarks is the syringing, which he condemns, and states that he never has his plants syringed and never has red spider, and yet a little farther on he says that in hot weather he does syringe, but that the water evaporates before he shuts up the house, which must be open for some time for it to do this, and the leaving a house open after syringing is a practice contrary to that of most people. I gave 7-inch pots as the outside limit that would be required in the potting of Amaryllids, but Mr. Douglas seems to think 5-inch ones large enough for flowering bulbs. Now, if that be so, the bulbs must be small, or they would not go into 5-inch pots, and there would be little or no room for the soil and the roots.—S. D.

SOME CELEBRATED YEW.

THE custom of planting Yew trees in churchyards has never been satisfactorily explained. Some have supposed that they were placed near churches for the purpose of affording shade, and others that they might be safe there from cattle, on account of their value for making bows. The subject has occupied the attention of various writers, and from the "Magazine of Natural History" we give the following abridged extract: It seems most natural and simple to believe that the Yew, being indisputably indigenous, and being, from its perennial verdure, its longevity, and the durability of its wood, at once an emblem and a specimen of immortality, its branches would be employed by our pagan ancestors, on their first arrival here, as the best substitute for the Cypress, to deck the graves of the dead and for other sacred purposes. The Rev. Mr. Bree suggests the probability of churches having been built in Yew groves, or near large old Yew trees, as greater than that Yew trees were planted in the churchyards after the churches were built. A consecrated Yew was worth a pound, while a wood Yew tree was worth only fifteenpence, a circumstance which renders it probable that some particular ideas of sanctity were attached to the churchyard Yews, and that they were only employed in religious ceremonies.

It may be mentioned, as a historical fact connected with the Yew, that De Candolle has adopted this tree as a sort of standard by which to determine the age of trees generally, from the number of layers of wood in their trunks. The reasons why he preferred the Yew appear to be that of this tree there are a greater number of authentic records of the age of individual specimens than in the case of most other trees; because the tree is very generally distributed throughout Europe; and finally, and chiefly, because the wood is of slower growth and greater durability than that of any other European tree. This authority says that measurements of the layers of three Yews, one of 71, another of 150, and a third of 280 years old agreed in proving that this tree grows a little more than one line annually in diameter in the first 150 years, and a little less from 150 to 250 years. He adds, "If we admit the average of a line annually for very old Yews, it is probably within the truth; and, in reckoning the number of their years as equal to that of the lines of their diameter, we shall make them to be younger than they actually are." The justness of De Candolle's conclusion has, however, been questioned by various botanists. Some consider a line a year, in the case of the Yew, not nearly enough, and show that De Candolle's average of a line a year makes old

Yews too young and young Yews too old; for the latter he would allow two, and in the case of rich soil even three, lines a year till the plants had trunks 2 feet in diameter, when one line a year may be allowed. So much, however, depends on the nature of the soil in which the tree grows, that but very little reliance can be placed on any data of this kind.

THE FOUNTAINS ABBEY YEW, in Yorkshire, is well known. This abbey was founded in 1132, and its history is minutely related by Burton. There stood a large Elm tree in the midst of the vale (Skeldale), on the lower branches of which the monks of old put some thatch and straw; and under that they lived for a time. Part of the day some spent in making wattles to erect a little oratory, whilst others cleared some ground to make a little garden. But it is supposed that they soon changed the shelter of their Elm for that of seven Yew trees, growing on the declivity of the hill on the south side of the abbey, all standing at this present time (1658), except the largest, which was blown down about the middle of the last century. They are of extraordinary size; the trunk of one of them is 26 feet 6 inches in circumference at 3 feet from the ground, and they stand so near each other as to form a cover almost equal to a thatched roof. Under these trees, we are told by tradition, the monks resided till they had built the monastery. The name of Fountains Abbey is derived, according to some, from Fontaines, in Burgundy, the birthplace of St. Bernard; and by others from the word *shell*, which, signifying a fountain, was written in Latin, by the monks, *fontibus*, and thence corrupted into the present name. A portrait of one of these celebrated trees is given by Strutt. The tree is upwards of 50 feet high; and if it existed and was a large tree previously to 1132, it must be now upwards of 800 years old.

THE TISBURY YEW.—In the churchyard of Tisbury, in Dorsetshire, there is now standing, and in fine foliage, although the trunk is quite hollow, an immense Yew tree, which measures 37 feet in circumference, and the limbs are proportionately large. The tree is entered by means of a rustic gate, and seventeen people lately breakfasted in its interior. It is said to have been planted, many generations ago, by the Arundel family.

THE ARLINGTON, OR HARLINGTON, YEW stands in the churchyard of the village of that name, a short distance west of Hounslow. It is chiefly remarkable for its large size, and for having once been clipped into a regular form. A print of this tree appeared in November, 1729, and this print is accompanied by a copy of verses by the poet, John Saxe, from which it appears that it must at that time have been between 50 feet and 60 feet in height. It was surrounded at the bottom of its trunk by a wooden seat, above which, at 10 feet from the ground, was a large circular canopy, formed by the tree itself, which was, according to Poet Saxe (who was clerk of the parish)—

So thick, so fine, so full, so wide,
A troop of guards might under it ride.

Ten feet above this canopy was another of much smaller dimensions, and above that a pyramid about 20 feet high, surmounted by a globe 10 feet high, and the globe was crowned by a weather-cock. The tree ceased to be clipped about 1780 or 1790, and it is now suffered to assume its natural shape.

THE DARLEY DALE YEW.—This ancient tree stands in the churchyard of Darley in the Dale, Derbyshire. It is a female, with a solid trunk, forking, at 7 feet above the ground, into two nearly upright boughs, which reach a height of about 55 feet. Its circumference at the base is 27 feet; at 2 feet 4 inches above the ground, 27 feet 7 inches; at 4 feet, 31 feet 8 inches; and at 6 feet, 30 feet 7 inches. At 4 feet high there are excrescences which swell the trunk beyond its natural size, but the mean of the three other dimensions gives a circumference of 28 feet 4 inches and a diameter of 9 feet 5 inches, disre-

garding fractional parts. The mean diameter of the tree is, therefore, 1356 lines, which, according to De Candolle's method of calculating the age of trees, would also be the number of its years.

YEW-TREE VALE, a dell on the Surrey chalk downs in the country of Sylva Evelyn, is one of those fine wild parks adorned and planted by Nature herself. Here may be found as many as fifty great Yew trees grouped together on an uneven slope, permitting no other growth except that of a few attendant Hawthorns, with the green turf under foot. The Yews stand in what may be called an "opening," or wood pasture, surrounded by a liberal growth of Furzes, Hollies, Junipers, and lesser Yews. It is undoubtedly part of the primeval forest, untouched as yet by culture, or even by any chance hand "sticking in a tree," for every-

thing that grows on this retired site is indigenous. The lesser native Evergreens, the Butcher's Broom, Ivy, and Mistletoe, are freely sprinkled around; so are the Oak, Ash, Birch, Elder, Maple, Hazel, Crab, Bullace, Sloe, and the usual hedge fruits. The bow has been cut in Yew-tree Vale, druidical rites may have been celebrated here, and the golden knife may have sliced the Mistletoe from the predecessors of these old Thorns. The place has an aspect of ancient Britain, and its silent repose seems to plead against revolution and deprecate change. May none attempt to beautify its ancient face, and desecrate the vale by introducing any novelty within its precincts.

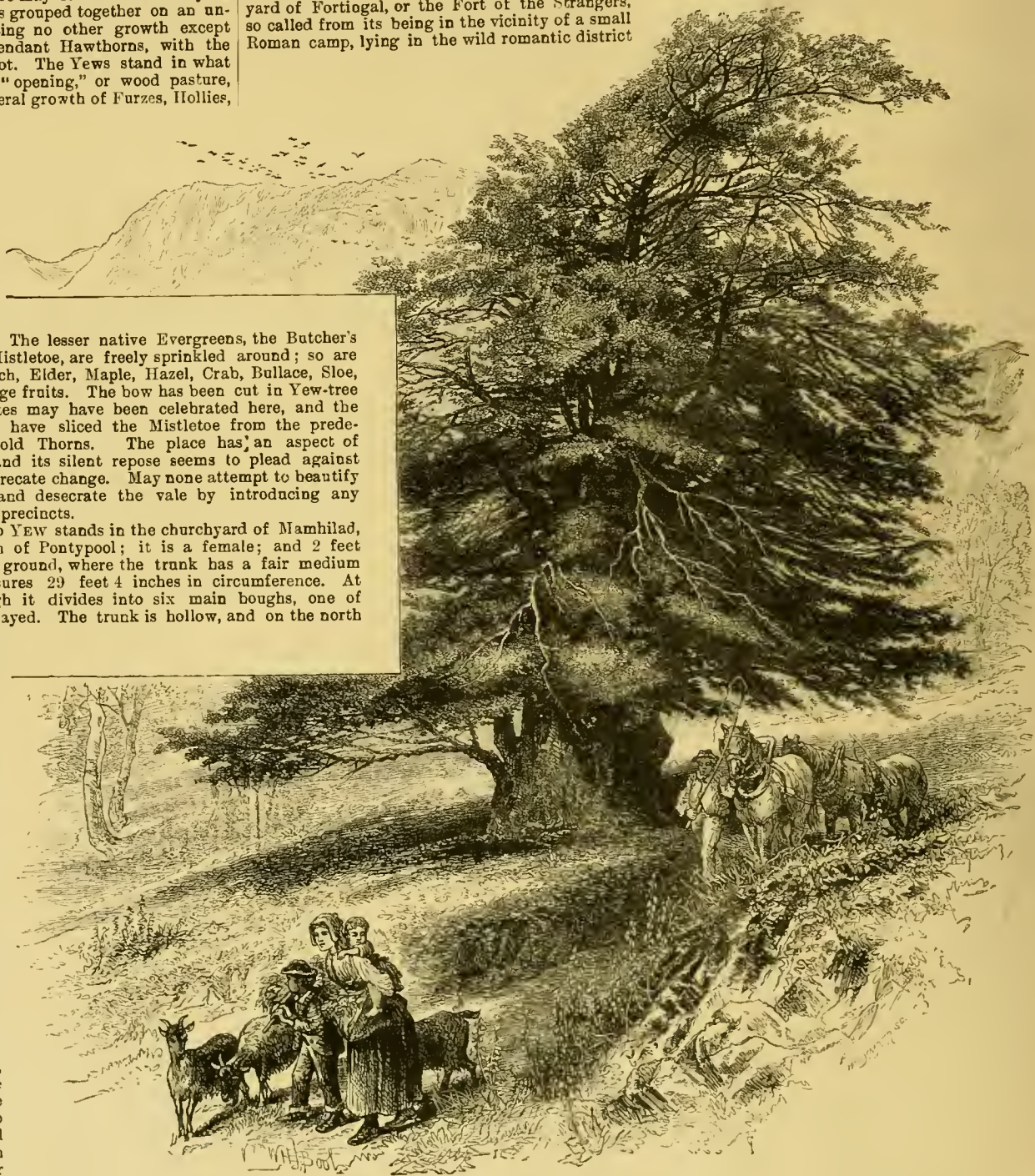
THE MAMHILAD YEW stands in the churchyard of Mamhilad, a few miles north of Pontypool; it is a female; and 2 feet 6 inches from the ground, where the trunk has a fair medium thickness, it measures 29 feet 4 inches in circumference. At about 4 feet high it divides into six main boughs, one of which is quite decayed. The trunk is hollow, and on the north side it has an opening down to the ground, which is gradually contracting on both sides by annual deposits of new wood. Within this opening, and in the centre of the original tree, is seen another, and apparently detached, Yew, several feet in diameter, covered with bark and in a state of vigorous growth; it is, in fact, of itself a great tree, and overtops the old one. On examination, however, it is found to be united behind, and also at some distance from the ground, by two great contorted arms, one on each side, to the inner wall of its decaying parent, being a curious example of natural inarching, and having altogether a very striking and singular appearance.

THE GRESFORD YEW stands in Gresford Churchyard, near Wrexham, Denbighshire. The circumference of the trunk at 5 feet 3 inches from the ground (being at the point of divarication of the main branches) is 29 feet, and at the very base it is 22 feet; from the trunk to the extremities of the branches, on the south side (being their greatest extension), it is 36 feet, and the

height of the tree is 52 feet. This noble Yew has seven main branches, and most of these divide again, very near the trunk, into two or three smaller ones. The tree, which is a male, is still full of foliage and of great beauty, as well as venerable for its size, and it shows no symptoms of natural decay.

THE FORTINGAL YEW stands in the churchyard of Fortingal, or the Fort of the Strangers, so called from its being in the vicinity of a small Roman camp, lying in the wild romantic district

notice of it by him will be found in the "Edinburgh Philosophical Journal" for that year, from which we make the following extract, premising that, when Daines Barrington measured the tree, he found one side of the trunk a mere shell of bark, all the interior having decayed. "Considerable spoliation," Dr. Neill observes, "have evi-



One of the Patriarchs of Yew tree Vale, Surrey.

at the entrance to Glen Lyon, in Perthshire. Its age is unknown, but it has long been a mere shell, forming an arch, through which the funeral processions of the highlanders were accustomed to pass. It was first described in the "Philosophical Transactions" in 1769 by the Hon. Daines Barrington, who found it 52 feet in circumference, and some years afterwards by Mr. Pennant, when the circumference had increased to 56 feet 6 inches. Dr. Neill visited the tree in July, 1833, and a

dently been committed on the tree since 1769 large arms have been removed and masses of the trunk itself carried off by the country people, with the view of forming drinking-cups and other relics. What still exists of the trunk now presents the appearance of a semicircular wall, exclusive of the remains of some decayed portions of it, which scarcely rise above the ground. Great quantities of new spray have issued from the firmer parts of the bark, and a few young branches

spring upwards to the height, perhaps, of 30 feet. The side of the trunk now existing gives a diameter of more than 15 feet, so that it is easy to conceive that the circumference of the bole when entire should have exceeded 50 feet. Happily, further depredations have been prevented by means of an iron railing which now surrounds the sacred spot, and this venerable Yew, which in all probability was a flourishing tree at the commencement of the Christian era, may yet survive for centuries to come."

SOCIETIES.

ROYAL BOTANIC.

JUNE 17.

THIS second great summer show in the Regent's Park was remarkable in two ways—for the large and fine display of Orchids and for the hardy flowers, which, in fact, formed the special feature of the show; never before have these been exhibited here so plentifully or so admirably. The other features, the stove and greenhouse plants, the Pelargoniums, the fine-foliaged plants, mixed groups and fruit were much the same as usual, and altogether formed a first-rate exhibition—as fine as the society has ever had in June. There could be no mistaking the chief points of attraction for the visitors, for it was difficult to get near the Orchids, and the corridor in which the hardy flowers were placed was crowded. Seeing that the latter prove to be such an attraction, let us hope that the council of the society will see fit to extend the classes for them and offer more liberal prizes. Now, the first prize for twenty-four hardy plants is £1, while for twenty-four trusses of Roses £3 10s. is offered, and for a collection of wild flowers the first prize is £3.

ORCHIDS.—These were admirably shown and numerous; not only was the usual "Orchid bank" crowded, but another bank was filled also. There were four classes, two of which were set apart for *bona-fide* single specimens, which, we were glad to observe, were contributed in grand condition. The amateurs in the large class were best represented by Mr. Whitbourne, of Great Gearys, Ilford, whose gardener showed a first-rate collection (all single specimens), including the finest plant of *Odontoglossum vexillarium* that has ever been exhibited. It was over a yard through, and bore no fewer than thirty-four spikes and two hundred flowers. The variety also was excellent—large flowers, and of a rich, rosy pink colour. The other noteworthy plants in this group were *Oncidium macranthum hastiferum*, with forty odd flowers on one spike; two grand specimens of *Odontoglossum Roezli* and the white variety, 18 inches through and covered with bloom; *Cypripedium Dominii*, six spikes; *Epidendrum vitellinum majus*, with half-a-dozen fine branching spikes; a large plant of *Masdevallia Harryana* and the beautiful *Cypripedium spectabile*, *C. Lawrenceanum*, *Lælia purpurata*, and *Cattleya Warneri* made up the group. The second dozen, from Mr. Southgate, of Streatham, was also good, the most remarkable being a specimen of *Aerides Fieldingi* with four branching spikes; *Cypripedium Dominii*, *Brassia verrucosa*, seven spikes; *Odontoglossum vexillarium picturatum* (bi-coloured), and an extremely rich form of *Cattleya Warneri*. In the third collection, from Mr. Little, was the new supposed hybrid *Cattleya intricata*, between *C. amethystina* and *Lælia elegans*; *Dendrobium Dearei*, a fine plant with numerous pure white spikes; *Aerides crispum*, and a very fine *Cypripedium barbatum superbum*.

The single specimen class among amateurs was represented by three collections, and in this again Mr. Whitbourne's garden furnished the best, but there were no extraordinary specimens, as in his dozen plants, but all were admirably grown and had a fresh appearance. There were some finely flowered *Odontoglossum vexillarium*, with which Mr. Douglas seems to be uncommonly successful, his spikes and blooms being large; *O. Roezli*, and the rarely seen but very pretty *Dendrobium amicum*. Finer specimens were

shown in the same class by Mr. De B. Crawshaw, of Sevenoaks, but some of his plants bore evident signs of having visited other shows, otherwise he must have been first, the majority of his plants being remarkable. For instance, there were two plants of *Vanda suavis*, both with three spikes; *Cattleya Warneri* with two spikes, one with three, the other with four flowers. This was one of the most remarkable plants in the show, and the variety was good. Other plants were of *C. Warneri Rosefeldensis*, a richly coloured form; *C. Gaskelliana alba*, shown poor, but promising to be fine; and *Dendrobium Jamesianum giganteum*, much bigger than usual.

The nurserymen were represented best by Mr. Cypher, of Cheltenham, who had enormous specimens of *Dendrobium thyrsiflorum*, *D. Bensonæ*, *D. Parishii*, *Cypripedium*, *Odontoglossum*, all of which, of course, made a great show. Mr. James' second group was similarly attractive, and was even brighter; he had enormous plants of *Cattleya Mendeli*, *Mossiae*, and *Warneri*, *Lælia purpurata*, and *Epidendrum vitellinum*. Messrs. Jackson's group was also excellent, and they showed the finest dozen in the single specimen class, *Aerides Lindleyanum*, with a branching spike, one of the most beautiful of the genus; *Cattleyas*, *Lælias*, and *Odontoglossums*, not large, but well grown and flowered. The second group from Mr. Cypher contained five good specimens; among them were *Cattleya Mossiae* with eleven flowers and a very large form of *Odontoglossum vexillarium*. Some of Mr. James' single specimens were also noteworthy, particularly a pretty form of *Cattleya Mendeli* with two spikes, one with four, the other with three flowers.

PELARGONIUMS were a bright feature, as they usually are at the June show, and no one showed them to such perfection as Mr. Turner, of Slough, who took the first prize both for the show and fancy sorts. His half a dozen plants of the former class consisted of *Prince of Prussia*, *Ritualist*, *Amethyst*, *Despot*, *Comtesse de Choiseul*, and *Jove*—quite a representative selection. The fancy sorts were *Mrs. Pottle*, *Lady Carington*, *Sarah Berohardt*, *Mrs. Pope*, *Princess Teck*, and *Mrs. G. Little*. Among the amateurs there was a good competition in the fancy class, the best being from Mr. Clay's gardener (Mr. Wiggins), whose plants, though not so large or so well flowered as Mr. Turner's, were well grown.

Half a dozen very fine plants of show and decorative sorts came from Mr. Little, the names being *Robinia*, *Amethyst*, *Fortitude*, *Triomphe de St. Amand*, *Duchesse de Morny*, and *Hermite*. Those from Mr. Clay were good, and those from Mr. Phillips, of Langley, a new exhibitor, were also well flowered; the sort *Mrs. Louisa Lloyd* struck us as being uncommonly bright. He also showed some excellent specimens in the fancy class. Mr. Martineau's garden, at Clapham Park, supplied the finest zonal kinds, Mr. Weston, the gardener, being well known as a good grower of these. He had a plant a yard through of *Henri Jacoby*, the best dark crimson, but the others were of little known sorts; the other group of zonals also did credit to the exhibitor, Mr. Eason.

STOVE AND GREENHOUSE PLANTS.—These were not so numerous or so fine as usual, some of the best known exhibitors being absent. Mr. Cypher's dozen plants formed a remarkably fine group, some being huge specimens and profusely flowered. An *Erica Cavendishi* was a globular mass of golden bloom, about 6 feet through, and his plants of *Pimelea decussata*, *Clerodendron Balfouri*, *Aphelexis macrantha*, and *Phenocoma prolium* were equally fine. Mr. Cypher also showed the best six plants. In Mr. James' group was a large plant of *Allamanda grandiflora*, *Hedera tulipifera*, and *Heaths*. A very fine half a dozen plants in the amateurs' class were shown by Mr. Barclay's gardener (Mr. Donald), of Leyton; they left little to be desired as regards size, floriferousness, and freshness. The group consisted of *Hedera tulipifera* and *H. fuchsoides*, *Erica tricolor*, *Kingscottii*, and *Cavendishi*; *Statice profusa*, very fine; *Ixora Fraseri*, one of the best sorts. Among other

flowering stove plants worth notice was a fine plant of *Eucharis amazonica* from Mr. Coope's garden, also *Ixora Williamsi*, remarkable for its large globular trusses.

FINE-FOLIAGED PLANTS.—The half-a-dozen *Crotons* from Handcross Park were about as fine as could be desired, both for size and colour. The sorts shown were *Warreni*, 9 feet through; *angustifolius*, almost as large; *Evansianus*, *albicans*, *Williamsi*, and *Prince of Wales*. Mr. Cypher's group of fine-foliaged plants was creditable, but contained nothing out of the ordinary run; but Mr. Rann's group in the amateurs' class contained some large and finely-coloured *Crotons*, besides gigantic specimens of *Cycads* and *Palms*. There was nothing remarkable about the first prize group of six *Palms*, but the *Ferns* were good throughout. Mr. Warren's gardener was first with *Gleichenia Mendeli* and *G. rupestris gigantea*, both marvels of good culture; *Davallia Mooreana*, 8 feet across; *Gymnogramma chrysophylla*, 4 feet through, and *Tree Ferns*. Mr. Douglas, in the second group, had *Adiantum concinnum*, *latum* very fine, and three *Tree Ferns*.

BEGONIAS, as shown by Messrs. Laing, were, as may be supposed, perfection so far as varieties went, and the plants also were large and well flowered. As all the sorts were first-rate, we give the names of those shown. General Roberts, crimson; Her Majesty, white, tinted rose; Novelty, crimson; Bridesmaid, white; Madame Stella, rose.

ROSES were uncommonly well shown, and it is doubtful if the blooms which came from the nurseries of Messrs. Paul or Mr. B. Cant will be surpassed next month. We have never seen a better collection of two dozen blooms in June than that which Messrs. Paul showed for the first prize, the blooms being not only large, but exceedingly well coloured. Among the most noteworthy sorts was the delicate blush-tinted *Violette Bouyer*, which is undoubtedly a coming Rose, no other being like it in delicacy of tone. Mr. Cant's Tea Roses were the admiration of all, and a finer dozen blooms of *Souvenir d'Elise* could not be imagined. If these were a foretaste of finer blooms at the coming Rose shows in July, we may expect to see some extraordinary productions. *Maréchal Niel* was uncommonly fine, and was shown by several. The climbing Roses, too, as shown by Mr. Rumsey, of Waltham Cross, won many admirers, being more uncommon than the others. The cut flowers in the classes for Orchids, Pelargoniums, and stove and greenhouse plants were much the same as usual.

New plants.

Botanical certificates were awarded to

LÆLIA CANHAMI, the beautiful hybrid shown at South Kensington last week. Messrs. Veitch.

THUNIA VEITCHII.—A hybrid between *T. Marshallii* and *Bensonæ*, very elegant and lovely in colour. Messrs. Veitch.

MASDEVALLIA GAIRIANA.—A new hybrid between *M. Veitchiana* and *Davisi*. Messrs. Veitch.

CYATHEA DIVERGENS.—One of the most remarkable Ferns ever introduced, graceful in growth and distinct from any other; a decided acquisition. Messrs. Veitch.

SPIRÆA PALMATA ALBA.—A white form of the common kind, remarkable only for its novelty. Messrs. Veitch.

EUONYMUS JAPONICUS SILVER GEM.—A very handsome silver-variegated kind, different in growth from the ordinary sorts. Messrs. Veitch.

CYPRIPEDIUM MACROPTERUM.—A hybrid between *C. Lowi* and *superbiens*, exactly intermediate. Messrs. Veitch.

PHYLANTHUS CHANTRIERI.—The same shown and certificated at South Kensington. Messrs. Veitch.

FAGUS SYLVATICA TRICOLOR.—A variety with rosy-tinted foliage, pretty enough as shown, but whether it will retain its character out-of-doors has yet to be proved. Messrs. Veitch.

ALOCASIA HENDERSONI.—Decidedly a distinct and beautiful fine-leaved plant; the large heart-

shaped leaves are bronzy green. Messrs. Henderson.

CUPRESSUS LAWSONIANA ERECTA VIRIDIS ALBO-Variegata.—A long name for a form of the Knap Hill Cypress, having numbers of its branches tipped with white. Messrs. Charles Lee & Son.

DENDROBIUM FALCONERI DELICATUM.—Differing from the type in being of a paler tint. It is very beautiful. **D. CRYSTALLINUM ALBUM.**—A pure white form. Both from Mr. Cypher.

AGAPANTHUS UMBELLATUS VARIEGATUS.—Foliage striped with white. Mr. Williams.

CALADIUM RAYMOND LEMONIER.—Small leaves, bright red ground, broad white edge. **ALBO-LUTEUM MACULATUM.**—A variety with red blotched leaves. **COMTE DE GERMANY.**—With small leaves, red ground, with white spots and mottled green. All from Messrs. Laing.

BRODIAEA STELLARIS.—A new Californian species in the way of *B. laxa*, but with larger clusters and flowers. Messrs. Barr & Son.

ODONTOGLOSSUM ALEXANDRE ROSEUM PUNCTATUM.—A beautiful spotted variety. **O. CRISPUM JOHNSON.**—One of the most distinct and handsome varieties yet exhibited, the flowers being heavily blotched with chestnut-brown on a pure white ground. **O. CRISPUM PHALANOPSIS.**—Remarkable for its enormous flowers, delicately tinted with rose. All from Messrs. Sander & Co.

Floricultural certificates were awarded to

CARNATION PRIDE OF PENSHURST.—A pure clear yellow, the best of its colour. Messrs. Veitch.

STATICE FLORIBUNDA.—Like *S. profusa*, but finer, deeper, and richer in colour, and denser in cluster. Messrs. Lee.

VERBENA DR. FEYERLIN.—Deep claret-purple; and **PURITY**, white. From Messrs. Cannell & Sons.

BEGONIA LOUIS BOUCHARLET.—A double sort, extremely floriferous and graceful in growth. Messrs. Cannell.

PELARGONIUMS PORTIA AND VESPER BELL.—Two first-rate sorts, the pick of a large number of fine new seedlings. Shown by Mr. Wiggins.

PELARGONIUM (FANCY) MRS. LANGTRY.—A distinct and pretty variety. Shown by Mr. Turner.

PELARGONIUM PLUTO.—One of Mr. E. B. Foster's seedling show varieties, and perfect as regards shape, size, and colour.

BEGONIAS MRS. BRESSENDEN AND SALMONEA.—Two tuberous sorts, both unapproachable in form, size, and colour. From Messrs. Laing.

HARDY FLOWERS, as we before observed, were better shown than we ever remember seeing them. In the tent Messrs. Paul, of Cheshunt, had a large and varied group of well grown alpine and border flowers, such as Columbines, Saxifrages, Campanulas, and many rarer kinds. These were all arranged admirably in an informal manner. The cut flowers exhibited in the long tent were marvellous compared with what have hitherto been seen, particularly the competing collections from Mr. Ware and Mr. Kelway. The former had in his stand tall spires of Delphiniums, St. Bruno's Lily, Iceland Poppies, Campanula dalmatica, and other such fine sorts, while the specialties in Mr. Kelway's collection were the noble Pæonies, Oriental Poppies, Pyrethrums, single and double, all of which were arranged admirably. The extensive collection from Messrs. Hooper, who occupied over 100 feet of stage space, was much admired, consisting as it did of an infinite variety of Irises, Pæonies, and Pyrethrums. In the corridor Messrs. Barr displayed quite a wealth of hardy flower beauty, consisting of commoner sorts besides others either new or rare.

Fruit was not up to the average, though some fine examples could be found among the various classes. The Fruiterer's Company offered some valuable prizes for collections of fruit, but only one was shown. This came from Mr. Dyke Lee's gardener, and contained some twenty dishes, but it would have been better had he selected his best dozen and left the rest at home, some of the sorts not being ripe. Of Grapes there were Black

Prince, Foster's Seedling, Buckland Sweetwater, and Black Hamburg. Of Melons, Victory of Bath, Hero of Lockinge, Scarlet Invincible, and Lord Beaconsfield. Of Peaches, Alexandra, a capital dish of what appears to be a first-rate early sort; Early Victoria, and Royal George; of Nectarines, Newington, Lord Napier, and Violette Hâtive; Strawberry President and Figs.

There were a few good Queen Pines, the best of three of the nine shown being handsome fruits. Out of four pairs of Melons, the best were Scarlet Premier and Hero of Lockinge, from Mr. Douglas. The next pair Hero of Lockinge and Read's Scarlet Flesh, and the third High Cross Hybrid and Scarlet Gem. Peaches were few, the best two dishes from Mr. Mowbray being fair examples of Royal George and Noblesse; Alexandra and Early Louise were second, and Violette Hâtive and Royal George third. The best two Nectarines were Pit-maston Orange and Elruge, and the next, Lord Napier and Newington. Strawberries were poorly shown, and only one exhibitor had Cherries; these were Elton and Black Circassian. Grapes were excellent, especially the three bunches of Black Hamburg from Mr. Smith, which were not only large, but finely shaped and admirably coloured. There were some good Alexandrian Muscats considering the early date, and Buckland Sweetwater and Foster's Seedling were likewise well shown in the class for white sorts; while Black Prince was shown well among black kinds. A new Strawberry was shown by Mr. Laxton, named Noble, which was stated to have ripened its fruit out of doors. It is a large, well-coloured globular-shaped fruit. The new sort, The Captain, was also shown by Mr. Laxton. This was likewise ripened out of doors, and must be a first-rate early sort, judging by the sample shown. Messrs. Paul, of Cheshunt, sent a dish of their new Strawberry, Pauline, an elongated fruit of rich colour; and it is undoubtedly one of, if not, the earliest of all Strawberries.

Ghent Horticultural Society.—At the last monthly meeting of this society the following plants were certificated: *Oncidium pulchellum*, from M. J. Vanderzwaemen; *Lastrea sp. nova*, from M. A. Van Geert, jun.; *Calamus species*, from M. Vervae & Co.; and *Odontoglossum vexillarium purpureum*, from M. L. De Smet-Duvivier. Honourable mention on account of novelty to *Masdevallia Backhousiana*, from M. Aug. Van Geert, jun.; *Anthurium Scherzerianum var. atropurpureum*, from Mme. J. Baumann; *Ixora Chelonii*, from M. De Smet-Duvivier; *Phalenopsis Stuartiana*, M. Aug. Van Geert, sen.; *Medinilla Curtisii*, from M. F. J. Spaer; and *Cattleya Mossiae splendens*, from M. Aug. Van Geert, sen. Cultural certificate to *Cypripedium Lowi*, from Mr. James Bray.

Fairy Rings.—Can you tell me what causes these, so often met with in old pastures? They are circles in which the Grass grows thick, black, and sweet. With the legends told to the young concerning them we are all well acquainted.—J. H.

* * * These are caused by the growth of fungi, notably by an edible species known as the Fairy Ring Champignon. The underground spawn from which the fungi arise at first starts from a centre, so that by the radial growth of the spawn the rings increase in size every year. The growth of the thick, black Grass here mentioned is caused by the decay of the previous year's growth of fungi on the margin of the ring. These fungi form a highly nitrogenous manure. The new crop of fungi (generally to be seen in the autumn) is outside the dark, rank Grass; this crop causes the growth of the dark-coloured Grass in the following year. The ring of black Grass is stated here to be sweet; Shakespeare says it is sour.

The nimble elves

That do, by moonshine green, sour ringlets make,
Whereof the ewe bites not.

By further observation you will find that Shakespeare was quite right; herds and flocks do not relish the rank, sour Grasses of Fairy Rings, and will not eat them.—W. G. S.

LATE NOTES.

Peach blight (A. C.).—The leaves on your Peach tree are attacked by a fungus (*Ascomyces deformans*). Pick off and burn all affected leaves and shoots. Very similar blisters are sometimes formed by cold winds or aphides, but in those sent the above named fungus is no doubt the cause, although the blisters are only just beginning to form.—G. S. S.

Beech blight (A. Cox.).—Your Beech trees are infested by one of the aphides nearly allied to the American blight on Apple trees. You cannot do better than scrub your trees with dilute mineral oil and soft soap. Quarter of a pound of soft soap dissolved in one gallon of hot water; to this while hot add two pints of petroleum; mix very thoroughly, and then add enough water to make ten gallons.—G. S. S.

Mushroom (J. R.).—Yes; the examples belong to the common edible Mushroom, but they are badly attacked by one of the parasitic mildews, or moulds, which sometimes grow on Mushrooms. In this diseased state Mushrooms are often dangerous for the table.—W. G. S.

Seedling Pelargonium (C. Magill).—Evidently a good sort, but it is sufficiently distinct from *Vesuvius*.

Seedling Aquilegia (W. Bald).—It is *A. cærulea*.

Pinus resinosa.—What is the character of this Pine in our country? I see it is praised as valuable in America.—R.

Ellam's Dwarf Cabbage.—The first plantation of this Cabbage was cut very early and turned out well; the second also did well and turned in early, but the first rain cracked them all to pieces. It is singular how some varieties keep fresh and solid, while others cracked at once.—R. GILBERT, *Burghey*.

Sparmannia africana.—This is often called a stove shrub. I have taken a photograph of a plant of it to show you that it will grow in a cool glass-sided room—a smoking-room—with very little sun, but probably kept free from frost. This plant has been so situated for two years past.—W. B.

High priced Orchids.—At Mr. J. C. Stevens' sale of Mr. Edward Wallace's Orchids on the 17th one plant of *Cattleya Reineckiana* sold for 76 guineas, and a large plant of *Cattleya Wagneri* for 90 guineas, and two smaller pieces for 19 and 12 guineas.

Double Fuchsia (F. B. B.).—It appears to be a fine sort, but without actually comparing it with others in a similar way, we cannot judge of its merits.

Iceland Poppy (S. A.).—The colour of the flowers of this Poppy ranges from pure white, through yellow, to almost bright scarlet, and a packet of seeds would produce all these colours.

Abutilon vitifolium.—Just now this *Abutilon* is lovely against a wall 15 feet high or more, being covered with flowers from top to bottom; it makes an excellent wall plant.—H. N. ELLACOMBE, *Bilton*.

Naming plants.—Four kinds of plants or flowers, only can be named at one time, and this only when good specimens are sent.

Names of plants and shrubs.—*F. W. L.*—1, *Either Arundo conspicua* or *Pampas Grass*; 2, *Tabernaemontana coronaria* fl.-pl.; 3, *Gymnostachyum Pearcei*; 4, *Euphorbia*; 5, *Polygonum orientale*.—*J. C. (Rushton)*.—*Geranium molle*, a common native plant. Probably mixed with the crop seeds.—*J. H.*—Please send again.—*N. Fox*.—*Illicium religiosum* (native of Japan).—*J. A. P.*—1, *Magnolia tripetala*; 2, *M. purpurea*; 3, *Polygala Dalmatica*; 4, we do not attempt to name *Roses*.—*Coalbuck*.—*Echeveria lanifolia*.—*Capt. M.*—*Clivia Garden* (?): specimen not sufficient to enable us to be certain of name.—*E. H. S.*—Next week. *Miss W.*—1, *Saxifraga aizoon pectinata*; 2, *Platystemon californicus*; 3, *Saxifraga lan-toscana*.—*T. W.*—1, *Meconopsis cambrica*; 2, *Doronicum Perdabianches*; 3, *Asplenium laserpitillifolium*; 4, *Papaver orientale*.—*A. Watkins*.—1, *Gladiolus segetum*; 2, *Muscari comosum*; 3, *Spiraea Filipendula*; 4, *Tradescantia virginica*.—*J. M.*—*Saxifraga sponheimica*.—*Subscriber (Cork)*.—*Ribes speciosum*.—*Anon.*—*Aquilegia cærulea*.—*W. L.*—1, *Papaver orientale bracteatum*; 2, *Iris* (withered).—3, *Brassavola Digbyana*.—*C. O. H.*—We do not attempt to name varieties of *Coleus*.—*E. F. C.*—1, *Pyrus terminalis* (Wild Service); 2, *Cornus*; 3, *Habenaria bifolia*; 4, *Polygonum*.—*T. W. H.*—*Lilium pyrenaicum*, *Geranium arvense*, *Syringa Emodi* variegata, *Salvia pratensis*.—*H. Karen*.—*Aster alpinus*.—*Bulb.*—*Critium pedunculatum*; also known as *C. australe*.—*Mac.*—1, *Salicicella apus*; 2, *S. Kraussiana aurea*; 3, *Alloplectus* (species); 4, *Rhipsalis salicornioides*.—*C. D.*—*Viburnum plicatum*; *Pyrus Chamaecephalus*.—*G. H. C.*—*Scilla campanulata*, the Spanish form of the common wood Hyacinth, *S. nutans*.—*Guerry*.—*Flowering Ash* (*Ornus europæus*).—*J. Mulliner*.—*Loquat* (*Eriobotrya japonica*).—*Mrs. A. Tempest*.—*Paulownia imperialis*, not uncommon, but flowering more plentifully than usual this year.—1, *Doronicum caucasicum*; 2, *Melittis Melissophyllum*; cannot name others.—*W. Elliott*.—1, *Salicicella Galleotti*; 2, *S. Mertensii*; 3, *S. viticellosa*; 4, *Adiantum tenerum*.—*K. Marsden*.—1, *Equisetum sylvaticum*; 2, *Clematis montana*; 3, *Diplacis glutinosus*; 4, *Crataegus Pyracantha*.—*E. M. G.*—Next week. *Subscriber*.—Purple hybrid *Laburnum*, *Cytisus Adami*, rather common.—*Sub.*, *Cork*.—*Scilla peruviana* (common).—*E. M. G.*—1, *Saxifraga granulata* fl.-pl.; 2, *Alyssum saxatile*; 3, *Saxifraga Geum*.

WOODS & FORESTS.

Giants and dwarfs among trees.—

That in plantations, trees of the same age and variety differ greatly in size, no one will deny; but what we have to determine is whether the difference is due to habit and constitutional vigour, or to other and external circumstances. I have often been struck by the difference in the height and girth of seedling Oak trees of the same age while in the nursery, but after transplanting to the woods, these differences were obliterated. Some years ago, I raised several hundred Oaks from picked seed from one particular old Oak tree; these were allowed to remain in the nursery for five or six years—the greater part of the time where they were sown—and I had often occasion to remark the difference of habit amongst them, particularly in stature and vigour of growth, differences which were steadily maintained while the trees were in the nursery. It is reasonable to conclude, therefore, that the tallest and strongest growing trees would keep the lead during their life and produce the greatest quantity of timber. I observed that some of the trees were quite as tall again as others, and of course double the girth also at their base. The tall trees made the longest annual shoots, which accounted for their greater stature, just as extra length of limb usually constitutes the principal difference between giants and dwarfs among the human family.

Difference of bulk in old trees.—In an ancient avenue of Elms here where all the trees have had an equal chance, so far as can be ascertained from their history, a great difference is observable in the bulk of timber in the different trees both as regards the thickness of trunk and the quantity and size of the branches. Some of the trees appear to have put forth stronger branches than their neighbours at an early age and usurped the most space, but there is not so much difference in their height. It is the same in an avenue of Spanish Chestnuts of the same age. A more reliable example of difference originating in constitutional vigour and habit is observable in our plantations of Scotch and Austrian Firs, now about seventeen years planted. The difference in the rate of trunk growth is very marked, hardly any two trees showing the same length of node or annual growth, but each tree indicating an uniform rate of growth in itself. Of course, those trees which have made the longest leaders are the giants in this case, but only as regards stature, for the dwarfs, having as a rule most branches, have as thick, if not in some cases, thicker trunks. The only two deciduous trees of good age which afford a fair comparison are two rather old Sycamores of the same age, growing side by side under equal conditions in every way, and one of them contains nearly twice as much timber as the other. The common Sycamore is subject to great variation of habit—some trees assuming a compact pyramidal shape, while others are umbrageous and wide-spreading. In this case the small tree is of the former, and the large one of the latter habit, and the last is much the larger in head and trunk. These trees were planted many years ago to hide buildings, and, so far as anyone can see, the difference between them is due to habit of growth alone.

Effects of climate on trees.—A writer dwells upon the fates of coniferous trees after they leave the shelter of nursery hedges, and says that, except in mild seaside and other favourable situations, many of them refuse to thrive. This is quite true, but we have a good deal to find out yet as regards the peculiar climatic needs of many trees, particularly Conifers. Some seem to do best in a dry climate, and others again where the climate is moist. The Larch and Austrian Fir, in my opinion, are distinctly partial to upland districts and a dry atmosphere—conditions that are inimical to the well-being of a good many others of the same tribe. So dry is the natural climate of the Larch, that English doctors now recommend their consumptive patients to sana-

toriums in or near those regions on the Alps where it grows on that account alone, the dryness of the atmosphere there equalling or surpassing even that of the desert without its heat. No doubt the inland position of the Alps promotes this dryness of the air, but that our own climate differs in that way also is shown by recent returns from the Scottish Meteorological Society's new station on the summit of Ben Nevis, where at times the air is so excessively dry, and the dry and wet bulbs so far apart, that Glaisher's hygrometrical tables are useless (*Journal of the Scottish Meteorological Society*, 1883, p. 16). This great dryness of the air on Ben Nevis has been observed "towards the termination of a protracted and heavy storm from the north that poured down deluges of rain on the high northern slopes of the mountain range" only 50 miles off, on the north-east coast, which proves that the air must have been robbed of its humidity in some way before reaching Ben Nevis. The same phenomenon has been observed in a lesser degree at other high stations of the Society, it is stated, and goes to show that differences in the degree of humidity of the air sufficiently great to affect tree growth in a marked manner may exist in many parts of these islands and account for those differences in the growth and health of Conifers and other trees that have so often been chronicled. The way in which certain Conifers, Spruces, and others behave in high-lying inland localities can only be accounted for, I think, by causes connected with the state of the atmosphere, which, in spring and early summer, becomes so parched and dry, when east and north-east winds prevail especially, as to sap the very life out of vegetation—passing over the same subjects nearer the west without hurting them.

Tap roots.—I am aware that as trees grow older and larger, the tap root does not increase in proportion, and sometimes perishes altogether, but my experience in stubbing up old trees has convinced me that the tap root is one of the most stubborn fallacies I have ever come across. The reason why a tap root does not continue in the direct downward course in which it started is that it is usually obstructed by the subsoil, but it is only deflected from its course, and lays its grasp on the ground as deeply as it can get elsewhere, and is still a tap root.

Prices of bark and timber.—A "Land Agent" (p. 558) may well be perplexed by "C. R. S. D.'s" apparently random statements about the prices of bark, which gets worse and worse to sell. We have sold about forty tons off the estate here up to this date this year, and have had great difficulty and much running about and sending of samples to get £3 12s. per ton for it, delivered free on the rails, and in some instances delivered at its destination. About a week ago 400 tons of superior Oak bark were sold at Lincoln at about an average price of £3 12s., delivered on the rails, with 5 per cent. discount off for cash. This is about half "C. R. S. D.'s" price, and it would be gratifying to learn where his market is. I find that the reports of prices frequently published are not worth the paper they are written on, and they often deceive proprietors and their agents.

Selecting Oak timber.—"D.'s" further qualification of his statements concerning the quality of quick *versus* slow-grown Oak timber do not alter the evident meaning of his words. His argument was distinctly to the effect that rich soils caused the trees to grow fast, and that their timber was "deficient in strength in consequence." His statements on this head are mere assertions and nothing more, and he evidently but repeats one of those fallacies so common amongst tradesmen and others about such subjects. The way to test a piece of timber is to pull it to pieces from both ends, or to strike it just as metals are tested. According to the Admiralty reports of the Oak submitted to tests, that from the Duke of Wellington's estate was the strongest, and its rate of growth, as calculated in tenths of an inch, was greatly in excess of all the other samples, and the same thing was proved of over a score of

different samples submitted—the strength decreasing in a regular ratio with the slower growth.

The Corsican Fir.—Although I have often recommended the Austrian Fir for planting freely on account of its free growth and hardness, and cautioned readers against depending on the Corsican Fir because of it being so precarious a planter, still I must admit that it is the best species I know of to plant as a substitute for the Larch. It differs from the Austrian Fir principally in habit of growth. Although hardly two Austrians are ever alike, still all have a tendency to grow broad and bushy, the timber of the branches equalling or surpassing the trunk in bulk; hence the tree soon grows top-heavy, and is very liable to be blown down by wind or broken by the snow, but much depends on the judicious and early thinning, plantations that are neglected in this respect suffering much worse than others. It is different with the Corsican Fir, which makes longer annual growths than the Austrian Fir, and its branches are neither so heavy nor so dense. The Corsican is a slender tree with a thick trunk, and the Austrian is a bushy tree with a small trunk—that is proportionately. I lately went over a plantation consisting of Austrians chiefly, with here and there a Corsican Fir, some Larch and other species, and it was impossible not to be struck with the superiority of the Corsican Fir in every case. This plantation has been planted about twenty-one years, and I have just measured some average examples of each, all growing under the same conditions. The cubic contents of the Corsican Fir run from about 6 feet to 6½ feet, and at the present low price of Larch an acre would be worth at least £50 or £60, which is more than the land fetched before planting, when it was let for about 30s. per acre. The contents of the trunks of the Austrian are about 3 feet, Scotch Fir about the same, and Pinus excelsa about 4½ feet. The Corsicans run about 26 feet in height by 6 inches in quarter girth, the Austrian 23 feet by 4 inches, Scotch Fir 25 feet to 27 feet by 4 inches, and P. excelsa 22 feet by 5½ inches approximately. Larch of the same age, planted at the same time on the same ground, bulks least of any, being tall with slender trunks. The most casual observer could not fail being struck with the superiority of the Corsican Fir in this instance. As to transplanting, I should advise no one to trust to plants of the Corsican Fir of any size that have not been transplanted the previous year, or at most two years before, but the year before's plants are preferable. There is no doubt about it being a bad transplanter, but once established it grows on the bleakest spots in England, where it makes good growth and fine foliage. Here, on a lofty ridge 1000 feet above the sea, it seems quite at home; but the plantation wanted beating up more than once before fully established. During the past autumn and winter we transplanted a few thousand Corsicans that had been transplanted last year, and to all appearance we shall not lose one plant; whereas of a thousand plants got from the nursery where they had not been transplanted for two years we shall lose many, as can be seen by the foliage at this date. YORKSHIREMAN.

PLANTATIONS FOR SHELTER AND PROFIT.

Is it possible to grow timber for profit and at the same time to produce a rich landscape effect as well as covert for game and shelter for cattle during winter by mixing a few evergreen trees among such as are deciduous in order more fully to attain that end? These are questions of great importance on estates, and I think a few hints on the subject might not be altogether lost or thrown away. In dealing with this subject, then, I think it best to confine my remarks to realities, as suppositions and opinions are sometimes not to be altogether depended upon. In order to elucidate this, I shall give an instance of a young plantation where the site is rather exposed and the soil principally of a poor texture resting upon clayey subsoil.

The principal crop here is Oak, but a mixture of Larch, Scotch Fir, and a few Spruce were

planted as nurses, the latter two trees being principally confined to the most exposed points and margins—the Spruce for the most part being planted upon some patches of peaty soil of a light texture and naturally a little damp. Of course, the soil here is unsuitable for growing sound Larch of a large size, but they grew remarkably well for upwards of twenty years, and thereby answered the purpose for which they were intended, and realised a better income to the proprietor during that time than any other tree could have done under the same conditions. The Larch thinnings, cut at different periods of their growth, were sold at 1s. 6d., 2s., 2s. 6d., 3s. 6d., 4s., and 5s. per dozen, and trees from twenty to twenty-five years old were sold from 2s. 6d. up to 5s. each, according to their size and quality. The Oaks at this stage of their growth were fine healthy trees, thoroughly established and making rapid progress, and by leaving a well-feathered Scotch Pine and an occasional Spruce as well as Holly here and there through the plantation and along the margins where the soil was suitable, the plantation had a warm, furnished appearance, more especially during the winter when the Oaks were divested of their foliage. I cannot give the amount realised per acre for Larch thinnings during the first twenty years, but the proprietor told me that the income derived from this source had by far exceeded his expectations, and that it was above the rent received for the best arable land on his property. This will in a great measure illustrate the advantage of planting Larch as nurses in young Oak plantations, for had the plantation been formed of Oak alone at the outset, the income during that period of time would have been very small indeed; and, moreover, from the shelter afforded by the Conifers to the former, they were better advanced and in every way superior to trees of the same species planted by themselves and growing under similar conditions as regards soil and exposure.

The Oak is a hardy tree; in early life its growth and development are greatly promoted by shelter, more especially in situations that are subject to late spring frosts. In such places I have occasionally seen young Oaks severely seared by frost at the time the foliage was bursting from the buds; hence one of the reasons for planting nurses, to be gradually thinned out as circumstances may direct. The highest elevation where I have seen the Oak growing naturally is on the hill of Craigandaroch, at the Pass of Ballater, Aberdeenshire, 1425 feet above sea level. The Oak, however, does not reach the top of the hill, but is principally to be found along the south-west slope, and the best trees at and near the base, where they are less exposed than such as are higher up the hill. The native Birch and Aspen trees grow here along with the Oaks as a mixture, and the Scotch Fir and Larch are the principal trees that clothe the summit.

An Oak plantation by itself has rather a cold, uninviting appearance when the trees are bare during winter, but by planting a few evergreen trees here and there as standards and on the most exposed points, with a good mixture of Hollies, the scenic effect is improved, shelter secured for cattle in the vicinity, and birds seem to enjoy it, from the robin to the capercaillie; therefore I think this constitutes a strong recommendation to plant a mixture.

J. B. WEBSTER.

The first Larch plantations were made on the estates of the Duke of Athole, at Dunkeld. The lower ranges of the Grampian Hills, which extend to Dunkeld, are at an altitude there of from 1000 ft. to 1700 ft. above the level of the sea. The Larch trees are planted as high as 1200 feet up these hills, and grow exceedingly well, a situation where the hardy Scotch Firs cannot rear their heads. The growth is very rapid, and Fir of the same age gives only half the quantity of wood.

The Catalpa as a timber tree.—This, according to Landreth's "Rural Register," has been long known to a limited number to possess wood of an enduring character for posts—as lasting, it is claimed, as the Black or Yellow

Locust (*Robinia Pseudacacia*)—but, fortunately, unlike it, exempt from insect attacks; indeed, so far as our observation has extended, it is not at all liable to disease, and as the tree grows readily from seed there need be no impediment in propagating it to any extent desired. Fence-rows, boundaries, lanes, the roadside, useless plots of ground, inaccessible knolls, might each be seized upon for planting this useful and ornamental tree. This tree thrives admirably in an impure atmosphere, as is proved by the existence of many good specimens in London which flower abundantly.

Origin of good soil.—Mr. C. Reid, of the Geological Survey, expresses the belief that the formation of soil is not generally due to the weathering of the underlying rocks. In order to form a good soil a mixture of materials from different rocks is necessary; and it seems that on high ground such a mixture can only be effected by means of wind. Mr. Reid therefore sees the origin of most fertile soils in the finely divided mineral matter and organic dust which is constantly present in the atmosphere, and was probably far more abundant in former periods, when the climate was colder. He believes that it is "to the keen east winds of spring that we owe in a great measure the fertility of our country."

THINNING FOREST TREES.

THERE is, perhaps, no other branch of more importance in the successful rearing of timber trees for profit than a thorough knowledge of the art of thinning, and, perhaps, there is no other branch of tree culture so little understood, or, at all events, that practical men are more divided in their opinions as to the proper mode of carrying out. Some say, "Do not thin at all; leave that to Nature, and she will do the work infinitely better than we can do." These advisers generally commence their argument by asking, "Who thinned the natural forests, the source from which we derive the finest and best quality of timber?" Now, at first sight these arguments appear to be conclusive, and there can be no doubt that by studying Nature we can learn much; at the same time, when once we become familiar with her ways, we can sometimes find a favourable opportunity of assisting her in her operations, and by acquiring a knowledge of her economy, and where and when to apply that assistance, rests the pivot of the whole argument. As, for example, in thinning a natural plantation of Scotch Fir some years ago, I found a patch of trees in one portion of the plantation about 30 feet high, and growing at a distance of some 10 inches or 12 inches apart. These trees were straight and free of branches, with the exception of small bushy tufts at their summits. Now, had these trees been thinned in early life, there can be no doubt that they would have attained the size of useful timber; whereas, by leaving them to Nature, they were only fit for paling rails, or other similar purposes. These trees, being all about one size, grew up like a crop of corn or wheat, but had they been of different sizes the results would have been widely different, as the larger trees would then have killed their weaker neighbours, which is Nature's system of thinning under ordinary circumstances. This may be taken as a fair illustration of the difference between natural forests and such as have been planted. The trees in the latter are generally nearly one size as regards height, whereas the former are of different sizes, except in some isolated patches such as I have referred to. Now, when the larger size of trees in the natural forest kill the weaklings in their immediate vicinity, the latter are never removed, at least as far as Nature is concerned, so that they crumble away and fall to the ground by degrees; consequently no sudden climatic change takes place in the forest, as the work of pruning and thinning goes on at such a slow pace that the trees left never feel the want of such as have been killed, and the result is that we never find any bark-bound trees in the natural forest, that is trees whose bark contracts and prevents the free

circulation of sap, such as is caused by sudden exposure.

In too many cases plantations suffer considerably before thinning is commenced, the trees becoming too crowded. Care is necessary at all times, but more especially in cases where thinning has been neglected too long, in not admitting too great a current of fresh air at once into the plantation, which would have a very injurious effect upon the health of the trees and lay the foundation for a series of diseases from the commencement.

W.

The wood of the Italian Poplar.—The Black Italian Poplar for timber purposes is the most valuable; and it is one of the best trees we have for planting on strong, wet, clay soils, on which it thrives well, provided there is no stagnant water. It grows to a great height, and generally leans a good deal to the leeward, especially when much exposed. Owing to its growing so much quicker than any of our other forest trees, it is not suitable for intermixing with them, as it soon overtops them. It should be planted 16 feet apart, and filled up with Birch to 4 feet apart. Its timber is of comparatively little value when it is of small size, but after forty years of age it commands a good price. It is the most suitable for making "breaks" for railway waggons of any of our timber, but for that purpose it must be not less than 14 inches in diameter. In soils unsuited to its growth, such as wet, peaty soils, it is liable to throw out excrescences on the trunk. On good, loamy soil its quickness of growth is quite astonishing. The White Poplar or Abele is the only other species valuable as a timber tree. Unlike the Black Italian, this grows well on damp, peaty soil, and in such situations it is most valuable to plant; it also grows well on stiff loam. Its habit of growth is not so spiral as the other, but partakes more of the habit of the Oak or Beech, and when grown singly is very ornamental. The timber is most useful when of large size.

Saleable and unsaleable home-grown timber.—What "J. S. R." says about the Walnut is true enough, as this tree is at present vetoed by fashion. If it was first shipped to America and then brought in as American, no doubt a customer could be found. Things must be better if they come from a distance, and it is partly this notion that causes our home-grown timber to be passed over in favour of foreign importations. Sufficient time has scarcely elapsed for property owners to realise the "gingerbread" nature of a large proportion of the stuff that is brought into this country and used in buildings. Those who follow fashions must pay the penalty, and property owners have yet to learn that it is a "penny-wise-and-pound-foolish-policy" to use indiscriminately the trumpery stuff known as "building red wood" simply because it comes a fraction cheaper than the honest enduring wood grown on their own estates can be manufactured. I like to hear of new varieties being introduced, as some day we may drop on a gold mine unawares, but practically we have already trees enough if we only understood them and their values. I hope we are slowly feeling our way towards a better appreciation of our home-grown woods, but it will have to be a long pull, a strong pull, and a pull altogether before we get matters righted and our British timber on its proper footing.—J. N. BLUNT.

The Willow as a timber tree.—The Willow (p. 484) deserves more attention than has been paid to it. It has seldom been cultivated in a large way, yet there are few trees so easily grown, or which pay better for cultivation. It adapts itself to a wide range of soil and climate. It grows on high ground and on gravelly soils as well as by the sides of streams, where we generally see them. They are of rapid growth and yield a large return. The Osier is especially useful. The Willow, though light, is tough, and hardly any wood is so good for the linings of carts or waggons used in drawing stone or other rough heavy articles. Some species of it are admirable

for a live fence or hedge. On account of its comparative incombustibility it is eminently useful for the floors of buildings designed to be fireproof. Indeed, generally, its economic value has been too much overlooked.—D. J. Y.

PROFITABLE TREES FOR PLANTING.

THAT the necessity exists for further and more extensive introduction of varieties of trees which, by their quick growth and early maturity will repay their planters by early profits, there can be no doubt. Anyone sceptical upon the point has only to look at the immense and rapidly increasing strides with which every manufacturing industry of the country is progressing. The demand for wood of every description, at enhanced prices, and the great scarcity of supply existing in many descriptions, will also corroborate the statement, and especially so when it is added that the demand is greatest and the scarcity most apparent in those very classes of trees of rapid development, namely—

WILLOW AND POPLAR.—During recent years the consumption of Willow as timber for the numerous railway networks of systems over the length and breadth of the country has been enormous. Its universal adoption and peculiar suitability for the blocks of the brakes, &c., of waggons and other railway vehicles have induced great scarcity of wood of large dimensions; while the more general application of Poplar of good quality for many country purposes, for which, before the introduction of the Larch disease, that tree was used, has caused a great increase in the demand for well-grown Poplar wood. Indeed, the substitution of Poplar for Larch is, in many parts of Scotland, now very general; for in addition to the risk of failure of the Larch crop by disease, and it being a tree which requires a longer time to produce wood of relative value than Poplar, there are many more useful purposes for which the wood of this latter named tree is found to be better adapted than young Larch wood of from fifteen to twenty years' growth. Consequently, the introduction of Poplar trees in young plantations mixed with Spruce, or Scotch Firs, and Larch, to be used as nurses, seems too much neglected. The comparatively quicker maturity, for sale purposes, of the Poplar trunk renders it a very desirable tree to be used for such purposes, and the variety of soils to which it can, without detriment to its rapidity of development, accommodate itself makes it capable of very general application in most situations where plantations are being formed, or where any of the other common nurse trees are employed. Judiciously mixed in this manner, the Poplars may be thinned out first, along with the Scotch Firs, and thus allow the Larches to remain, if they should prove to be a healthy and thriving crop, till they become of more value from their larger growth; while in the meantime a better return is obtained from the Poplars than would have been produced had Larch alone been used instead of them, and cut when the wood first required to be thinned. The variety of Poplar most suitable for this purpose, and, indeed, the best of all the class of fast-growing timber trees, is

THE BLACK ITALIAN POPLAR (*Populus monilifera*).—The more general cultivation of this useful and desirable Poplar for timber purposes is well worthy the consideration of every Scottish planter. Although this tree, like the other Poplars as a class, will thrive in almost any soil and attain to considerable size in a very few years, it prefers, and will grow most rapidly, when planted in a deep, moist, loamy soil, and makes most wonderful annual growths of young wood in damp, although sandy, alluviums beside river banks or level flats. The height to which a full-grown Poplar of this variety will attain is about 120 feet, and this altitude it will reach in sixty years in suitable soil and situation. The uses to which its timber is adapted are numerous, and owing to this toughness and lightness it is well suited for any constructive purposes. In localities where there is easy and convenient means of transit to

any of the great centres of industry and manufacture, Poplar wood of fair size, from about 2½ feet to 3½ feet diameter at the base of the trunk, will fetch from 1s. 3d. to 1s. 4d. per cubic foot, and frequently a higher price. In this respect, grown solely as a crop, this species of Poplar, in the same given number of years, will be found to be a safer and more remunerative tree to plant than almost any other.

WHITE AND GREY POPLARS.—Other varieties of Poplars are also worthy of notice as being "early remunerative trees," and should be much more extensively cultivated. We refer to the common Grey Poplar (*Populus canescens*), the White Poplar (*Populus alba*), both of which are decidedly worthy of much more attention than arborists have hitherto given them, and will be found to be trees of very useful value as timber for country purposes. The Grey Poplar is indeed a very potent rival to the Black Italian, but we prefer the latter, as yielding a timber of much higher quality for every purpose than the former named tree will yield at the same age. This last mentioned tree, the Grey Poplar (*Populus canescens*), is also much esteemed by many planters, and is deservedly prized for its striking foliage and cold grey tints, when skilfully blended with warmer hues in the landscape, no less than for its intrinsic merit as a useful "country wood" producing tree. It yields a light, tenacious, durable quality of timber, and it is an equally rapid grower with the Black Italian Poplar. The other varieties of Poplar, such as the Athenian (*P. græca*), the Black Poplar (*P. nigra*), the White Poplar (*P. alba*), and the Ontario (*P. canadensis*), may be all held as fast-growing trees respectively, and worthy of attention to some extent where variety of foliage and habit in a mixed plantation are desired; but as rapid producers of wood of any considerable value, we must limit our recommendations to the two Poplars previously named, *P. monilifera* and *P. canescens*.

IN PLANTING POPLARS it is very necessary to give due attention, in the young plantations or strips, to "clear headroom" to the young trees, for the Poplar is of itself not very prone to throw up a vigorous leader, while the rubbing and fraying of neighbouring shoots too frequently destroys the tender soft bark of the young wood of the main stem, where early thinning has not been attended to in due season. Poplar trees in strips and plantations may thus be frequently seen to be permanently injured from this cause, and if really good specimens are desired in after years, it would be well to clear out all round the specimens left. The return from the sale of the wood of the Grey Poplar of similar age to the Black Italian is about the same under ordinary circumstances, and we find that, at some timber sales lately, vigorously grown trees of the Grey Poplar fetched as much as 1s. 2d. to 1s. 3d. per cubic foot, being about 2 feet in diameter at the base; and in other localities similar, if not better, quotations were realised at recent sales for similar sizes and equal quality.

WILLOWS.—Having thus cursorily noticed the principal members of the Poplar family, which are deserving of wider introduction into the woodland scenery and economic planting of this country, we shall proceed to notice those varieties of the Willow family which are worthy of more attention than they at present receive, as being trees of rapid growth, producing good and useful timber, and as being decidedly entitled to be fairly ranked amongst the foremost species of forest timber trees, as subjects worth planting as early remunerative trees. The rapid growth of the Willow is a matter of universal admission. From the earliest Scripture times we are told of this habit of quick development when in suitable localities and situations. Thus, "they shall spring up as Willows by the watercourses;" and the very derivative name "Salix," under which the whole class is enumerated, signifies to spring, and is thus characteristic of the habit so well known of the plant. The varieties of the Willow family are well-nigh countless. Loudon enumerates some 282 varieties as well

known and in cultivation. The general features of the broad outlines of the family are their rapidity of growth, the soft, porous, light, and uninflam-mable nature of the timber, and its general suitability for country purposes, to which ordinary hardwood and Fir are quite inapplicable, but in regard to which its toughness renders Willow or Saugh peculiarly adapted, all combine to make this tree worthy of more extensive cultivation. The covering or "cleading" of cart bottoms and railway waggons and the manufacture of break-blocks form a considerable source of demand for the timber of large, well-grown Willow trees, and there are many other purposes to which this wood is specially adapted, and for which it is largely used. Passing over for the present the treatment of the Willow as a crop (grown as wands), and the remunerative advantages of this mode of utilising wet land and damp situations, where, from peculiarity of situation, drainage is difficult, we notice only the question of the value of the Willow as a timber-producing tree. Unfortunately, in this country the Willow is too often thrust into the background as a tree worth planting for the value of the wood, and is planted only or chiefly in damp marshy corners, where it is frequently neglected and allowed to grow up without any regard to the formation of a good bole, or, in fact, without any reference whatever to its ulterior use. Were a little care and attention paid to this handsome species of trees, even in such waste situations, the trouble and expense would amply repay the planter. Indeed, there is no department of forestry that yields a better return than cultivating these rapid-growing timber trees, such as the Willow and Poplar. In the commercial world small profits and quick returns are now-a-days the acknowledged maxim of correct mercantile policy; and similarly in forestry, whatever plan of management, planting, or beating up be adopted, and shows the most probable prospect of future advantage at the earliest date, is sure to be at once recommended and put into practice.

It is very difficult indeed, out of 282 varieties of the Salix or Willow family, to single out one or two of the most suitable and advantageous for general planting as timber trees; but at the same time, though there may appear 282 varieties, botanically speaking, these may be reduced to a very much smaller compass when they are treated of collectively as similar trees. In fact they present frequently so few features of distinctive merit or difference, that the number might be very safely reduced to a much smaller list of distinctive individual trees worth growing for their timber in suitable soils and situations throughout Scotland. Indeed, after a careful analysis of all the species, it appears that the entire list of Willows, which may be regarded as claimants for popular favour as timber trees, may be simply reduced to four distinct varieties—viz., *Salix alba* (the White or Huntingdon Willow), *Salix caprea* (Goat Willow or Saugh tree), *Salix Russelliana* (Bedford Willow), and *Salix fragilis* (Red-wood Willow). Of these varieties, the first named, viz., the Huntingdon Willow (*Salix alba*), is probably, when unpruned and grown naturally in favourable circumstances, the handsomest and finest of all the Willows of really tree dimensions. It is, in truth, a most picturesque and beautiful tree, whether it be regarded for its general outline and habit, or for the peculiar and distinctive whitish appearance of the foliage, which, combined with its general light and elegant outline, contribute to render this one of the most favourite trees for planting in such situations as conduce to its early and full development. Such situations are river banks in deep, damp alluvial soil in flat marshy ground, and upon those low-lying swampy situations so well known and common in Scotland, where few planters care to risk a general crop of timber trees. This Willow, which we deem worthy of far more universal cultivation in this country than has hitherto been attempted, has, like many other varieties of its tribe, the advantage of thriving very well indeed in rather poor soils and in thin sandy stretches or on damp sub-soils. Certainly most trees will thrive better in deep rich loamy soils, with rather a damp sub-soil, than in a

poor thin one; but the only point of importance to be observed now-a-days is, that the soil (whatever its nature may be) shall be well drained from stagnant water, and trees of magnitude, such as the White Willow, Grey Poplar, and other rapid-growing timber trees, will all benefit immediately. Thus in cold upland situations not only may the Grey Willow, but also the Bedford Willow (*Salix Russelliana*) be grown with profit and advantage. In any situation of soil with damp bottom the progress made by the Grey Willow is truly marvellous. The plants so situated soon attain considerable height, and rush up with clean straight boles when planted closely, and yield timber of no small value in a few years. It has been observed that the annual increase in timber of the Grey Poplar, in trees of about twenty years of age, is at the rate of about 2 cubic feet in certain situations—certainly no inconsiderable rent for the ground occupied by the tree—and this measurement has been verified in more than one place both in Scotland and England; and, in some soils, trees planted eighteen years ago have now attained in strong clayey loam fully 25 feet in altitude, and girth about 7 feet in circumference at 1 foot from the ground. The wood of the *Salix alba* is used for a variety of wright work. It is peculiarly light, tough, and easily wrought, and is adapted for a great number of country purposes—such as cleading of carts and waggons, railway brakes, planking and joisting boards, and for many purposes in connection with mill-wright work; tool handles, hoops, copper-work, and basket-making. Indeed, there is no part of this tree, from its thick and heavy trunk to the youngest twig, but is adapted to some use. The bark of the Grey Willow abounds in tannin, but does not appear to be sufficiently appreciated, and is worthy of more notice in this country for the purposes of the tanner. In this respect it appears to be much more generally used on the Continent of Europe. The facility with which this tree is propagated, and rushes up into shape after being planted, is another recommendation to its future increased introduction. All that is requisite to commence a willowry or plantation of this tree is to insert into the soil cuttings made from one or two years' wood (about 2 feet long) to the depth, say, of 10 inches to 1 foot. Stobs made of this tree of greater thickness, say even up to 4 inches to 6 inches in diameter, succeed very well in damp snb-soils, and many fine large trees have been grown from them, although, upon the whole, and in a variety of soils and situations, trees grown from the smaller sizes are preferable. The next variety of Willow well worthy of culture in this country is

THE GOAT WILLOW (*Salix caprea*), commonly called "The Saugh." Although it can hardly be said to acquire a great height and large dimensions, there are, nevertheless, examples throughout the country of immense size, considering the habits of the tree. It thrives in any soil or elevation, but will attain its highest height and dimensions in a dry, rich, deep, loamy soil, with a cool, if not dampish, bottom. The wood of the Saugh is tough and elastic, having considerable lateral as well as longitudinal adhesion, and admits of a very fine polish. It is of considerable value for jobbing purposes; but the White Willow (*Salix alba*), in point of utility as a timber tree, beats this variety completely. The price which the *Salix caprea* will realise in a sale is about the same (according to district) as that of the Larch or Birch wood. It is very profitable as an undergrowth in many plantations, for in favourable seasons it will yield young shoots fully 5 feet in one year, and very suitable for the purposes of the crate-maker or basket manufacturer. The bark yields a large amount of tannin. Another member of the Willow family worthy of notice is the

SALIX FRAGILIS, OR REDWOOD WILLOW, a tree regarding whose utility there is considerable difference of opinion. On the one hand, its timber has been condemned by some arborists as useless; and they have further asserted that the qualities usually ascribed to it are due to another

species, with which they say it is confounded—viz., *Salix Russelliana*; while, upon the other hand, its suitability, on account of durability, lightness, and toughness for many purposes, whether local or for shipbuilding, for which it is well adapted, renders it worthy of more notice than it at present attracts in our plantations, where damp soil, with deep alluvial sub-soil, fosters its rapid growth. Its wood is likewise available and very suitable for constructive purposes, for houses, water-wheels, planking, &c., and indeed for all country work, where a really good, clean, light, tough, elastic and useful wood is required. One considerable drawback to this Willow is its liability to become dead in the top shoots, or "stag-headed;" and as this habit is of frequent occurrence, this variety is in much less repute than the *Salix Russelliana* or *Salix alba* as a timber tree of rapid growth. It will thrive best upon a stiff, damp, clayey soil, with cold sub-soil. The wood is, when cut, red in the heart, with a white margin, and upon being exposed to the influence of the air for a time, the whole assumes a reddish pink hue of agreeable appearance, and of a consistency easily wrought, and of a very useful texture for any domestic or rural purpose. The other species of Willow which has been mentioned as worthy of extended cultivation in this country is

THE RUSSELL, OR BEDFORD WILLOW.—Resembling as it does the *Salix fragilis*, already described, it is rather more graceful and elegant in its foliage and contour; and indeed, in the case of large and well-grown trees, the *Salix Russelliana* exhibits a far finer outline than any other of the congeners of this family. Its rapidity of growth is fully equal to that of the *Salix alba*, and far superior to that of the other members of the Willow tribe already described. Its timber is about equal to that of the *Salix alba*. While light, tough, elastic, and unlikely to crack or split, its timber is highly prized in the building of manufactories and for flooring and such like purposes; for its non-combustive properties, coupled with its non-liability to shrink or crack, render it very useful in the building of many edifices—such as mills, manufactories, granaries, &c. It is also, like its other neighbours of the Willow and Saugh tribes, greatly used for cleading cart and wagon bottoms, making railway brakes, lining coalpits and stone or lime quarries, and for almost any purpose connected with rural economy. This Willow succeeds best in a deep moist soil of medium description, but is decidedly unsuited to situations where water is stagnant in the subsoil. It will also thrive and produce good timber upon cold clayey soil if there be due regard to drainage of the till beneath. Upon the whole, the *Salix Russelliana* is very decidedly a tree to be extensively planted, in conjunction with the *Salix alba* and *Salix fragilis*, upon exposed uplands for timber purposes, and in such situations it will yield a quick and good return to the planter. It should be grown in masses, for in such circumstances it is far more profitable than when planted as a single specimen or hedgerow tree, or when mixed with others whose too rapid side-spreading growth may interfere with its head or stem.

Observation on tree growth.—An interesting observation on tree rings is recorded by Professor Bachelant. During a visit to the ruins of Palenque, Mexico, in 1859, M. Charnay caused all the trees that hid the façade of one of the pyramids of the palace to be cut down. On a second visit in 1880 he cut the trees that had grown since 1859, and he remarked that all of them had a number of circles greatly more numerous than their age would warrant, supposing one circle only to be added annually. The oldest could only have been twenty-two years of age, but on a section of one of them he counted 250 circles. The tree was about 2 feet in diameter. A shrub not more than eighteen months old had eighteen concentric circles. M. Charnay found the case repeated in every species and in trees of all sizes. He concluded that in hot and moist climates, where Nature is never at rest, trees may

produce, not one circle in a year, but one in a month. The age of a monument has often been calculated from that of trees that have grown on their ruins. For Palenque 1700 years had been calculated, 1700 rings having been counted on a tree. These observations, however, require the number to be cut down to 150 or 200 years. Professor Bachelant asks if M. Charnay took account of certain coloured rings which some tropical trees present in cross section, and which are to be distinguished from the annual circles.—D.

THE WOOD OF THUJA GIGANTEA.

THUJA GIGANTEA is, among the trees on the north-west coast, the Indian's best friend, for out of its wood and bark he manufactures endless articles of domestic, hunting, fishing, and warlike economy. Most of their canoes are hollowed out of it, at least in Vancouver Island; and there is a case quoted where a canoe made out of *Cupressus nutkaensis*, in Vancouver, was quite an exception, and indeed the canoe was probably traded from some of the northern tribes, and not of Vancouver manufacture at all. The Indian ropes are also very commonly twisted out of its bark. The tree which I took for *Thuja plicata*, and out of which I happened to see the Indians, just at the time I wrote the letter quoted, twisting ropes, I believe, from after investigation, to have been only a stunted form of *T. gigantea*, and that *T. plicata* is not a separate species, but for reasons which I have given in another place, and cannot now again repeat, is, indeed, only a variety of *T. gigantea*. North of latitude 53° *Cupressus nutkaensis* takes the place of *Thuja gigantea*, and is applied by the Indians to all the useful purposes of *T. gigantea*, and to some others in addition. For instance, at the Matlakatlah Mission, on the coast of British Columbia, in about latitude 54° north, where there are fine groves of it, it is sawn into lumber and sent to Victoria, where it meets a ready sale among the cabinetmakers, as it takes a fine polish and works beautifully. Most of the prettily polished discs and little cylinders used by the Indians in gambling are made either from this wood or from that of *Acer macrophyllum*. It is also valuable for ship or boat-building. The wood of *T. gigantea* is whitish, but in its fresh state is yellow; hence the name Yellow Cypress applied to it. It is light, tough, durable, and easily worked. The property of durability it shares with *Thuja gigantea*, and, in addition, it has a pleasant fragrance. On this account the Russians about Sitka used to call it dushnik, or scented wood. It was absolutely at one time exported to China, and returned marked with Chinese characters, which warranted it as "real Chinese camphor wood," puissant for many purposes, and a sovereign remedy against moths in drawers! In repairing old Fort Simpson, the only log found sound after twenty-one years' trial of those used for underpinning was a stock of this. M.

The most wooded counties.—Treating the three Ridings of Yorkshire as separate counties, Sussex is the only county which returns more than 100,000 acres of wood, nearly 11 per cent. of its area being thus clothed. The woods of Hampshire are next in magnitude, embracing some 87,000 acres, but forming only 8 per cent. of that county's area. Kent follows with 78,000 acres of woodland, while the adjoining county of Surrey, although returning only some 48,000 acres of wood, shows almost as high a percentage as its neighbour Sussex, since very nearly one-tenth of its whole area is thus employed. These four counties, Hampshire, Kent, Surrey, and Sussex, appear to possess a much larger extent of woodland, relatively to their size, than any other area in England.

The red-rot of Pines it said to be caused by the penetration and diffusion of the mycelium of a fungus (*Trametes pini*) in the heart-wood, whose reproductive parts appear on the outer surface of the branches, especially in branch holes. The spores produced fall on the exposed surface of newly broken off branches, and thus red-rot may soon become widely spread.

"This is an Art
Which does mend Nature : change it rather : but
THE ART ITSELF IS NATURE."—*Shakespeare*.

FLOWER GARDEN.

NOTES FROM BERWICKSHIRE

THE spring months, March, April, and May, were extremely cold and backward. During April the registering thermometer indicated 67° of frost for the month, and in May 30° were registered. This low temperature was generally accompanied by piercingly cold winds from the north, north-east, and east, which had a very unfavourable effect upon our gardens, and especially upon spring flowers of all kinds in the open air, the consequence being that gardens generally in this county looked very bare. Even the common Primrose seemed to feel that the season was ungenial, and refused to flower as freely as usual. Fortunately, fruit trees, such as Apples and Pears, had not advanced sufficiently to suffer much from the frosty nights and cold, biting winds which we experienced; consequently, wall trees consisting of Apples, Pears, Apricots, and Cherries now give promise of heavy crops of fruit.

In the beginning of April the sulphur Hoop-petticoat Narcissus (*N. Bulbocodium citrinus*) flowered beautifully on my rock border in the open air. It was planted out in June last year after having bloomed in the greenhouse in the previous spring. It appears to me to be perfectly hardy, and is certainly one of the most beautiful of the Narcissi. It has just ripened its seed, which will be sown in the course of a few days. The white Hoop-petticoat Narcissus (*N. Bulbocodium monophyllum*), planted out at the same time and in the same situation and soil, has not flowered. Several of my gardening friends have complained to me of the difficulty which they experience in establishing the yellow Hoop-petticoat Narcissus (*N. Bulbocodium conspicuum*) in their gardens; they find that it is in the habit of flowering well the first year after being planted, and then disappearing altogether. The same difficulty was experienced by me in getting this lovely flower established in my garden, for although bulbs of it were frequently purchased from some of the leading bulb merchants and carefully planted in early autumn, yet, after flowering, they invariably disappeared, and did not come up again. Seven or eight years ago some small bulbs of this Narcissus were presented to me by a friend in this neighbourhood, in whose garden it had become established in large clumps, and they have grown luxuriantly and flowered profusely in my garden every year since they were planted. Last week several clumps were finely in bloom on the rock border. There are clumps of upwards of fifty of the most distinct kinds of Daffodils in my gar-

den, and they have all flowered remarkably well this season, owing apparently to the roots having been lifted in the beginning of August last, when they were perfectly ripe, and replanted immediately afterwards in fresh, well prepared soil, mixed with thoroughly rotten farmyard manure.

In THE GARDEN (p. 417) the Rev. C. Wolley Dod stated that "*Primula minima* is a plant which no treatment I can think of will make flower, though I have had plenty of roots for several years." It appears to me that many peculiarities with regard to the growth of particular kinds of plants in different localities and soils have yet to be cleared up, for I may mention that a small plant of this *Primula* which I brought from the nursery of Messrs. Backhouse, of York, three years ago has grown on my rock border so well, that the plant is now very nearly a foot in diameter. It has flowered every year since I got it, and is one of the most exquisite alpine plants in my garden in early April, when its lovely pink blossoms appear above the mossy foliage. The following *Primulas* have flowered on my rock border and in my little bog garden this spring, viz. :—

Primula minima
Wulfeniana
rosea
cashmeriana
denticulata
altaica
ciliata and its
varieties
farinosa
farinosa superba
longiflora

Primula Auricula
auriculata
luteola
sikkimensis
viscosa
Peyritschii
marginata
Sieboldi
japonica
involucrata
capitata

There are several other species in my garden, but they have not flowered. I am indebted for the most of my *Primulas* to the kindness of my friend, Mr. Boyd, of Faldonside, near Melrose, late president of the Botanical Society of Edinburgh, who has a very large collection of these beautiful and interesting plants in his alpine garden, and who grows and flowers them better than I have ever seen them elsewhere. When I paid him a visit in the middle of April last, he showed me most beautiful specimens of many rare kinds in full bloom, not small sickly plants such as one usually sees, but fine large healthy specimens covered with bloom. Many of them were exquisitely beautiful. His set of *P. marginata*, consisting of several distinctly marked varieties, was particularly fine. One of the chief difficulties connected with the successful growth of alpine *Primulas* is the keeping them properly supplied with water when they require it.

Chionodoxa Lucilæ is one of the most beautiful spring flowers in my garden, being in general colour very like the well-known annual *Nemophila insignis*, and flowering very shortly after the Snowdrops. Four or five years ago I purchased from Mr. Barr twenty-five bulbs of the *Chionodoxa* and these now form a large clump and produce flowers in great profusion. This spring flower requires to be seen in well-established large clumps to enable one to judge of its merits.

It is invidious to make any comparison between it and the well-known *Scilla sibirica*, for both are lovely.

Some years ago, in spring, I got from Messrs. Froebel, of Zurich, a plant of *Eritrichium nanum*, which flowered well in my rock border in the following summer, but very shortly afterwards it died. This is, I understand, the usual experience of cultivators of alpine plants in this country with regard to this *Eritrichium*. *Soldanella alpina*, *S. minima*, *S. Clusii*, and *S. montana* grow well with me, but they will not flower. There is a large clump of the common blue *Iris*, *Iris germanica* (type), on the lawn here, near a *Rhododendron* bed, at present in full flower. This *Iris* incurs no trouble after it is planted, and its effect in a large clump on the Grass is excellent. Many species of *Irises* have flowered with me this season, including—

Iris aphylla

Chamaeiris

cristata

caucasica

biflora

biflora gracilis

flavescens

florentina (*germanica*

alba)

graminea

lurida

Iris neglecta

nudicaulis

olbiensis

pallida

pumila

reticulata

sibirica

stylosa

tenax

versicolor

virginica

There are between sixty and seventy kinds of *Iris* in my garden, but some of them, such as *susiana* and *iberica*, have not yet produced flowers. I intend trying Prof. Foster's plan with these. GEORGE MUIRHEAD.

Paxton, Berwickshire.

COLOUR COMBINATIONS.

It might, perhaps, be interesting to those who are fond of a herbaceous or wild garden if I note down a few accidental groupings which have presented themselves this spring, and which may so easily be followed another year. In a garden surrounded by a Yew hedge (now covered with shoots of a rich bronzy tint) stands a stump overrun with a nearly white variegated Ivy; all round the foot of the stump the ground is carpeted with the wild Forget-me-not, and out of this mass of cloudy blue rise large scarlet herbaceous Poppies and light primrose-coloured *Irises*, a combination that is most interesting. In another place a *Cotoneaster* bush full of white blossom is surrounded by the pink *Campion* of our woods, and in front of the *Campion* is the delicate *Woodruff* and a plant or two of the *Water Aven*, Sowerby's favourite wild flower, which grows most luxuriantly in Derbyshire. A charming harmony in yellows is formed by the *Irises* already mentioned with Iceland Poppies, and below these are the yellow and white *Limnanthes*, which are always covered with bees, and blossoming so profusely that one can scarcely see the delicate green of the foliage. A low-growing blue *Veronica* makes a good contrast to the *Limnanthes*, and creeps on the stone edge of the border with golden *Moneywort* and the *Saxifrage* called *Lady's Cushion* or *Dovedale Moss*, now a snowy mass of flower,

The little white Burnet Rose is coming into bloom, and, small as it is, its scent on a warm evening overpowers everything in the garden. I do not think it is often seen in cultivation, but it is well worth planting in the wild garden for the sake of its perfume. Mine was brought from a Welsh mountain, and has been twice transplanted, but flourishes as a bush about 3 feet high against a Privet hedge double that height; over it hangs a Laburnum, and by its side a stump covered with a white Clematis of small full-flowering growth from the beautiful garden of Mr. Frank Miles. Where it is practicable to have in a garden a hedge as a background I should strongly recommend stumps to be placed at intervals in front of it, as so much variety can be obtained by growing on them different coloured Ivy, Clematis, creeping Roses, and summer annuals or Honeysuckles, which stand out against the dark Yew and do not injure the hedge, as would be the case if they were allowed actually to climb upon it. The front and sides can then be filled up with low-growing plants of suitable colours for the various stumps, blending the whole by degrees. It would take up too much space to allude to the endless beauties of combination that strike one in a wild garden of this sort, and no one can really experience the full enjoyment of such an "earthly paradise" who does not study colour in its manifold harmonies.

L. C. MASTERS.

Annerley Park, Notts.

HARDY PLANTS.

ALPINE and hardy perennial borders are now extremely gay, many excellent plants being in flower. Aquilegias of the *chrysantha*, *californica*, *Skinneri*, and *Williamsi* types have been especially grand this season; some, indeed, are still in flower. A marked improvement is perceptible in these flowers, good substance and distinct colours being particularly noticeable. The spurred varieties are very elegant in form, and their colour is delicate and pretty. The common Forget-me-not is an excellent plant for moist boggy places, where it grows and flowers freely. The *Symphytums*, blue and crimson, make good plants for elevated background positions, their foliage being robust and their flowers drooping. *Cornus canadensis*, a pretty trailing Evergreen, has pure white flowers resting prettily upon the foliage, and as a carpet is exceedingly effective. Amongst the *Erodiums* and *Geraniums* there are some excellent things, notably *E. macradenum*, with Fern-like foliage and beautiful delicately-coloured flowers; *G. striatum*, *arvense*, and others will also soon be masses of bright colour; these are all worthy of a place in flower borders. Many fine *Saxifragas* are now in bloom; *S. Cotyledon* is a beautiful variety, and belongs to the Crustaceous group. *S. longifolia* bears a very large spike of flowers, and is a good type of the group just named; the best position for it is a slope, consisting of plenty of sandstone intermixed with sandy loam. *Gypsophila cerastioides*, a compact plant, bears a profusion of white flowers beautifully veined with pink, and is in every way a good border plant. About *Ourisia coccinea*, a dwarf plant belonging to the Gesneraceae, it would be impossible to say too much, its tube-like flowers being of the deepest scarlet and borne boldly above the foliage; some specimens of it which I have lately seen were extremely striking. *Omphalodes linifolia*, although an annual, is a pretty plant, with white flowers and glaucous foliage; in habit it is all that could be desired; planted on rockwork, it reproduces itself freely from seed. *Linaria pallida* cannot be surpassed

for covering bare banks, its deep green leaves being extremely effective; its flowers are violet-purple and last good for a considerable time. *Astragalus monspessulanus* and *vulpinus* are both extremely pretty; their flowers creeping out from underneath the beautifully divided foliage have a charming effect; turfy loam appears to suit them best. *Phlox ovata* is just now very showy, its habit being good and the flowers large. *Erigeron aurantiacus* is also a grand plant; it is dwarf in habit, and its flowers are large and reddish orange in colour.

Too much cannot be said in favour of the Rock Roses; during the recent bright sunshine they have been a glorious sight, and indeed will continue to be for a considerable time to come. Their colours—yellow, crimson, white and other shades—intermingled on banks or borders render them invaluable; they are, too, easy of propagation and culture, sandy soils suiting them best. *Primula sikkimensis*, growing in a moist place in full sunshine, is a lovely plant, its pendulous pale yellow flowers being very beautiful. *P. farinosa* in a like position is also attractive; both are worthy of extensive cultivation. *Veronica saxatilis* bears blue flowers of great beauty, as does also *Polemonium rupestre*, and the latter in addition has pleasing foliage. *Odontospermum maritimum* has *Gaillardia*-like flowers of good substance and very effective. *Dryas octopetala* is an excellent plant for rockwork, forming, as it does, a sheet of white flowers. The above are some of the best things in our flower borders at the present time, although the list might be greatly extended; for instance, the *Arenarias*, of which there are many desirable varieties, are likewise now in great beauty.

C. D.

NOTES FROM BROCKHURST.

Daffodils seeding.—We have taken a little extra care with our *Narcissi* this season to encourage seed bearing, and the results promise to be very satisfactory. *N. Horsefieldi*, which I have always understood to be sterile, has borne us several well-filled seed capsules, and in a bed of double poeticus there are several plump well-filled pods. The following varieties seed profusely: *nanus*, *obvallaris*, *Telamonius*, *princeps*, *poeticus*, Mr. Wilk's variety (*Tottenham Yellow?*), and *Emperor*. Of the following we have seed in smaller quantities: *cernuus*, *moschatus*, *tortuosus*, *gracilis*, Barr's *Golden Mary*, and several of the *Polyanthus* or *Tazettas*. We have also two or three good seed capsules on Mr. Burbidge's *College Garden maximus*. As the brush has been freely used, we may look for an interesting lot of seedlings in the future.

Leucojum carpathicum has borne a large crop of seed, but we have none from the ordinary *L. vernum*; *L. aestivum* has also an abundant crop of seed, but on a large number of clumps of *L. pulchellum* there is scarcely any.

W. BROCKBANK.

Panercatium illyricum.—As the hardness of this fine bulb in Surrey has been noticed, I would wish to add that with sufficiently deep planting it may succeed in any soil and position. I have grown it in different parts of the garden—under a wall, in the open, and also near the shelter of trees; and even when the thermometer went down to 2° below zero in two successive winters I did not have any of the bulbs injured by it.—J. T. Poë, *Riverston, Nenagh*.

Vio'as for summer bedding.—These are extensively grown in some places in South Wales, notably at Cardiff Castle, where I saw thousands of them the other day in grand condition. They were very showy then, but will be much more so from the beginning of July onwards. Mr. Pettigrew finds them to succeed admirably, and to require much less attention in winter and at other times than the proverbial scarlet *Geranium*.—CAMBRIAN.

Iris germanica (pallida).—I have been sent by Mr. H. R. Boyd, Suirmount House, near this town, some very fine specimens of this strangely coloured Iris. I measured the falls from tip to tip and found them to be slightly over 10 inches across. The colour is unique, the prevailing one being lavender, curiously splashed and spotted with dark purple of various shades. The beard is bronzy yellow, singularly deflected from the tripartite dark velvety throat. The whole Iris family is most beautiful; they have no competitors among hardy flowers.—W. J. MURPHY, *Clonmel*.

Double Poet's Narcissus.—Referring to the two forms which Mr. W. B. Hartland sent from Cork to your office, mentioned in *THE GARDEN* (p. 536), allow me to observe that I know two such different sorts; the one, perhaps, the same as is named *minor* by Mr. Hartland, or one similar to it, used to be cultivated on a large scale in France, at least at the last International Exhibition at Paris all the cut flowers exhibited of the double *Poet's Narcissus* belonged to this variety. The other variety with delicious scent, and pure white well imbricated flowers like those of a *Gardenia*, is that generally cultivated in Holland as *Narcissus albus plenus odoratus*. It is, doubtless, the best of all known forms and the best adapted for bouquet work.—J. H. KRELAGE, *Haarlem*.

ANEMONES FROM SEEDS.

THE application to Anemones of the term annual cannot but prove misleading, and I must disagree with "J. C. C." in that respect. Plants raised from seed sown in one year and only blooming in the second or following year are of necessity biennials, and although it is not at all uncommon for Anemones sown early to bloom the same year, yet that is not making them annuals, because their year of life and fruitfulness is not complete until they have done blooming and seeding. "J. C. C." does not think sowing seed and transplanting so good a method of culture as sowing in the open ground, although he admits that it is very difficult to disintegrate the seeds so far as to admit of regular sowing. Apart from the fact that far more seed is needed to sow a bed in the open ground than is required to raise plants to fill the same space when dibbled out, there is the difficulty of thinning the plants effectually, and the quantity thus wasted is considerable. If the plants be not thinned when young, then the bloom from them cannot be nearly so fine as is seen in plants dibbled out thinly. If seed be sown in hallows boxes, as mine is sown here, and the plants are raised under glass, they get a fortnight ahead of those sown in the open ground; so that the check received when dibbled out singly is not discerned later. I saw the other day, at Maiden-Erleigh, a fine strain of what are called Irish Anemones. These bloom rather later than our Poppy Anemones, and differ also in having flowers that are somewhat semi-double, but the petals are narrow and pointed. I have a strong preference for the fine and grandly coloured French or Poppy-flowered strain, plants of which two years sown began blooming at Christmas, and have now just given a crop of seed, whilst plants raised from seed sown last summer are still blooming beautifully.

A. D.

NEW VERBENAS.

IT was interesting to see so much notice taken of Mr. W. Stacey's new Verbenas when shown at South Kensington the other day. The two varieties selected by the floral committee for certificates were *Distinction*, a very fine striped variety, the large stout, finely formed pips of which were pure white heavily flaked with rich crimson. The other was a distinct and somewhat singularly marked *Verbena* named *Fairy Queen*, the ground colour of which was white, or slightly creamy white, with an irregular broad ring of satiny rose round a white centre; the pips were of fine form, stout, and produced on bold trusses. Some other fine varieties were also shown, including *Striata*, pink and white striped; *Hamlet*, glowing crimson, large and fine; *Ophelia*, pink flushed with carmine; *lilacina*, a beautiful pale lilac with slight dark centre; *Othello*, shaded crimson slightly flushed with purple, large and fine; and *Purity*, a very fine pure white, with large solid pips. Assuming that these fine flowers of Verbenas were produced on pot plants grown under glass, one may well ask, is it not worth while growing a few in that way in order to have such grand trusses? All the delicate beauty of the *Verbena* comes out to perfection when the plants are well grown under glass. In the open air the scorching sun, rain, and wind sadly mar the beauty of the blossoms, but under glass, with the plants carefully shaded when necessary, these disfigurements are avoided. Mr. Stacey tells us how they should be

treated in pots: "The best soil for them is good fibrous loam and well decayed manure, with occasional waterings with weak liquid manure. Thus treated, they will yield a good display of bloom for two or three months, and will be found to be very effective for the summer and autumn decoration of the greenhouse or conservatory." Given a good strain of seed, there is no reason why seeds sown in a little heat in January should not flower abundantly the same year. Let the plants be pricked off from the seed pans as soon as large enough to handle. Grow them on in pots, and when hardened off plant them out in the open ground in a good, light, but not over rich soil; keep them well watered in drying weather and there is no reason why the plants should not be full of bloom and objects of great beauty from August onwards.

R. D.

WINTER BLOOMING CARNATIONS.

I WISH I could persuade Mr. Douglas and other good growers of Carnations to grow the perpetual sorts from seed in a good border in the open air. No one who has not grown them in that way can have any idea what grand border flowers they make, and what a profusion of bloom they can produce. Plants from layers or pipings are not much better out of doors than under glass in pots, but seedlings planted out where they are to bloom as soon as large enough to handle and encouraged to grow freely from the first are quite another thing. I have had them keep on blooming during the whole summer, only ceasing when cold weather stopped the further production of flowering shoots. No one would grow ordinary border Carnations who has once seen seedling perpetuals in full bloom, unless where there is space enough for both. The best kinds for borders, however, are neither the old Carnations nor the Tree Carnations, but a variety which is rightly neither. It is perpetual flowering, but does not develop the tree habit. It may be best described as a Tree Carnation with extremely short nodes to the central stem, so that it becomes a great, round bush, with so many flower-stems that these have to be thinned out or they rot if the weather is the least damp. These thinnings can be struck as pipings. One great advantage of perpetual Carnations is, that they do not require layering, but can be struck from pipings taken off in spring. These make strong plants for planting out in September. The difference between these Carnations and kinds like the old Clove and show varieties is that while the old kinds send up one flower-stem and make side branches which can be layered, and which would otherwise not generally flower until the following year, these new sorts keep on branching, and do not rise for bloom until a large mass of shoots has been formed, and the branches from these shoots, as well as fresh shoots from the base, keep on continually and quickly run up and produce flowers.

J. D.

NOTES ON ALPINES.

Saxifraga longifolia and *S. lantoscana*.

Of these the first makes a handsome foliaged plant for the rockery, and the illustration in *THE GARDEN* (p. 566) gives a good idea of it, but *S. lantoscana* is better. This variety resembles *S. longifolia*, having the same long silvery coloured leaves, but the "rosettes" are smaller and more numerous, and the flowers are more freely produced—in panicles about a foot long, clothed the greater part of their length with dense wreaths of white flowers. It is a fine flower on our rockery just now, and is one of the very best of its section. Unlike *S. longifolia*, it produces offsets freely and is more rapidly increased. *S. longifolia* was first brought into notice during the bedding-out mania, being recommended for edgings in the same way as *Echeverias* are used, but it could not be increased fast enough for such purposes. With us its flowers are not nearly so fine as those of *S. lantoscana*.

Rosa pyrenaica.—Your coloured plate of this was very good and did not flatter the plant in the least. Unlike "Delta's" plants, ours form dense little tufts about 5 inches high, their roots wedged between the rocks where they have been three years. They

are covered with buds and flowers. This Rose should not be allowed too much root room.

Verbena Melindres.—All are fish that come in the net with us—annuals or perennials—so long as they are good growers and pretty and attractive, and we have just put out this old friend among the stones this season. It is the oldest *Verbena* of our acquaintance—a perfect creeping subject, neat in foliage and habit, with intensely scarlet flowers. One rarely sees it now-a-days, but it is one of the neatest and most effective of all *Verbenas* when planted in light rich soil in the right place. It is, I believe, the typical species from which our garden varieties are descended.

J. S. W.

Trieyrtis macropoda.—I have succeeded in blooming this in the open ground. It is most curious and interesting. The individual flowers are about the size of half a crown, and are borne in a cluster of five or six on the top of each stem; they are of a pale, rather greenish yellow colour, densely spotted with minute dots of claret. The pistil is spotted like the petals; it is composed of three branches, which expand like a tiny, flat-topped umbrella over the centre of the flower, and the extremity of each branch is split like an adder's tongue. There are six petals and six anthers. By the way, not being a botanist, I have called them petals, but they are I think, strictly speaking, sepals.

—W. WILKS, *Shirley Vicarage*.

Clematis montana.—I quite agree with Mr. Groom (p. 567) respecting the value of this *Clematis*. I find that many get tired of the large formal flowers of the Jackmanni and lanuginosa types, but the beautiful wreaths produced by such kinds as *montana* are universally admired. It comes into bloom in April and lasts well into June. We have some of it growing against the church wall here; more of it has mounted to the top of the conservatory lobby, from which it hangs down in pretty garlands, and other plants of it have been allowed to scramble over Sweet Bays and other Evergreens, and when in bloom the Bays have the appearance of being covered with newly driven snow. Were I planting many *Clematises*, *montana* would be the first and most extensively used. Mr. Groom recommends pruning, but some of our plants are never touched in that way, and they are the best.—J. MUIR, *Margam*.

Alstroemerias.—The value of the "let-alone" policy in regard to these is seen at Gunnersbury Park at the present moment. Some years ago a few bulbs were planted out at the south end of the large square vinery at Gunnersbury, and there they have remained undisturbed ever since, the result being that they have increased of themselves in a remarkable manner, and now cover a large space of ground. In the past spring frosts frequently robbed them of their beauty, but this season they have escaped this visitation, and in a few days they will be a mass of bloom, and such a sight as one seldom sees. The variety shown in the flowers suggests that they represent some of the seedlings obtained some years ago by the late M. Louis Van Houtte by crossing *A. chilensis* with *A. Hookeriana*. Every year Mr. Roberts gives them a good mulching with well-rotted manure, which greatly helps them. Judging from the experience gained at Gunnersbury, a hot, sunny position suits *Alstroemerias* best.—R. D.

CROWN IMPERIALS.

MR. WOOD seems to want farther information regarding these. The garden to which I referred (p. 568) is that of The Rectory, Hotham, near Beverley, but I do not see what is to be gathered from this, for Crown Imperials took possession of the whole of it for years, and the few that are left there now, after a time of sad desolation, are growing under trees. I can give Mr. Wood the name of another Yorkshire garden which is much more to the point. Mr. F. D. Horner was staying with me last week, and, of course, he reads *THE GARDEN*, as he ought to do, at breakfast on Saturday morning. He said at once his experience exactly tallied with mine, and, let it be observed, he has lived not in the "warm, dry, sunny Isle of Wight," but at Kirkby

Malzeard, which is not very far from Leeds, in the West Riding of Yorkshire. Mr. Horner moved his bulbs some years ago from a southern exposure to a northern one, to their great satisfaction and his own. I think Hotham proves nothing, because I know there are places where these things will exist and flourish anyhow; but if we want to find out their preferences (and of them I was writing), we shall do better to go to localities where there has been need of removal from one exposure to another. I shall think Mr. Wood's view of the case a right one if he can adduce instances of Crown Imperials giving trouble in a cool, moist situation, and then in the same garden of their luxuriating in a position of "extra dryness" when they had been taken to it. I do know of instances where extra dryness did not answer at all, and a moderate degree of moisture instead of it made all the difference in the world. Of course there are such things as relative terms, but "extra dryness" when taken in conjunction with the sentence in your previous number—"that they like a sunny situation may be put down as a fact"—conveys a very frizzling-up idea to the mind, and has an absolute ring about it. It is the being burnt up in summer which, I think, Crown Imperials dislike more than anything else, and they have improved with me since I found it out.

H. EW BANK.

St. John's, Ryde, Isle of Wight.

GIANT POPPIES.

"D." (p. 567) propounds the much-vexed question, What is the true *Papaver orientale*, and what the true bracteatum? I do not venture to answer, for I doubt very much if either is to be relied on to come "true" from seed. I have four varieties which to the eye are quite distinct, and none of them comes true from seed. I will describe the four, and possibly "D." may be able to recognise his flower. 1. The earliest in bloom, an orange or almost yellow-scarlet colour, 4 inches to 6 inches across, borne on tall, upright stalks. It has no black blotch on the flower and no green bract on the stem, and the petals are very little, if at all, crinkled. 2. Colour a deep scarlet, 6 inches to 8 inches across, a black blotch at the base of the petals, which are very much ribbed and crinkled towards the outer edge like those enormous shells one sometimes sees in shop windows; stems and foliage more spreading than those of the last, with frequently, but not invariably, a green bract on the stem below the bloom. This I take to be the true *orientale*. 3. Colour deep blood scarlet or red, in all other respects exactly like the last, black blotch and green bract included. This is by many called true bracteatum. Nos. 2 and 3 blossom about a week later than 1; 4 I consider the best of all. It is a true soldier's scarlet or with perhaps one tone less yellow in it; it is a week later in beginning to bloom than 2 and 3, and by far the most brilliant; it equals them in its enormous size, but has smooth petals, no blotch, no bract, and an upright stem. Its foliage is of a paler green, narrower and more hairy than that of 2 and 3; indeed, in all respects except size and time of blooming it more nearly approaches 1, but is of a far better colour. I have heard people say that these giants are difficult to grow, but in my light warm soil the difficulty is to get rid of them from a place where they have once grown. Every little bit of root left in the ground throws up a shoot. Three years ago I dug up a clump and it has been diligently weeded out ever since, but still I see there are a few stray bits making their existence known above ground. They all make a vast number of seed-pods, but there is very little seed inside them, and this I regard as a blessing, otherwise the plant would be as troublesome as Thorns and Thistles *et hoc genus omne*.—W. WILKS, *Shirley Vicarage*.

—In my note respecting Poppies (p. 567), the size, instead of being 2 inches across, should have been 9 inches. I should like, in making this little correction, to refer to the common field Poppy (*Papaver Rheas*) as an interesting subject for improvement, if thought worth the trouble. I have from seed sown last autumn plants that produce very fine and high-coloured single flowers, the petals being so large that each pair seems to form distinct blooms as they come round and meet—almost, indeed, over-

lapping each other. The finest forms greatly excel the common field kinds in size and richness of colour. The most interesting feature, however, is the tendency in some plants to produce semi-double blossoms, and it is evident that one or two seasons' careful selection might result in the production of a race of fine double flowers in this common Poppy.—D.

Cyclamen repandum.—In *THE GARDEN* (p. 544) are given some notes about Cyclamens, which have induced me to make a few observations. It is quite right to say that all such forms as *ibericum* and *Atkinsi* belong to *Cyclamen Coum*; but as for *repandum*, figured in *THE GARDEN* (pl. 496), it is probably that form which was figured as *C. hederacifolium* in the *Botanical Magazine*, vol. xxv., pl. 1001, and which is the true *C. vernum*. This *Cyclamen* is cultivated largely in Holland, where in 1836 a pure white variety was obtained from seed. *C. repandum* is different from this. With *C. vernum* roots and shoots come from the same point in the tuber beneath and above, and in the case of *repandum* the roots come from one side beneath and shoots from the opposite side above. These various *Cyclamens* have been very well described and figured in a Dutch horticultural paper by Prof. Oudemans. — J. H. KRELAGE, *Haarlem*.

ROSE GARDEN.

PROTECTING MARECHAL NIEL.

ALL Roses that have Tea blood in them, like the original Tea kinds, have only a very short period of rest, for no sooner has the turn of the days come round, unless there happens to be a spell of hard weather, than their buds are on the move. The natural result of this is that in the case of such springs as the last three which we have had in succession the shoots first formed are so far injured, that they flower indifferently or not at all. When the plants are grown against a sunny wall the evil becomes intensified, as owing to the solar warmth having more effect in such a position in accelerating early growths they suffer proportionately more than they otherwise would do when severe weather comes out of season. This is particularly the case with *Maréchal Niel*, as with it there is no subsequent compensation during the season by a second display of flowers, such as the Tea varieties produce. I have had a plant of the *Maréchal* some six years growing on the south side of the house, where, in addition to being under the full influence of the sun, it is further excited to push early by shelter from east and west winds, and by the eave of the roof which projects some 2½ feet, the result being that the two first years after it had got strong enough to produce flowers in quantity few escaped. For the last two springs it has been provided with a movable stout canvas blind, such as is used for Peaches on outside walls. With this the plant was covered every night when there was an appearance of frost from the time when the young shoots had grown a few inches. This little cost in protecting material and in labour has been well repaid, as the crop of flowers has been saved each spring, besides getting them earlier than where no protection is used. This season they began to open on the 1st or 2nd of May, and in the second week I counted forty mature flowers and partially open buds within a

space of 2½ feet. In fact, they were literally touching each other; but as a matter of course the whole space occupied by the plant was not all like this. Another advantage derivable from the use of a blind for this Rose is that by keeping it down whilst the sun is shining, so as to shade it effectually, the flowers retain their beautiful yellow colour; whereas exposed as they are on a wall it bleaches so as to be almost white. T. B.

LARGE ROSE BUSHES.

"J. S. W." (p. 559) has struck the right note about Rose growing. The growth of the Rose for furnishing exhibition blooms is one thing and its growth as a garden plant, from which single flowers, sprays, and clusters can be cut for general decorative purposes, is quite a different thing. It has been too much the habit to attempt to make the same varieties and the same methods of growing and pruning do for both purposes. Whenever anyone has recommended Roses as own-root bushes, the arguments in favour of that form of growth have been met, not by the condemnation of own-root Roses, but invariably by a denial of the ability of own-root Roses to furnish blooms for the exhibition table. Even now one seldom sees any Roses mentioned but show varieties, which, taken as a group, are less useful than those which never appear on exhibition tables. The National Rose Society might advantageously offer prizes for the best furnished sprays of Roses, to be competed for by such varieties as *Madame Plantier* or *Harrison's Yellow*, of both of which good-sized branches might be shown. *Gloire de Dijon* assumes, when growing naturally, the habit of the Dog Rose, and so will all the more vigorous Teas grown in the same way. *La France* amongst Perpetuals has many points of resemblance to the old pink China. The way in which the outer petals often flop open before the flower is fully expanded is exactly similar. This Rose does best on its own roots, and would be sure to make a handsome bush.

It is new to find anyone interested in gardening admiring the wild Dog Rose. It is certainly very beautiful, but not nearly so much so as the red-flowered Scotch variety. This is more profuse in the way of bloom, and when growing in a short-jointed state in poor soil is often a scarlet blaze of hips in the autumn. There is also a white variety, but no bluish gradations between the two. Next to the Scotch Dog Rose and Sweet Brier, *stylosa* is our most attractive wild Rose; its clusters of white flowers, often with a faint creamy stain in the centre, contrast well with its dark green leaves and brown calices. This Rose is not nearly such a strong grower as the Dog Rose; the wood is much more lasting, a circumstance which makes the plant more bushy.

R. stylosa may be easily distinguished when in flower by the little pillar of confluent styles in the centre of the blossom.

In trimmed hedgerows, where it is pruned in summer, it shows a tendency to bloom in autumn, and I can always pick a few dozens of its flowers in September. The handsomest bush Roses are the Albas. The old White is now lovely. It immediately follows the Guelder Rose (*Viburnum Opulus*), and has much the same effect at a distance. The Maiden's Blush is a beautiful variety, and in cottage gardens all the connecting gradations between it and the Alba are to be found. It is unaccountable why these two beautiful Roses do not appear in nursery catalogues, for they are the only Roses that can be trusted anywhere. The Hybrid Albas, *La Seduisante*, *Madame Legras*, *Madame Zœtzmans*, *Madame Audot*, and *Diadème de Flore* also make capital bushes. Many of the Damasks, too, make good, vigorous, and handsome bushes, more especially the striped Roses.

The Scotch Roses seem to be confined to old-fashioned gardens. Standard Roses have driven these out of many a garden, for their proper growth is a sheaf of suckers, and only shapeless blooms come out of old wood. Grown in rich but not too heavy soil, they are delightful little bushes, as round and buxom as a Box tree, while the flowers are well shaped and deliciously scented. The foliage is very abundant. I counted forty-one leaves on a shoot 7 inches long. It may seem needless to describe these old Roses, but when one finds two such utterly different Roses as *Celeste* and the old Maiden's Blush named as identical in a leading nursery catalogue, it shows that many old and useful Roses have been forgotten or neglected through the monopoly of attention which has been bestowed on exhibition Roses. I have seen few things more attractive than a small Rose bed I had filled with Alba, Moss, Provence, and Damask Roses, with two standards of *Harrison's Yellow* in it and a tall trellis at the back covered with the old Garland Rose.

J. D.

Rosa lævigata.—The following note from Dr. Graham refers to a beautiful white Rose which he noticed in Madeira, running along railings and up trees, along hedges and everywhere with remarkable vigour and grace. It bears many large white flowers and has glossy green leaves: "The name of the white Rose is *Rosa lævigata*, often wrongly called *Macartney* in Madeira; whence originally I know not, but it has been long known under various subsequent names—*R. ternata*, *R. nivea*, &c."

Rose Souvenir de la Malmaison.—As "J. C. C." observes (p. 559), the one fault of this Rose is the shapeless character of its first crop of flowers. I have, however, seen perfect flowers in plenty on two plants early in the season; one was a standard in a very sheltered position facing the south and enjoying reflected sunshine from a brick wall. The other was in a low span-roofed house, from which frost was excluded in winter, but from which the roof was removed in summer. From my limited experience of this Rose in the open it seemed to be more affected by damp weather than most others. My plants were bushes on their own roots in a very damp garden, and the early blooms often rotted off without opening. I think "J. C. C." is in error about the colour of this Rose being objectionable; few people would prefer a cold dead white to its exquisite and unapproached creamy flesh colour. It

seems to me that it is its colour which has kept it from being superseded, owing to its bad shape.—J. D.

Rose prospects.—Roses on warm walls and other sheltered positions are unusually fine this season, and if this is any criterion, the season of 1885 should be an exceptionally brilliant one as far as Roses are concerned. Both on old and young plants of *Maréchal Niel* the blooms are extra large and well coloured, much better, in fact, than I have ever had them before. *Gloire de Dijon* is also in good condition, and *Devoienensis*, *Safrano*, *Cheshunt Hybrid*, *Céline Forestier*, *Catherine Mermet*, *Souvenir de la Malmaison*, *Madame Lambard*, and *Jean Ducher* are all yielding good supplies of large well-formed blossoms. The Hybrid Perpetuals are also fast unfolding their blooms, and these promise to be unusually plentiful and good. Even the Banksians have been more floriferous than we have seen them before, and the same may be said of the various other kinds of climbing and shrubby Roses. Evidently a few weeks of real summer weather, such as we had last year, act most beneficially upon all our flowering trees and shrubs, and let us hope we shall be again similarly favoured during the present summer.—W. L.

Niphetos Rose.—It is so much the fashion to praise this white Tea Rose, that I fear to say a word against it. In spite, however, of all that has been said in its favour, I cannot say that I am deeply in love with it. Certainly my experience of it is limited to a number of strong plants growing against a south wall, where they thrive well and produce good wood and large blooms. But then the wood is so exceedingly thorny, that it seems in that respect to be worse than almost all other Teas. That defect, however, might be borne with were the blooms more dense and enduring. Cut just in the half-opened bud stage ere the flowers merit the appellation of Roses, they are pretty; but even then they are far too much tinged with pink to be honestly termed white. Left about one day longer to expand and develop into whiteness, the buds burst into large loose flowers, the petals of which are very large, but thinly set and soon hang loose. How much in this respect does *Niphetos* differ from many other smaller flowered, but more useful, Teas, the blooms of which are solid and full of petals even to the last? Perhaps the plants are thriving too well, the wood too strong, and the flowers unduly large and loose in my case. Certainly most of them when fairly open more resemble white loose-petalled *Pæonies* than Roses. I should like to hear from some rosarian, who is not infatuated with any one or even with any dozen kinds, which is the best pure white Tea Rose for wall culture the blooms of which when half expanded are still solid and pure. *Safrano* against a south wall is another deceitful Rose; the buds are charming enough one day, but the next they burst into large loose rubbishy flowers not worth gathering.—A. D.

KITCHEN GARDEN.

KIDNEY BEAN OR FRENCH BEAN.*

(*PHASEOLUS VULGARIS* (L.). *LEGUMINOSÆ*.)

French, Haricot, Phaséole, Pois. *German*, Bohne, *Flemish* and *Dutch*, Boon. *Danish*, Havebonnen. *Italian*, Fagiolo. *Spanish*, Habichuela, Judia, Frijol. *Portuguese*, Feijoa.

NATIVE of South America. Annual. A plant of rapid growth, flowering and seeding soon after it is sown. Stem slender, twining, usually channelled or angular, rough to the touch, always twining in the direction of from right to left (but there are several dwarf varieties with stiff stems which do not require any support). Leaves large, composed of three triangular leaflets, which have the angles at the base rounded, are rough on the surface, and of various shapes and sizes. The flowers are produced in the axils of the leaves,

in clusters containing from two to eight flowers each. They resemble other Papilionaceous flowers, but are rather irregular in shape, the petals being often twisted in an unsymmetrical manner, and the keel especially being generally reduced to two small blades which are more or less convex and non-adherent to each other. Hence it results that the pistil is not so completely covered as it is in most



Soissons large Runner Bean (one-twelfth natural size).

other Papilionaceous flowers, and consequently spontaneous crossing frequently occurs amongst the varieties of this plant. The pods and seeds of the different kinds vary much in shape, colour, size, and substance.

We shall describe each variety separately, merely observing here that the difference in the texture of the pods has led to the division of the plants into two classes, viz., the tough-podded (*Haricots à écosser* or *Haricots à parchemin*), the pods of which become hard and leathery when ripe, and the edible-podded (*Haricots mange-tout*, or *Haricots sans parchemin*), the pods of which never become stringy, even when dried. The germinating power of the seeds continues for three years.

The Kidney Bean does not appear to have been known to the ancients; for, although Columella and Virgil mention a plant under the name of *Phaseolus* or *Phaselus*, this could not have been our Kidney Bean, which, even in Italy, does not accommodate itself to being sown in autumn, like the *Phaseolus* of these authors. It is certain that the Kidney Bean is a native of a warm

climate, and in the absence of positive documentary proofs of its original habitat and the time of its introduction into cultivation, there are good grounds for assenting to the opinion of Mons. Alph. de Candolle, that it was originally a native of South America, and was introduced into Europe in the sixteenth century. The old French writers on kitchen garden subjects do not mention it before that period, and give it but scant notice in comparison with that which they bestow on Peas and garden Beans. Since their time, however, and chiefly owing to the power which the plant possesses of producing numerous varieties, its culture has acquired a considerable amount of importance. In France, every year, many millions of kilogrammes of the seeds are harvested (the kilogramme is equal to $2\frac{1}{2}$ lbs. avoirdupois); and, besides this, considerable quantities are imported, and form a large part of the national food. They contain more azote or nitrogen than almost any other vegetable, and their chemical composition in some degree approaches that of the flesh of animals.

Tough-podded Kidney Beans.

French, Haricots à écosser. *Italian*, Fagioli da sgusciare.

I. TALL-GROWING VARIETIES.

Variétés à rames.

SOISSONS LARGE RUNNER BEAN (*Haricot de Soissons à Rames*).—A plant with a slender green stem, growing $6\frac{1}{2}$ feet high or something more. Leaves pretty large, at wide intervals from each other; leaflets moderately crimped, rounded at the base, of a dark and slightly yellowish green colour; lower leaves larger than the upper ones; flowers white, passing into yellow; pods green, but turning yellowish when ripe, broad, somewhat curved, and generally irregular in shape, owing to the unequal growth of the seeds, which are seldom more than four in number, and are white, kidney-shaped, and more or less humpy or round-backed; they are nearly an inch long, about half an inch broad, and nearly a quarter of an inch thick. The litre weighs about 720 grammes and 100 grammes contain about 120 seeds. They are late in ripening. The dried seeds of this variety are highly esteemed for their delicate flavour and the thinness of the skin. The plant is found to succeed in the greatest perfection in its native district, where it most probably enjoys conditions of soil and climate which are specially favourable to it; but when grown under a warmer sky, it sometimes suffers from the heat—the skin of the seed becomes thickened, and the seed loses its fine quality, and also degenerates in size and colour.

LARGE WHITE LIANCOURT KIDNEY BEAN (*Haricot de Liancourt*).—Stem green, slender, tall, reaching a height of from 7 feet to nearly 10 feet; leaves large, of a rather dark green, not quite so much crimped as those of the preceding kind, the upper ones much smaller than the lower ones; flowers white, turning yellow after impregnation; pods longer and narrower than those of the last-mentioned variety, slightly curved, each containing about five or six flat, slightly kidney-shaped seeds, rather irregular in form, like those of the large White Runner (but of a dull or dead white, while the seeds of the latter variety glisten like porcelain), about three-quarters of an inch long, a little over a quarter of an inch broad, and less than a quarter of an inch thick. The litre weighs 750 grammes, and 100 grammes contain about 190 seeds. This is a rather hardy, strong-growing, productive, and half-late variety, and is chiefly grown for the ripe dried seeds.

ROUND WHITE RICE RUNNER KIDNEY BEAN (*Haricot Riz à Rames*).—A variety of moderate height, seldom exceeding about 5 feet, and sometimes not much over 4 feet. Stem very slender, of a light green colour; leaves medium sized, elongated, pointed, not much crimped, and of a clear, green colour;

* Extract from "The Vegetable Garden," the new English edition of Messrs. Vilmoren & Andrieux's "Plantes Potagères."

flowers white; pods green, narrow, very numerous, especially at the lower parts of the stems, where they often grow in clusters of fours or fives, while hardly any are produced near the tops of the stems; seeds five or six in each pod, nearly round, with a very smooth, thin, almost transparent skin, and not much over a quarter of an inch in diameter. The litre weighs 830 grammes, and 100 grammes contain 700 seeds. This variety presents an appearance so peculiar and so different from that of most other kinds, that it might be readily supposed to be derived from a distinct botanical species, were it not that its flowers exactly resemble those of other Kidney Beans. It branches and spreads more than the majority of tall-growing varieties, forming a clump nearly 2 feet wide, with weak, slender stems, which do not exhibit much of the climbing character. The seeds are so small and so peculiar in shape, that it is difficult at first sight to imagine that they belong to a plant of the same species as the two last mentioned. However, as the pods are produced in very great numbers, the plant is productive enough. The dried seeds are of an exceedingly good and delicate quality, with a very thin skin, which seems to dissolve in cooking, on which account they are highly esteemed. The only defect which can be ascribed to the plant is that the pods are very liable to rot in wet seasons, when they trail to the ground before they are quite ripe.

WHITE DUTCH, SCIMITAR, or CASE-KNIFE BEAN (*Haricot Sabre à Rames*).—A very vigorous-growing kind, nearly 10 feet in height. Stem thick and green; leaves very large, deep green, crimped;



White Dutch, Scimitar, or Case-knife Bean (one-twelfth natural size).

flowers large, white, fading to nankeen yellow, and forming long clusters; pods straight, sometimes undulating on the sides, 10 inches to 1 foot long, containing eight or nine seeds each, numerous, produced in succession for a long time, especially when the first have been gathered green; seeds white, glistening, kidney-shaped, very like those of the Large White Runner, but more regular in shape and one-third less in size, seldom three-fifths of an inch in length. The litre weighs 715 grammes, and 100 grammes contain about 245 seeds. They ripen rather late,

The young pods may be used as green Haricots. The seed or Bean, when used fresh from the pod, is one of the best; it is also very good when dried. This is certainly one of the best varieties; the only objection to it is that it requires very long stakes when growing. The Germans cultivate a great number of sub-varieties of it, characterised chiefly by having broader and straighter pods; but, notwithstanding numerous trials, we have never found any of them to surpass or even equal the variety here described; it is the most tender for use and also the most productive.

DWARF WHITE LONG-POD KIDNEY BEAN (*Haricot Blanc à Longue Cosse à Demi-rames*).—A plant 4 feet to 5 feet high; leaves of medium size, smooth, of a clear green colour; flowers large, white; pods exceedingly numerous, very straight and long, and nearly cylindrical, of a fine green colour, passing into yellow when ripe; seed oblong, nearly as thick as broad, nearly three-quarters of an inch long, quarter of an inch broad, and nearly a quarter of an inch thick; skin exceedingly thin, almost transparent, in consequence of which the seed, instead of being pure white, is of a faint salmon colour. The litre weighs 790 grammes, and 100 grammes contain about 240 seeds. This variety, which requires only very short stakes, can be highly recommended for the production of green Haricots; perhaps there is no other kind which yields such fine young pods, and it has this advantage over dwarf varieties, that the pods, growing higher on the stem, are not liable to trail on the ground and rot. The seeds are equally good when dried. They ripen tolerably early.

CHARTRES RED KIDNEY BEAN (*Haricot Rouge de Chartres*).—This kind is very extensively used for field culture. It requires hardly any staking, as the plant is of compact growth and seldom more than between 3 feet and 4 feet in height. Leaves of average size, of a fine green colour, and slightly crimped; flowers white or yellowish, pretty large; pods 4 inches or 5 inches long, slightly curved, each containing about five or six flat short seeds, which are often square at one or both ends, of a deep wine-lees red colour, and having an almost black circle around the hilum; their average length is about half an inch, breadth a little over a quarter of an inch, and thickness less than a quarter of an inch. The litre weighs 765 grammes, and 100 grammes contain about 300 seeds. They ripen early. The seeds are almost entirely used in the dried state, and the variety is almost exclusively grown in the fields.

PARTRIDGE-EYE KIDNEY BEAN (*Haricot (Eil de Perdrix)*).—A plant of medium height, with lank slender stems and lilac flowers. Pods short and flat, each containing four or five seeds, which are flat, shortly oval, or almost square, and of a white colour finely streaked with greenish grey. This variety has been a long time in existence, but, being a poor bearer, it is very little grown.

There are many other tall-growing varieties of Kidney Beans in cultivation, of which we shall only mention the following, as being very distinct and of special interest in various respects.

HARLEQUIN KIDNEY BEAN (*Haricot Arlequin*).—A tall-growing, rather late-ripening kind with long crimped leaves. Pods numerous, short, and curved; seeds very flat, oblong, scarcely kidney-shaped, coffee-coloured, and irregularly streaked and furrowed with black lines. It is a hardy and productive variety, and may be often seen in the Central Market at Paris.

GIANT-PODDED KIDNEY BEAN (*Haricot à Cosses Géantes*).—A very distinct kind, although evidently allied to the White Dutch or Case-knife Bean, from which it differs in having longer, narrower and somewhat less stringy pods. It is also allied to the Edible Long-pod (*Haricot Mange-tout à Longues Cosses*), and thus forms a connecting link between the tough-podded and the edible-podded varieties.

SOISSONS RED KIDNEY BEAN (*Haricot Rouge de Soissons*).—A tall, rather slender-stemmed variety, not overburdened with leaves. Pods long, slightly curved, and rather narrow; seeds nearly the same shape as those of the White Dutch or Case-knife Bean, and of a brilliant coral colour just before ripening, after which they assume a wine-lees red tint.

This handsome kind is tolerably early, but only moderately productive.

SAINT-SEURIN KIDNEY BEAN (*Haricot Saint-Seurin*).—A very vigorous and rapidly growing kind, with very large, broad, deep green leaves and lilac flowers. Pods very numerous, almost straight, marked when very young with violet-coloured streaks; seeds flat, kidney-shaped, salmon colour, marbled and spotted with black. It is a hardy, very productive, and early variety, and is particularly well adapted for rather warm climates.

(To be continued.)

AUTUMN-SOWN ONIONS.

THESE are very valuable from the time when the spring-sown ones are finished in March or April until the new crop bulbs in July or August. No one who grows a good selection need be without a good supply of fine Onions all the year round. Last autumn we had a selection of kinds to sow; they consisted of new *Monster White Tripoli*, new *Red Globe*, and *Webb's Queen Onion*. They were sown the last week in August, germinated freely, and stood the winter well. About the middle of March they were thinned out to 8 inches or 10 inches apart. Those drawn up were dibbled in elsewhere, amounting altogether to some thousands, and not one of them has thrown up a flower-stalk or failed. The *Red Globe* is somewhat later than the other two in bulbing, but the *Monster White* has now bulbs 15 inches in circumference. The *Queen* is not far behind it, and both have been remarkably useful of late. Those left in the seed rows have the largest bulbs at present, but the transplanted ones promise to swell up more than this. *Giant Zittau*, another favourite Onion of ours, was sown at the same time, but we have not one of it left. Every plant flowered prematurely, and had this been our only autumn-sown Onion, we would have been very badly off indeed. White Onions are the most satisfactory for autumn sowing, as good varieties grow and bulb so freely in spring, and those who give them a rich soil and sunny position need never be without an abundant supply of fine Onions.

Margam, Taibach.

J. MUIR.

TOMATOES WITHOUT MANURE.

I QUITE agree with Mr. Muir that the cutting of armfuls of superfluous growths from Tomato plants is a wasteful and bad practice, but does he mean to assert that plants grown without solid manure do not form any superfluous growths? I maintain that plants potted in loam only and fed up with strong artificial manures will form nearly or quite as many side shoots as those potted in a mixture of loam and manure. The dwarfness of Mr. Muir's plants (p. 570) was doubtless the result of good culture rather than the kind of soil used, and as later on he appears to think it necessary to top-dress with a powerful and, as I happen to know, lasting manure, the side heading "Tomatoes without manure" is a misnomer. The fact is, good crops may be grown under glass in almost any kind of compost and in any kind of box or pot. This season we have gathered most satisfactory and, under the circumstances, surprisingly good crops from plants rooting in shallow tin boxes, measuring 2 feet long, 1 foot wide, and 4 inches deep, each containing four plants. No drainage holes nor drainage were allowed, and, as a consequence, but little water was required, neither was much manure given. At the same time if I wished to grow heavy crops of extra fine fruit, I would use good sized pots or boxes, good soil and but little drainage, adding rich top-dressings as required, supplemented with frequent supplies of liquid manure. Starvation treatment does not pay, at least such is my experience, neither under glass nor in the open air. Under dry, hot walls, solid manure mixed with the soil is of great service; while artificial manures, unless water is frequently given, are almost useless. The plants should also be mulched with manure. There is no doubt that high culture induces the formation of much superfluous growth, but what is more easily or quickly done than timely disbudding? If all side-shoots are kept closely rubbed out and the leading growths properly supported, there will be no armfuls of super-

fluos growths to cut away, but there will be grand clusters of fine fruit. W. I. M.

Bedfont Rose Potato.—This is the latest of all Potatoes with which I am acquainted; it is, indeed, some three weeks later in getting through the soil than any other kind. Ample evidence is thus given of its long keeping powers; that is a feature which cannot be over-estimated, especially when allied to good quality, in places where the supply of old Potatoes as late as the months of May and June is imperative. Bedfont Rose is a round of good form and has a pink skin. Notwithstanding its lateness in pushing growth, thus enabling it to be planted for succession to other crops up to the middle of May, it yet tubers rapidly after growth is made, and its crop is always ready to lift with Regents and Magnum Bonums in October. So many kinds of so-called late Potatoes persist in pushing growth about Christmas-time, that it is only by constantly rubbing off the shoots that the tubers can be kept fit for late consumption.—A. D.

GARDEN DESTROYERS.

Diseased Almond leaves.—I send a leaf taken from an Almond tree, and would be glad to know the nature of the blight from which the tree is suffering. At a little distance off the blighted leaves have been mistaken for blossoms.—W. I. W.

* * The crimson colouration and thickening of the Almond leaves are caused by the presence of the spawn of a fungus named *Ascomyces deformans* growing within the leaf. It is one form of "blister." When the tissues of leaves are injured by insects or fungi, a change of colour to crimson is very common. Familiar instances occur on Currant leaves when attacked by aphides, on Maple leaves when invaded by gall insects, and Peach, Almond, and Gooseberry leaves when preyed upon by fungi. When practicable the diseased leaves should be picked off and burnt.—W. G. S.

Apple bud-eating insects.—Extensive standard Apple tree nurseries in Somerset have been infested with the enclosed insect, which comes every year in May and has done hundreds of pounds' worth of damage by eating the buds off trees which have been headed back, completely destroying the buds which should form the new heads. What is it? and what measures can I adopt to prevent its ravages next spring?—F. RICH.

* * The insect attacking your Apple trees is a weevil (*Phyllobius oblongus*). It may be caught on a white cloth spread under the trees. Keep the ground free from stones, rubbish, Moss, &c., under which the weevils may find shelter during the winter. Keep the trees as clean as possible for the same reason, turning up the soil in the spring before the weevils appear, and dressing it with gas-lime or nitrate of soda would probably be useful.—G. S. S.

Black Currant pests.—I send some branches of Black Currant which have been attacked by an insect, and I should be obliged by your telling me what it is and if there is any cure for it. Our Black Currants have been attacked by it for some few years, and so have those in many gardens in the neighbourhood; it very much lessens the yield of the fruit.—J. S. S.

* * Your Currant bushes are attacked by one of the gall mites (*Phytoptus vitis*). Cut off at once all the shoots which are badly affected and all the useless buds from other shoots to prevent the mites getting into the new buds. When next pruning the trees, cut back as short as practicable, so as to get rid of as much infested wood as possible. The mites are very small, and are only just visible to the naked eye when placed on a sheet of black paper.—G. S. S.

5360.—**Horse ants.**—If by "horse ants" "T. E." means a large kind of black ant much stouter than the ordinary kinds, and which has a circle of brown hairs between the thorax and the head and another between that and the abdomen, I would advise him to reduce their numbers without exterminating them until he is quite sure that they

do no harm. There are numbers of this ant in the woods here, and one day last month I had the curiosity to watch a crowded and noisy double procession of it, running to and from a large nest along a hard-beaten path. About one in seven were carrying small chips of withered Bracken with which to repair the nest. The rest carried exclusively animal food. I watched them closely for ten minutes or so, and each returning ant had in its mandibles an egg, an aphid, or other small insect, or a grub, or caterpillar of some kind. It was an odd sight to see two ants struggling along with a caterpillar as large as four of them, and often pulling opposite ways.—J. D.

PLANTS SOLD UNTRUE TO NAME.

QUITE accidentally I have seen Mr. Frank Miles' note on this subject in THE GARDEN of the 30th ult. I may mention that I have imported plants and bulbs for eighteen years, and can say that for quality or price they were better value than anything I could purchase on this side of the Channel. Of the thousands of bulbs and plants sent me all were true to name. In the matter of new plants and seeds with home nurserymen, they make frequent mistakes if orders are large and consist of many varieties. As to foreign nurserymen, it will be found that they are just the same as home nurserymen; mistakes, occasionally great mistakes, are made by them all. But the proper way is not to rush into print when a plant or a packet of seeds is wrong, or a few bulbs apparently incorrectly sent, as Mr. Frank Miles has done; the proper and courteous way is to write to the parties in question, pointing out their mistake; and, if not made good, then give publicity to their unhandsome conduct. With the leading nurserymen and bulb growers, home and foreign, every effort is made to keep their plants and bulbs true to name; but, as Burns says, "the best laid schemes of mice and men gang aft a-glee," and oftener than anyone would suppose wrong plants, bulbs, or seeds are sent. Mr. Miles surely knows little about the thousands of mistakes that are made every season by seedsmen with farmers' grains, and the heavy damages they claim for having their fields destroyed with worthless seeds. When we have, therefore, "taken the beam out of our own eye," then we may commence to point out the shortcomings of foreign nurserymen; but so long as our own case is, in reality, considerably worse than theirs, it does not become us to raise a railing accusation against them.

As to M. Van Houtte, no firm stands higher; it ranks amongst the best on the Continent, and, like our own big houses, its reputation for honourable conduct is world-wide and perfectly unimpeachable. The business is one of the largest, if not the very largest, amongst establishments on the Continent. Such an unparalleled position is never attained by any "trickster" firm. Its imports and exports are most extensive, and I have never heard a word of complaint; in fact, every importation made by me and my friends has been more and more satisfactory. Yet this high position and great name Mr. Miles desires to impeach because of some little mistake. All he had to do was to have written to M. Van Houtte on the subject and the matter would have been rectified. As to Messrs. Roozen, they, like Messrs. Van Houtte, have progressed year by year, till they are now the leading growers and exporters of bulbs in Holland. Such a position, as I have said, is never occupied by any trickster firm, and the good quality and reliability of their bulbs are as high as that of M. Van Houtte's plants. I know M. Roozen personally, and, talking of this very subject, he said that he grew annually millions of bulbs, and yet that the complaints he received averaged only from three to four each season. Under the circumstances, such correctness is marvellous, when we remember that many thousands of the bulbs cannot be grown in Holland, and have to be procured every year from California, South America, Russia, France, and Italy, the Cape, and, in fact, nearly from every quarter of the world. If what Mr. Miles states is true, it appears that some mistake has been made in sending him *Iris aurea* and *I. cristata*, the whole value of which is about two shillings; and for a small matter of this kind he does his best to impair the public reputation of one

of the highest firms in the bulb trade. He should have written to Messrs. Ant. Roozen on the subject, when the error would have been immediately made right.

A fruitful cause of mistake with both home and foreign nurserymen, I may mention, is the careless way in which orders are written. I can decipher hieroglyphics with any man, but when a nurseryman showed me about twenty orders from various parties I was utterly baffled, and could only indistinctly make out the names of a few of the plants. To those who understand such matters, the wonder is not that mistakes are made by nurserymen, but that they are so few.

I may mention that I am quite unconnected with any bulb or nursery firm. Last year my home purchases were £26; foreign, £11. Like other amateurs, I buy where I consider the best value is to be got, and I have no prejudices.—W. A.

—The remarks from sundry correspondents, called forth by Mr. Frank Miles' article on this subject, have been of particular interest, and have led me to record two instances which occurred during the past season. I purchased bulbs from a firm long and well established in a neighbouring county, and my disappointment was great to find that in a rare instance only did the specific name come true. I refrain from giving the name of the firm, as I feel sure (like "K.") that firms are deceived in their heavy purchases, like individuals in their small ones. I also had a supply of bulbs from another firm, and can testify with great satisfaction to myself that all the bulbs supplied me came true. On inquiry I found that this firm adopts the very commendable practice of sending out to name only those plants and bulbs which they have flowered and verified. The wish of "J. D.," with which he ends his observations (p. 544), is therefore anticipated in this instance, and I trust that it is not a solitary one, and, if so, that it will soon be enforced by the best of all agents (cannot get a sale without it) on the firms who have not adopted it.—W. H. S.

WORK DONE IN WEEK ENDING JUNE 23.

JUNE 17.

A HEAVY rain during the night and a cloudy, warm day have made us extra busy in the kitchen garden. Thinned out Salsify, also thinned out Leeks, and filled up gaps in the rows with the best of the thinnings. Planted out another batch of Autumn Giant Cauliflower and a first lot of Snow's Broccoli. This is still one of the best kinds when it can be had true, which, unfortunately, is very seldom. Planted out a few Savoys and the last lot of Brussels Sprouts. Thinned out the second sowing of Turnips; we have grown the Early Milan Turnip for the first time this year, and it is not only extra early, but handsome, and of the best quality. Earl Snowball, sown at the same time, will not be ready for a fortnight or more. Sowed Peas, French Beans, Radishes, and Spinach. Other outside work has been the continuation of pegging down, tying up, picking over, pinching, &c., of plants in the flower garden. Work in fruit houses is now purely of a routine character; stopping shoots, tying them into position, syringing walls and floors, watering borders, and airing, according to the requirements of each particular crop, is all that now needs to be done. Perhaps, though, harvesting the crops should be included. Peaches and Nectarines we gather before they show signs of full maturity, and place them in a cool fruit room for two or three days before using; there is then no meanness of flesh, but a brisk, refreshing flavour, even in fruit that, previous to gathering, may have been thought to be of second rate quality. Apricots and early varieties of Pears that are usually left to ripen on the trees we serve in a similar manner and with like results.

JUNE 18.

Very fine. Finished up the planting of early winter greens, and made another attempt to bring to a close the clipping of Box edgings in kitchen garden. Netted over Strawberries on south borders. We can spare a few scores of thrushes and blackbirds to those who believe that birds do no harm. They do so

much harm here, that without netting we should not get a fruit. In flower garden work to-day was included clipping of *Herniaria glabra*, that forms the upright edgings of the whole of our bedded-out garden. This we consider the perfection of a plant for the purpose, and it requires but little labour to keep it in order, as it does not require to be trimmed oftener than half-a-dozen times in the course of the season, and in all weathers it maintains its colour and vigour. All the Sedums that we use for foliage bedding are this season flowering more than usual, which condition entails a lot more work in regard to cutting and picking off the flowers, but which must be done if the plants are to cover the ground at the earliest period. *Sedum acre elegans* and *S. glaucum* have been thus trimmed up. The flowers of *Sedum Lydium* we pull up, for if the flower-stems of this variety be cut back, the new growth is but a repetition of flowering shoots. Thinned *Gros Colman* and *Gros Maroc* Grapes a second time. The berries of both varieties grow to such an enormous size, that one is afraid to thin them sufficiently at first thinning, though no doubt that is the right way to thin. Cut small, imperfectly-fertilised berries out of *Muscad* of *Alexandria* and *Mrs. Pearson* bunches. The latter variety is a grand Grape of the *Frontignan* class, its only fault being that there is generally a large percentage of small berries. Top-dressed a few of the earliest *Chrysanthemums*, and stood them in their permanent summer quarters. Divided and planted out in the open borders *Arum Lilies*. This we find the easiest way of securing a large number of flowers; the plants being lifted and potted about the middle of September, and being placed in an intermediate house, produce a lot of flower from December onwards.

JUNE 19.

Cloudy, but warm: work nearly the same as yesterday. Discontinued cutting *Asparagus*. The *Pea* crop was so late or we should have left off before; and now that there is abundance of both *Peas* and *Cauliflowers*, *Asparagus* is not required. The plots will now be given a sprinkling of salt to keep down weeds, and the stems needing support, to prevent them breaking, will be tied to small *Hazel* sticks. Netted over more *Strawberries*, also *Cherries* on walls. Continued summer pruning of *Pears* and *Plums*, young wood being retained to fill up bare places and to take the place of spurless branches that are to be cut out at the winter pruning, such young growths, in the meanwhile, being tied to the condemned branches. Watered a few of the choicer varieties of *Pears* with manure water. All trees bearing heavy crops would be done if time and supplies of water could be afforded; but as they cannot, we have to content ourselves by doing only such as are likely to give the best returns for this additional labour. *Apricots* and *Peaches* are such heavy crops that stimulants are indispensable, and therefore before each syringing, or rather washing of the trees with garden hose, we apply over the mulching either a sprinkling of soot or *Beeson's* manure, and occasionally a little of both, and the vigour and colour of the foliage indicate how thoroughly the dressing is relished. Renewed soil in one division of *Melon* house, and another batch will be planted soon as the soil has got warmed through. Stopped and pegged down *Cucumbers* in frames. All the fruit is cut soon as ready to prevent premature exhaustion of the plants. Gave fresh top-dressings—light loam and horse droppings in equal quantities is the kind of soil we use for this purpose.

JUNE 20.

Slight showers occasionally, and much colder. Thoroughly overhauled fernery and sub-tropical garden. Weeded amongst *Ferns*. With the new soil lately applied as top-dressing were imported roots of the common *Bracken*, and the growth of it, over-topping some of the better kinds, we have pulled all up that could be found. Clipped *Grass* edgings of sub-tropical beds, weeded them, and tied up all the plants that required support. *Ferulas*, *Funkias*, *Bamboos*, *Dracenas australis*, *lineata* and *Blue Gums* are at the present time the most effective plants in this department of the garden. Cleaning up generally. The same in and about the houses. Thinned out the fruit of the last batch of *Strawberries*. Watered all *Pines*. Gathered *Peaches*,

Nectarines, and *Figs* that were ripe. Ripe *Melons* and *Pines* have also been placed in the coolest fruit room for preservation. Early *Grapes* being now dead ripe, a full amount of air is kept on night and day. The foliage has suffered a good deal from spider, and therefore we shall be glad to get rid of the fruit as quickly as may be, in order to be able to wash the foliage by syringing heavy and often.

JUNE 22.

Fine, but cold for the season. Laying in the new growth of *Peaches* and cutting back the shoots of standard and pyramidal-trained *Pear* trees. Began to prepare soil for layering *Strawberries* for next year's forcing. The runners are quite ready, and are obtained from young plants of last year that have not been allowed to fruit. Flower garden work the same as for some time past. Tied up *Delphiniums*. Incredible as it may seem, we have plants of them quite 9 feet in height, with spikes of flower 4 feet long. All the kinds of herbaceous *Phloxes*, too, are this season making an abnormal amount of growth, and promise to be very fine. Sticks are also being placed to these, and also to *Potentillas*, tall *Veronicas*, perennial *Sunflowers*, &c. Planted out seedling *Sweet Williams*, double and single *Zinnias*, *Pinks*, and *Carnations*. Cut *Laurel* hedges and the tops off young plants of *Cupressus Lawsoniana* that are intended to form a hedge. Picked off seed-pods from the choicer varieties of *Rhododendrons*. We always endeavour to do this before the new growth gets so far advanced as to be injured by careless picking. In addition to the ordinary indoors work, preparations have been commenced towards filling the *Strawberry* house with plants to grow on for house decoration as soon as *Strawberry* plants are cleared out. Tuberous *Begonias* will be the first occupants, and they are now being put in their flowering pots. *Grevilleas*, *Aralias*, and the hardiest *Dracenas* are also some of the plants that are waiting for the better quarters that this house affords than do the frames they now occupy.

JUNE 23.

Another cool, cloudy day. Trimmed *Privet* hedge and more *Laurels*, and continued clipping *Box* edgings in kitchen garden. Sowed *Brompton Stocks* and *Canterbury Bells*, and pricked out a number of seedling *Anemone fulgens*. Cutting *Grass* verges and weeding the sides of walks as the *Grass* is cleared up. Other work has been but a repetition or continuation of what we have had in hand for several days past, consisting of summer pruning of fruit trees, hoeing in kitchen garden, and getting every part of the flower garden into its best form. Began to lay *Strawberries*. Our first 200 are laid in 5-inch sized pots, and are forced into fruit in these pots; being so extraordinarily hard packed with roots conduces to earlier maturity of the crowns, and consequently they fruit earlier, and frequently as well as the later plants that are grown in larger pots. *Vicomtesse Héricart de Thury* is the best of all varieties for early forcing.

HANTS.

HARDY FRUITS.

PEACHES.

The final thinning of the shoots should now be finished, as it is time all the strongest growths were tied or nailed in, not only to train them in the way they should go, but also, after such very rapid growth, to secure them from injury from rain and wind. If any of the trees show a tendency to grossness, all the strongest shoots should be incessantly pinched, not once or twice, but repeatedly, until such time as they begin to feel the weight of the crop. Many people have an idea that nothing short of root pruning can keep a *Peach* tree in order, and possibly nearly every tree, particularly when young, may require lifting and replanting for the two-fold purpose of checking luxuriant growth and laying all the roots in a horizontal position. Neglect of young roots which strike down into the turf and drainage very soon leads to mischief, but roots, like shoots, once put into a proper position will retain it, when all that is afterwards needed is the annual or biennial check with spade and pruning knife. But independently of root pruning, branch space being given for extension, it is really surprising what superfluous

sap may be carried off into needy channels by means of constant pinching. When the trees are made secure to the trellis or wall—I prefer the old-fashioned system of nailing close into the bricks—the final thinning of the fruit may be proceeded with, but not hastily, as the blossoms in many places were not over perfect, and some fruit will most likely drop at stoning time. One *Peach* to every foot should not be exceeded on walls, although it frequently happens that twice that number are left by covetous people, who do not realise the fact that the effort to perfect twenty-four stones and kernels where there ought only to be twelve distresses the tree and places them in possession of a few mediocre *Peaches* neither saleable nor eatable. After the fine rains we have had in this part of England, the borders are in satisfactory condition as to moisture; but a brilliant sun playing on the surface of the foliage as well as the border will soon carry off 1½ inches of rain if some steps are not taken to prevent it. This, to a certain extent, can be prevented by covering up the borders, not with the everlasting remedy—rotten manure, but with good fresh stable litter, full of ammonia, clean and elastic to walk upon, and health-giving to the foliage as well as the roots. If dry weather continues, the hose must now be brought into frequent use to cleanse the foliage, moisten the roots, and break up all insect colonies biding their time for attacking the earliest and best of the fruit.

CHERRIES AND PLUMS.

If these have not been dressed over, all breast-wood should now be broken off and the trees well washed to keep them clean and encourage the development of the fruit. Where there is a good command of water and the hose can be brought to bear upon the trees, green fly can be kept in subjection on *Plums* by this means alone, but black fly, which generally attacks the *Cherries*, is a more difficult enemy to deal with. This season our sweet *Cherries*, which, by the way, are carrying full crops of fruit, have lately been rather badly attacked by black fly, but we have now pretty well cleared the trees—first, by the removal of all superfluous shoots and committing them to the fire; secondly, by dipping the points of all the leading growths in diluted tobacco water; and, finally, by repeated syringings to remove the fly from the curled leaves and to cleanse the fruit. In addition to these operations, having plenty of water under pressure, the hose is well plied over the trees and roots after the sun has left the walls on fine evenings. In old gardens where black fly is often troublesome, a little extra attention devoted to the trees and walls in winter will save a good deal of time and loss in the spring.

Morellos, also a heavy crop, are quite clean and growing freely—better, indeed, than they have grown for some years. Possibly the unusual amount of sun heat that has penetrated through south walls to their northern occupants has told in their favour, and that a better time is coming for this very useful autumn fruit—one might say, badly treated fruit, for no matter how bad the climate of the district may be, the *Morello* is the invariable occupant of the north wall; and hardly and accommodating as it undoubtedly is, the general complaint that has gone through the country, of whole walls of fine trees dying or becoming unhealthy, may be taken as a fair proof that a better aspect and better seasons would greatly benefit this delicious fruit. Aspect is not, however, the only indignity cast upon the tree. There prevails an idea that, heavily handicapped, it is capable of carrying any quantity of fruit to perfect maturity, and that it must go on doing this for any number of years. Six or seven bad seasons have, however, told to the contrary, and it now behoves us to consider whether we might not spare a few yards of west wall for early *Morellos* and thin out the fruit as we now do our *Plums* and *Pears*.

PEARS.

Generally are well set, and the fruit, where trees were not heavily cropped last year, is very abundant and fine; moreover, many of the trees which have not been regularly productive are clean, healthy, and quite equal to the performance of any reasonable task which may be imposed upon them, provided they are not allowed to carry more than they can swell to full average weight and size. To enable them to do this

no time should be lost in the performance of the operations which will prevent waste of force on useless breast-wood, which must at some time be taken away, and timely thinning to a fair percentage over and above the number intended to remain greatly helps them. A wall of fine Peaches, it must be conceded, is an invaluable crop, but it is questionable if a good collection of choice Pears, which will furnish a dish every day from September until March, does not take precedence of all other fruits grown in the open air, as they come on in their season when all other outdoor fruits, save the Apple, have passed away. And yet we find pyramids growing gross and wild through the early part of the summer, but carefully pruned back to the stereotyped three eyes in the autumn, and fine wall-trained trees making breast-wood a yard in length before an effort is made to break it down. Surely this is not the method pursued by our Haycocks and hundreds of good growers besides, who produce fruit worthy of France or the Channel Islands, for they recognise good culture as a science; they mulch and water, they pinch and manipulate betimes, and they thin down to a fair number of the finest and fittest as carefully as the best Grape growers thin out their surplus bunches of Grapes. Soil and climate favour some, but not all; timely attention to the requirements of the trees completes the routine and leads to success where neglect of trifling details ends in comparative failure. If, then, a crop of fine Pears year after year is so valuable, improved cultivation should commence in the autumn when half the roots of all gross trees should be lifted, not cut off, and re-laid in good strong soil resting on drainage. This operation will check, but not distress, the trees; new fibres and feeders will be formed during the ensuing summer, and blossom-buds, most likely in plenty, will succeed this partial check; the operation will not, however, be complete until the other half of the roots has been treated in a similar manner. The fall of the leaf indicates the proper time for root-pruning; mulching protects from frost and drought; a good watering washes the soil home to the roots, and the trees are safe for the winter. The first care in the spring will be the protection of the blossoms; then will follow the pinching and manipulation of the shoots; and last, but not least, the thinning of the fruit.

STRAWBERRIES.

Early kinds that were mulched with fresh stable litter before they came into flower, and have recently had the benefit of copious rains, will now be deriving great benefit from the ammonia washed down to the surface roots, while the perfectly sweet straw will form a suitable material for the ripening fruit to rest upon—that is, provided the garden is not infested with slugs and snails. Where these depredators are troublesome, the modern Strawberry tile, recently introduced by Matthews, will be found a suitable contrivance for preserving and keeping it out of their reach, and at the same time for protecting it from grit which may be washed up by heavy rains. If a less expensive mode of procedure is preferred, each stool, according to its size, may have three or four short sticks, a foot or so in length, placed round it as supports for a band of matting or twine 6 inches to 9 inches above the ground, over which the fruit will hang fully exposed to sun and air—two important items in securing colour and flavour. Whatever mode of preserving the fruit is adopted, it is important that the operation be performed as soon as the Strawberries are set—certainly before they change colour, otherwise many of the earliest, which are always the finest fruits, will be bruised and rendered useless. The thinning of outdoor Strawberries is not generally practised, but where extra fine fruit is wanted for special purposes, the removal of a number of the inferior flowers will add greatly to their size and value. Netting the beds, in almost every garden now birds are so numerous is simply a work of necessity. In this wooded district the blackbirds and thrushes are already surveying the situation, evidently aware of the fact that a good time is near at hand. We, on our part, are doing our best to circumvent them by surrounding the beds with 3-foot rabbit wire attached to sticks placed firmly in the ground. From the tops of these stout strings are drawn to others in the centre of the bed 4 feet to 5 feet in height, and the framework, through which no experienced black-

bird can work his way, is complete. Nets a little larger than the area enclosed are simply cast over the openings when the fruit begins to colour, but they are neither tied nor pegged, for the convenience of rapid removal should a straight-backed picker appear on the ground. This, however, is quite unnecessary, as people at work can pass beneath the nets without inconvenience. Nets and stakes, put away when done with, last a number of years and soon pay for themselves in saving of time, independently of the preservation of the tanned netting, which is kept clean and dry, as it does not touch the ground.

Raspberries and Currants we protect in the same way, otherwise we should never see the colour of the fruit. Bush fruits should never be permanently enclosed, as it is essential that small birds have free access to them at all times before the fruit is ripe and again after it is gathered. W. C.

NOTES OF THE WEEK.

Clerodendron fragrans.—This very fragrant plant requires a cool, moist house rather than a stove. It makes a good bush 3 feet through, and flowers about three times a year.

Lilium auratum.—I have this Lily now in bloom in a 10-inch pot with 28 fully expanded flowers, and the stems, 6 feet high, are clothed with leaves almost to the bottom. It has never had any heat, but stood in a cold greenhouse.—W. WILKS.

Lavender Speedwell (Veronica Hulkeana).—Mr. Woodall brings us this from Scarborough, where it has proved fairly hardy and flowered beautifully. It is quite distinct from all its kind, and has elegant terminal panicles of delicate lavender flowers. In all seashore and genial districts where the others do well it should flourish.

The yellow Wand Lily (Eremurus Bungei).—This beautiful Central Asian plant has been in flower during the past week in Messrs. Paul's nursery, Cheshunt. It promises to be a hardy plant of the first class, bearing a graceful long spike of yellow flowers. We have for years seen no hardy plant that pleased us more.

Yucca Whipplei.—A plant of the original pure white form of this fine Yucca has been in flower during the last fortnight in the nursery of Messrs. Krelage, Haarlem. This Yucca flowered for the first time in Europe almost at the same moment in Messrs. Krelage's nursery and in Mr. Peacock's garden at Sudbury House, Hammersmith, in the summer of 1876.

High hedges of Tea Roses.—We were greatly pleased at Messrs. Paul's, at Cheshunt, to see some noble hedges of Gloire de Dijon, Bouquet d'Or, and the harder Tea Roses trained over high trellises. The freedom of foliage and flower was charming in this position. Freer modes of training for the harder Tea Roses in the districts in which they do well is very desirable.

The many-flowered Rose.—We were well pleased lately to see, at Mr. George Paul's, double dwarf forms of this Rose; they are quite a new break in Roses, and very pretty. There is a very pretty white and flesh-coloured form; Rosa polyantha is the Latin name of the parent of these, and a good name for the group would be the many-flowered Rose. Two varieties that struck us most at Messrs. Paul's were Paquerette and Mignonette.

The common white Locust Tree.—We have never seen this plant so full of flower about London as it is now. The trees during the week have been literally snowy with bloom. We hear it is also flowering in the same way on the Continent. In this condition its claims to be a flowering shrub are of a high order. We should not be surprised if valuable varieties are yet raised from it in addition to those already known.

Eremurus robustus var.—We were charmed to see during the present week the giant bulb of Central Asia (Eremurus robustus, or a variety of it) in fine condition in Messrs. Paul's nursery, Brompton. The plant, as we saw it on the 21st inst., was at least over 7 feet high, one enormous shaft of flowers of beautiful salmon-pink. It is larger than the form we saw at Colonel Wortley's, and really pretty in colour.

Stocks.—In the splendid reaction in favour of open-air flowers, we too seldom see our old friends,

the Stocks, well done. Why it is we do not know. "Hants" sends us a few good big spikes of crimson Stocks. The best that we have seen for a long time were growing in a paved yard of a small roadside inn. The effect of the tall spikes growing among the stones was remarkably good. Stocks and walls seem to go together well. The plants, though not fastidious, like warm, rocky, and chalky gardens.

White-throated Snapdragons.—Mr. Caudwell, of Wantage, sends us specimens of his strain of white-throated Snapdragons (Antirrhinums), which we consider very beautiful, the contrast between the pure white tube and the glowing rich colours of the other parts being very striking. In some there is a mixture of clear yellow, crimson, and white; others have their colours of various shades. Some of the spikes are 1 foot in length and densely covered with flowers. Seen in large masses these must be extremely effective.

Delphinium Mrs. Miller.—A magnificent spike of this variety, measuring fully 2 feet 6 inches long and densely covered with flowers, has been sent to us by Mr. Stevens, of Byfleet, who grows Delphiniums to perfection in his light, deep, rich soil. This variety is one of the finest among the many grown by Mr. Stevens. The flowers are semi-double, the outer petals being blue, the inner tinged with violet. A few plants of Delphinium in a garden bearing such spikes as these is a beautiful sight, and one that might be realised in every garden.

Persian Ranunculuses.—Among some hardy flowers which "Hants" sends us to show us that he is not behind the time, we notice a large bunch of these. They are very beautiful, and we ask why the double Ranunculuses are so seldom seen. Perhaps because they require better soil and more attention than most hardy flowers. They always give pleasure when well done. We are now, however, getting so many valuable classes of plants among hardy flowers, that only the best and those which give a handsome and good effect are likely to be popular. Plants of fine form—like the Gladiolus, Lily, Narcissus—have a great advantage over things like the Ranunculus.

German Pansies.—Of all the flowers we know, none perhaps has given so much pleasure as the Pansy in its countless forms, the novelty of which is not quite exhausted, judging by some that Mr. Poë sends us, in which the Wallflower-coloured, edged, and dark-fringed kinds are very pretty. The power of variation is without limit in Pansies clearly, and one may look for even other types of colour and form. The rich dark and finely fringed kinds are finer far than any of the old sorts in form, and indeed reveal a new type of Viola beauty. Mr. Poë writes: "I got the seed from Wrede, of Lüneberg, through Miss Jekyll last year, and have sent again for a large lot for myself and friends. I had but one bad bloom amongst some 250 plants; that was the only plant I had to remove from the beds."

Hybrid Columbines.—One of the most beautiful series of hybrid Columbines that we have seen has been brought to us by Mr. Whitaker, of Morley, near Derby, a veteran hardy plant grower who has paid much attention to raising Columbines for years. There are five species of Aquilegia apparently from which this series has been derived, viz., A. vulgaris, cœrulea, chrysantha, glandulosa, and californica. These have been crossed and recrossed until it is difficult to single out one sort that would answer to the original, the nearest being apparently glandulosa and chrysantha. These two appear the least altered, though their colours and forms have been infused into the other sorts. One kind, with large glandulosa-like flowers, is very fine, the sepals being purple and petals pure white; another is chocolate-purple and yellow, while many partake of red, yellow, and purple hues. It would be hard to name a more beautiful class of hardy flowers than these Columbines, and the fact that they are of easy culture and that anyone may raise them renders them all the more valuable as garden plants.

Pentstemon Menziesi.—Some specimens of this new Californian Pentstemon sent to us by Mr. Burbidge from Trinity College Botanic Garden, Dublin, clearly show this Pentstemon to be a most

valuable addition to our gardens. Mr. Burbidge says that it forms a prostrate mass fully a yard through, just now a lovely glow of deep rosy red colour. It is a tufted and much-branched plant and shrubby at the base; the leaves are ovate or oblong, about an inch long, and of thick texture. The flowering shoots are very numerous, erect, and about 4 inches of their upper parts are furnished with blossoms. These are over an inch long and of an uniform height, rosy red except the protruding anthers, which are orange-yellow and woolly. It must be for a considerable time a very showy plant, as the flowers open in succession all along the spikes. It is presumably quite hardy, as it comes from high elevations. Its habitat is the Sierra Nevada, where it occurs on rocks at elevations of from 5000 feet to 12,000 feet. It also extends northwards to British Columbia. It is said that several varieties of it occur in a wild state, the Californian form always having the pink or rose-red flowers. It is synonymous with *P. Newberryi* of Gray.

Double Ixia.—Flowers of a double Ixia reach us from Mr. Hartland, of Cork. It is apparently a form of the *I. crateroides*, the colour being of a soft cherry-rose. The blooms are quite double, and we imagine that the doubleness would enable them to last in good condition much longer than single sorts when cut.

Hose-in-hose Gloxinias.—Among a gathering of beautiful seedling Gloxinias from Mr. Evans, Lythe Hill, Haslemere, is a singular variety, the flowers of which have a secondary corolla, like a Hose-in-hose Primrose. Mr. Evans says that the peculiarity is constant. The colour is white, with an edging of soft pink.

Kidney Beans.—In another part of to-day's GARDEN we print the first portion of an article on the Kidney Beans from the English edition of Vilmorin's "Plantes Potagères." This work, with many additions bringing it quite up to date, is now being printed, and will be issued in the autumn under the name of the "Vegetable Garden." It will contain much information.

Rose Reine Marie Henriette.—This is a favourite Rose in the Duke of Westminster's garden at Cliveden, whence Mr. Ellam has sent us some fine blooms of it on two or three occasions. It is said to be a rosy crimson Gloire de Dijon, though it does not appear to possess the vigorous constitution of that Rose. It is a climber, and, being an early flower, is a capital Rose for supplying early bloom. The half-expanded stage of the flower is the most beautiful. It is scentless, which is a drawback to it; but its soft, pleasing colour will render it popular.

Alpine plants.—A gathering of various choice alpine plants from Messrs. Stansheld, of Southport, is accompanied by the following notes: "*Houstonia corulea* grows freely with us. It has been one mass of flower for six weeks. *Saxifraga aizoides aurantiaca* is a very fine alpine, on account of its peculiar colour and the time of flowering, which is fully six weeks in advance of the type. *Viola alpina* is a perfect gem, growing about 1 inch high in compact tufts. *Achillea argentea* is free with us; the foliage is quite silvery, like *A. Clavennae*. *Linaria pallida* is particularly fine, so also is *Saxifraga cochlearis major*, which is well covered with bloom, while the variety *cochlearis* scarcely ever blooms."

Button-hole Roses.—Mr. House, of Peterborough, exhibited at South Kensington on Tuesday last two diverse Roses, both of which ought to be exceptionally popular with those who have to provide supplies of button-hole flowers. W. Allen Richardson is a Noisette, producing some three or four small blooms in clusters on strong shoots and single blooms on weaker growths. These blooms are perfect in form when half open, and of a rich yellow-buff hue that is both striking and novel in the Rose. It is a wonderfully floriferous kind. The other Rose was a pure white Moss Blanche Moreau, that is both a robust grower and very free, but it is one of the best of all that pleasing section. Market growers of flowers for cutting, and specially of Roses, should make a note of this lovely Moss, the which must soon become widely known.

The Rosemary Wreath shrub (*Helichrysum rosmarinifolium*).—Some extremely fine flower sprays of this pretty shrub from the Australian Alps have been sent to us by Mr. Hartland, of Cork, where it thrives to perfection in the open air. The tiny white starry flowers, like miniature Daisies, are produced in the greatest profusion on slender shoots—so dense, indeed, as to quite hide the Rosemary-like leaves. The sprays make a perfect natural wreath of white, and when cut last a long time in perfection; in fact, the flowers partake a good deal of the nature of Everlastings. It grows into bushes from 6 feet to 9 feet high in a wild state, and no doubt will attain as large a size in the most favourable localities in this country. Mr. Hartland grows it under the name of *Ozothamnus rosmarinifolius*, and its other synonym is *O. thyrsoideus*.

From South Devon.—I send you a very pretty *Gladiolus*. I had the roots from a friend as G. Herberti; it is dwarf and full of bloom. I make out a boxful as under: *Iris pallida* and *aphylla*, *Iris* the old Thunderbolt, some pretty pink-flowered *Alliums*, *Mimulus cupreus* and others, *Bomarea oculata*, *Ornithogalum arabicum*, *Philadelphus mexicanus* with large white flowers, *Diplacus glutinosus*, and *Saxifraga rotundifolia*, a graceful little plant. The *Ornithogalum arabicum* is specially good this year; very tall, and with seventeen flowers on an umbel.—T. H. ARCHER-HIND, *Coombefishacre House, Newton Abbott*.

* * The *Gladiolus Herberti* is apparently one of the ramosus race; the flowers are of a delicate flesh-pink colour, spotted with white. The *Alliums* resemble *A. acuminatum*, but seem to be finer. The *Bomarea* is a most interesting plant, with pretty crimson flowers; it is hardly about London. *Ornithogalum arabicum*, with large white flowers and dark centres, is the best of the genus, and it appears to grow to perfection with Mr. Archer-Hind.—Ed.

A new climbing shrub (*Actinidia Kolumbika*). Some flower-sprays of this new Japanese climbing shrub have been sent to us by Mrs. Bullar, of Bassett Wood, Southampton. It is really a beautiful plant. The leaves resemble those of the common Lime in size and shape, but are of thicker texture, and the stalks are bright red. The flowers,



The Fruit.

produced one and two together from the leaf axils, are like small white rough Camellias; the petals are white, and resemble little shells, and the pistil resembles a miniature Sea Anemone. Respecting it Mrs. Bullar writes: "It is a climber, and is now as high as the house and in wreaths of flower. In the autumn the fruit which ripens is very nice, and about the size of a Gooseberry." A fruit was sent to us last autumn by Mrs. Bullar, and we herewith reproduce a drawing of it. This shrub is among the most beautiful and interesting plants we have seen for a long time.

Odontoglossums.—Flowers of a numerous collection of forms of *Odontoglossum Alexandræ* have reached us from Mr. A. Wilson's garden at Westbrook, Sheffield. The series includes the finest forms of the species that we have seen, the majority being of the large-flowered, broad-petalled type, like that usually associated with the name *Bluntii*, and which is regarded as of the most perfect forms. The spotting of the various forms of course varies a great deal, and some are prettily flushed with rosy purple.

Tree Pæonies.—We are glad to see that these noble flowers are again likely to become popular, and that nurserymen are preparing for a possible large demand for them. Those who saw the lovely white variety, certificated recently at South Kensington under the name of *Snowball*, were fascinated with it, and the rich crimson sort, also shown by the same exhibitor, Mr. W. Gordon, of Twickenham, was also greatly admired. Mr. Gordon is, we are pleased to hear, importing these flowers direct from Japan, so that we may expect to see many beautiful sorts from that source.

NOTES FROM PENLLERGARE.

RHODODENDRONS of late have been uncommonly fine at Penllergare. There are hundreds of them there, many 30 feet and 40 feet high and as much through, occupying many acres of woodland and pleasure-grounds, and the effect which they produce is magnificent. There are none of those round beds or straight hedge-like lines of them to be seen; on the contrary, they are intermixed with other bushes and trees, and allowed to develop in a natural way associated with Ferns and native Grasses. They grow by the side of the Llan River, fringe lakes and adorn slopes and recesses in the woods. As in many old places the once much-valued varieties of the ponticum type rather predominate, but for some years past large quantities of new and improved kinds have been annually introduced, especially in the foreground near the larger specimens, and these are succeeding admirably. Amongst new ones the best sorts are Marie Stuart, a beautiful bluish kind spotted with maroon; Joseph Whitworth, a finely-spotted rich dark lake; John Henry Agnew, pale bluish spotted with chocolate, a magnificent variety; The Warrior, rosy scarlet, wonderfully showy; Concessum, clear pink, very beautiful; and others too numerous to be mentioned. Some of the Indian species are also succeeding admirably here. *Argenteum*, *Falconeri*, *barbatum*, and many of this class have been planted out amongst the trees, and their growths this year are upwards of 12 inches in length. The foliage is clean and healthy, and the shelter which the trees and undergrowth afford is evidently a great help to them. A place once a pheasantry has been cleared of its winged occupants and their accompaniments, and here some of the greenhouse varieties, such as *Edgeworthii*, *Dalhousianum*, and *Aucklandi* are making themselves at home. Azaleas of the Ghent and mollis types have also been freely planted, and vie with the Rhododendrons in attractive colours, while they surpass them in perfume. In some spots they are grouped together so as to form masses; but here and there there are isolated specimens, and all are growing freely, flowering profusely, and adding greatly to the floral beauty of the place. Azaleas, indeed, should be planted even more abundantly than they are; many, I am sure, would prefer them to the Rhododendrons. In the large lakes here and there are islands planted with Rhododendrons which come down to the margin of the water and are very effective.

The carriage drive, especially from the inner lodge to the mansion, is most interesting. On the left is an almost upright wall of rugged rocks, amongst which Ferns luxuriate, over-shadowed by ancient Oaks and other trees, while to the right the ground falls away rapidly into a deep valley, at the bottom of which flows the Llan, intercepted here and there to form lakes, and everywhere around are ornamental trees, beautiful blooming shrubs, and wild flowers. Hardly plants receive much attention here, the kitchen garden borders, many beds near the mansion, and nooks and corners everywhere being filled with them. To the Orchids and fruit crops indoors reference need not be made, except to say that they are abundant and good. CAMBRIAN.

Index of "The English Flower Garden."—An index of this work has now been prepared. The arrangement of the book is, for the greater part, alphabetical, but it was found that a thorough index would be useful in showing at a glance the kinds mentioned and their number, in giving a ready reference to all parts of the book and indicating the illustrations by the use of italics. Between 8000 and 9000 names are enumerated in this index, which will be bound up with all future copies of the book.

The waterfowl nuisance in the Botanic Gardens.—This is too evident in many pretty places. Like the sheep in Hyde Park (2000), waterfowl are too numerous in gardens. This particularly applies to the Botanic Gardens in Regent's Park, in which the space is restricted, and in which this kind of "garden decoration" should be reduced to the narrowest limits. On the occasion of a recent important show, some of our correspondents were much unpleasantly impressed by the evidences of the animals in question.

Woodlice (A. B. C. D.).—A toad or two kept in your cucumber frames will thin their numbers; you must also try the effect of pouring boiling water between the walls and the bed, taking care not to injure the roots.

Books (A. Z.).—Brown's "Forester," published by Blackwood & Sons, Edinburgh, and Grigor's "Arboriculture," both standard works on forestry.

CLIMBER-CLAD HOUSES.

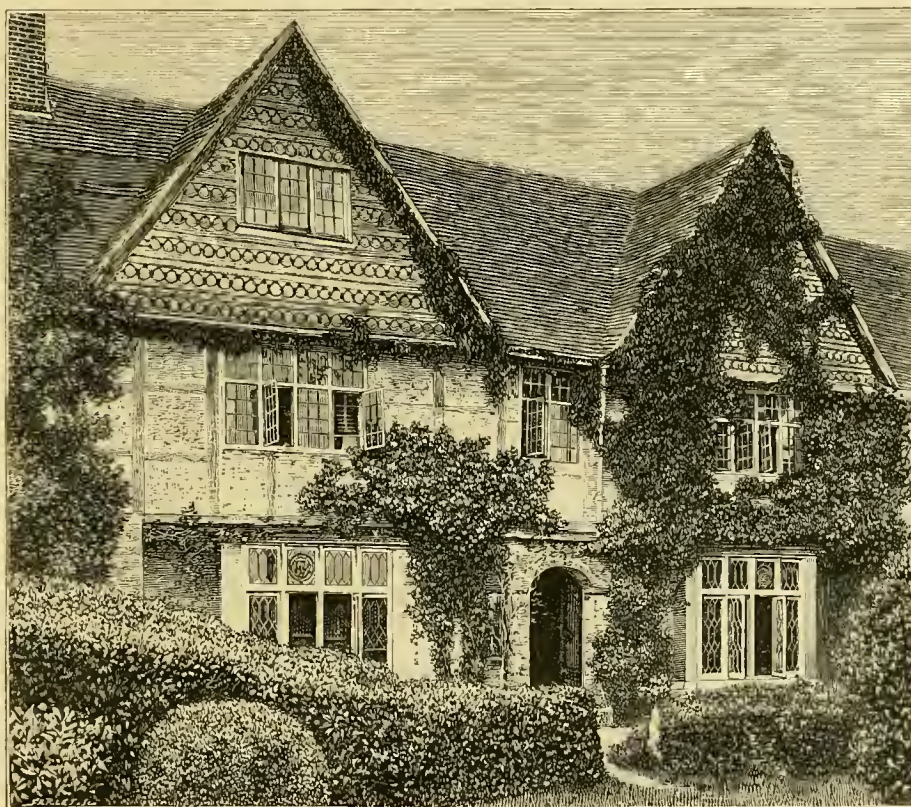
CONSIDERING the abundance of varied and beautiful material which we now possess for covering walls, the wonder is that we ever find any that are bare, especially as the latter are about as incongruous in a pleasant landscape scene as climber-clad walls are beautiful. Greenery of any sort, whether on cottage wall or mansion, is always pleasing, and all the more so when there is a happy combination of flower and leafage. On many a cottage at the present time one may see a wealth of bloom, none being more beautiful than that produced by Roses which have just burst into flower, and among these the deservedly popular Gloire de Dijon is unquestionably the finest. In the little village of Egham, near Windsor, for instance, one may see just now this Rose in perfection on the walls of almost every house. In one case it covers the whole side of a good sized cottage in company with a dense covering of Ivy, and the effect of the combination of leafage and flower may well be imagined. In all parts of the village on the rising ground it is met with equally luxuriant and smothered with bloom. Would that one had a dozen such useful hardy Roses as this in various colours! What effects could we not produce! Although we may be without a profusion of Roses of the Gloire de Dijon stamp, we need not despair, for there is ample store of beauty to select from, even among other Roses, a statement in confirmation of which we have only to mention the old-fashioned Ayrshires, the Boursaults, the Monthlies, the Evergreen, the Banksians, and the innumerable single kinds such as the Macartney, the Polyantha, the Persians, the Austrians, and others. Here is a wealth of material for wall decoration even amongst Roses alone. But we need not confine ourselves to Roses; we must have variety, although nothing is so beautiful or fragrant as a Rose. A long list could be made of suitable plants for wall coverings, but it is always advisable to plant the best. Beginning alphabetically, there is probably none more popular than the Ampelopsis, the Virginian *A. hederacea*, and the Japanese *A. Veitchi*, or *tricuspidata*. Everybody must know these; the first is a very old plant, and the latter, though a comparatively recent introduction, is already

to be found on the humblest cottage as well as on the castle wall. Both are indispensable and valuable on account of their rapidity of growth; it is, indeed, astonishing to see how fast they cover a wall. *A. Veitchi* under good treatment may be induced to reach the top of the highest wall in a given time. Mr. Frank Miles has just started a tiny plant of it in the hope that it will reach the top of a wall about 100 feet high in his town garden, a feat which he believes it will accomplish. It is to be regretted that both these climbers are deciduous, as one misses their verdure so much in winter, but then were they evergreen we should be deprived of their resplendent foliage tints in autumn—one of their most charming features. There is a so called evergreen Ampelopsis (*A. striata*), but it has

of May, and in later districts it is still in great beauty.

The Ivies in numberless varieties are indispensable. Though common, no other Evergreen can equal the Irish Ivy for rapidly covering a wall, and at the same time it is thoroughly hardy. There is no need, however, to plant Ivies, except, perhaps, the choicer variegated kinds, on a house, as such walls can be adorned in a more beautiful way with flowering shrubs. The Jasmines and Honeysuckles, so elegant and so fragrant, one must always have at least one of each. Among Jasmines none is better than the common white (*J. officinale*) for summer flowering, and *J. nudiflorum* for winter. The lovely golden blossoms of the latter associated with Ivy have a charming appearance.

The common white is a capital plant for cutting from, the flowers having long slender stalks and being deliciously fragrant. It is, moreover, desirable on account of flowering to perfection on the north side of a house where other plants would not flower. Those who like variety might add the Indian *J. revolutum*, a yellow summer-flowerer. Among Honeysuckles there are also winter and summer flowerers; the white and sweet-scented *Standishi* and fragrantissima both flower early in the year, and their fragrance at that season is delicious. They are not showy shrubs, but most desirable for a sunny wall near windows or doors, so that their perfume may not be wasted. The common Honeysuckle and its varieties are capable of producing some extremely beautiful effects when



Climber-covered House in Hampshire.

hitherto failed to fulfil the expectations entertained regarding it. Its hardiness is doubtful, and it does not seem to like our climate. The Clematises are well known wall-coverers and highly appreciated. Who could be without *C. Jackmanni* with its purple wreaths of bloom in August? The lanuginosa group with their huge blossoms are also common, as is likewise *C. montana*, the small white-flowered kind which has been in such great beauty during the past month. It is one of the prettiest of all climbers, very hardy, rapid in growth, and one which never disappoints one in not yielding a profusion of blooms. Many a wall and porch have been clothed in white this year by means of this faithful creeper ever since the middle

allowed to ramble at will—not tied or nailed in a stiff way.

THE NORTH AMERICAN TRUMPET HONEYSUCKLE (*L. sempervirens*) is not half sufficiently well known as an outdoor wall plant, being generally confined to greenhouses. Against a wall it is quite hardy in localities south of the Trent. It bears a profusion of orange-scarlet trumpet-shaped flowers in clusters, and these mingle charmingly with the rich glaucous foliage. There are two sorts, one called minor, the other coccinea, both superior to the original. The variegated Honeysuckle (*L. brachypoda aureo-reticulata*) is so well known, that it needs only mentioning as one of the best of wall-coverers, and allusion need only be

made to the common sweet Honeysuckle and its varieties in order to mention that the late flowering variety *belgica* called the late Dutch Honeysuckle should be planted in company with the rest, as it flowers when the others are over. The Canadian Moonseed (*Menispermum canadense*), though bearing inconspicuous flowers, is a pretty vine for running over arbours and training on shady walls, and of the same stamp is the *Periploca græca*, an old-fashioned climber not much seen now-a-days.

THE DUTCHMAN'S PIPE (*Aristolochia Siphon*) is a handsome climber that may be grown admirably against a shady wall where a flowering climber would be unsuitable.

THE HARDY PASSION FLOWER (*Passiflora cærulea*) is one of the prettiest climbers one can have on a house, being beautiful in flower, and again in autumn when laden with its golden egg-shaped fruits. The white variety of it, named *Constance Elliott*, is likely to prove a valuable climber, and its flowers will show better on a wall than those of the blue-flowered original. The Passion Flower is practically hardy, although cut down during very severe winters; being, however, a quick grower, it soon re-covers a wall.

STÆUNTONIA LATIFOLIA is among the sweetest climbers for planting against a warm wall in districts south of London. Being a Himalayan plant, it is not very hardy, but it thrives perfectly against a house on a good aspect, and often produces fruit. It has handsome divided foliage of a leathery texture and deep green colour, and in summer produces clusters of deliciously scented blossoms in clusters from the bottom to the top of the young growth. The flowers are greenish, and therefore unattractive, but the fine leafage and perfume quite compensate for striking colour.

THE WISTARIA is such a common plant, that no one need be reminded of it when selecting wall-climbers. It is unquestionably the finest of all deciduous hardy climbers, and being a rapid grower, it is all the more desirable. It is, however, too thin and straggly to rely on for covering a wall; the best place for it is the top of a wall, along which its slender branches will run for 100 feet or more, and garland the whole length with lilac flower-spikes until the early part of June. There is a white variety of it which is pretty and distinct, and there is one called *multijuga* which is said to possess uncommonly long spikes, but as yet its merits have not been thoroughly proven. The double *Wistaria* (*flore-pleno*), introduced a few years ago with a flourish of trumpets, is not a satisfactory plant; on the contrary, it has proved comparatively worthless a curiosity, in fact, which no one would think of planting in preference to the common single sort.

THE HOP-LEAVED VINE (*Vitis humulifolia*) makes a capital wall coverer, its chief beauty being the turquoise-blue berries, which hang in clusters all over the Vine in

September. The variegated-leaved form of it—*heterophylla variegata*—is not such a satisfactory climber out-of-doors, as it is apt to become scorched and otherwise disfigured. There are other Vines suitable as climbers for wall decoration, but as they do not possess showy flowers or berries, they are not to be recommended, particularly as they are all deciduous.

Other climbers include several which may be met with in botanical gardens. Among these are *Akebia quinata*, *Billardiera longiflora*, which bears deep blue berries in autumn; *Lardizabala bitermata*, a handsome climber of about the same degree of hardness as the common Passion Flower; *Mutisia decurrens*, a beautiful Chilean climber with large yellow blossoms; *Solanum jasminoides*, a South American shrub bearing clusters of white flowers; and *Berberidopsis corallina*, a Chilean shrub with globular flowers like deep coloured coral.

Besides the true shrubby climbers, of which the foregoing kinds are a selection, there are numbers of other shrubs suitable for covering walls, and which are commonly put to that use. In fact, almost every shrub may be grown against a wall, and a good many commonly used for that purpose are as suitable for the open shrubbery as for walls. Among these are the *Garrya*, deciduous *Magnolias*, *Cotoneasters*, *Barberries*, *Thorns*, *Cydonia japonica*, *Viburnums*, *Forsthias*, and others. These are all quite hardy, but there are others, again, which are rather tender, and a wall is necessary for them in this country. These include the *Pomegranate*, *Myrtles*, *Ceanothuses*, *Escalonias*, *Pittosporum*, *Eriobotrya*, *Olea*, *Euonymuses*, and *Embothrium*. Some, even among the hardiest non-climbing shrubs, are most desirable against the walls of a house, such, for instance, as the *Pyracantha*, whose brilliant berries light up the surroundings in autumn. The delightfully scented *Chimonanthus fragrans*, again, is valuable against a wall on or near the house, so that its winter sweet-scented blossoms may be at hand.

W. G.

INDOOR GARDEN.

HARD-WOODED GREENHOUSE PLANTS.

GREENHOUSES representing the variety advocated by "T. B." (p. 537) are rarely found now-a-days—a fact much to be regretted. In due course hard-wooded plants may possibly come into popular favour again, but the quicker growth and easier culture, generally speaking, of their soft-wooded associates will doubtless always weigh somewhat unfavourably against them. The great preponderance in greenhouses of one class of plants to the almost entire exclusion of others is an arrangement which might well be altered, and with good results—*i.e.*, if hard-wooded plants were well grown; but that is seldom now-a-days the case. Even *Azaleas* in many gardens look starved and infested with insects. Under a proper system of culture, healthy growth

would be secured and maintained by constant attention in the way of potting, watering when necessary, and cleansing. Many of the supposed difficulties in cultivation vanish when constant and careful attention throughout the year is given. The time usually recommended for potting hard-wooded plants is just as they start into growth. Now, in the case of many of the tenderer kinds the period between cutting back the wood of the previous year and the starting of that for the next is a most critical time, and if the check, which is more or less inseparable from repotting, be too severe, the chances are that the plant will die. If the roots are in good health, no harm will result, but rather the reverse, by allowing them to remain undisturbed until the new growth is somewhat solidified. A rather close moist atmosphere in May and June with shade from sunshine will re-establish root action in plants that will not withstand heat much quicker than can be done earlier. Hard-wooded plants which are mostly natives of Australia and the Cape will not bear too close an atmosphere at any time; nor should they be subjected to much artificial heat, which proves equally injurious. All require a compost consisting largely of peat, which should not be too spongy, and sharp silver sand. A little naturally decayed leaf soil is a good addition for *Azaleas* and greenhouse *Rhododendrons*, but the use of that which has heated violently or contains fungi in any form should be avoided. A small proportion of loam intermixed will be suitable for *Acacias*, *Grevilleas*, and other genera or species similarly vigorous in habit, but nothing beyond peat and sand should be used for the majority of *Heaths*, *Boronias*, *Tetrathecas*, *Leschenaultias* and such others as are of a somewhat tender constitution. Efficient clean drainage must be provided for all, and the pots should be previously washed and allowed to become quite dry before being used. The soil must be rammed firmly, and a point of great importance is the fixing of the balls, so that the new soil when the work is finished will be on the same level as the old. Hundreds of hard-wooded plants are killed simply by their stems being buried when repotting, or placed too deeply, so that water applied in the ordinary way is conducted towards them. *Epacrises*, *Eriostemons*, *Boronias*, *Azaleas*, *Agathosmas*, *Grevilleas*, *Pimeleas*, all the more free-growing softer-wooded section of *Heaths*, and many other plants of a similar habit and constitution may be treated very much alike as regards temperature and the amount of syringing that may be practised. Shade in bright weather and keep a rather close atmosphere after repotting, but avoid the use of fire-heat. Watering at the roots is best left alone for two or three days after shifting; a light syringing each evening will supply sufficient moisture for that period, *i.e.*, if the balls were in the condition in which they should be at the time of repotting. When growth is resumed plenty of air by day may be gradually ad-

mitted, and some should left on at night as well. Towards the latter part of summer it is a good plan to remove the sashes at night only at first when heavy rain is not expected, but afterwards keep them off altogether, except when the weather is very wet or otherwise unfavourable. I recommend indoor treatment all the year round only for such as are extremely tender or susceptible to injury from exposure, such, for example, as *Tetradleas*, *Leschenaultias*, *Dillwynias*, *Aphelaxis*, &c., and the tender, slow-growing kinds of *Erica*. We have rarely had decorative hard-wooded plants of all kinds flower more profusely than they have done during the present season which is just closed, so far as those which require cutting back is concerned.

Careful watering is one of the most important conditions as regards successful hard-wooded plant cultivation. If water, particularly that which is naturally hardened by the presence of lime, be used at set times indiscriminately, its effect on all the tenderer species at least will be most disastrous. Rain-water should always be collected and used for plants such as those under notice. If its storage is impracticable, hard water may be considerably softened by allowing it to stand exposed to the air in an open tank, or by placing a small bag of soot in it. Examine the plants frequently, and water thoroughly only when there is a certainty of the soil becoming too dry. Admit plenty of light by removing the shading in all but the brightest summer weather, and preserve a somewhat dry rather than a moisture-laden atmosphere. Of hard-wooded plants suitable for greenhouse decoration, and available for culture in comparatively small pots—indeed, they always succeed best in such—a numerous and beautiful selection might be given. Amongst the smaller growing kinds may be mentioned *Acacia armata*, *diffusa*, *Drummondii*, *lineata*, and *longifolia*; *Boronia elatior*, *heterophylla*, *megastigma*, *pinnata*, *polygalifolia*, and *tetrandra*; *Grevillea elegans*, *rosmarinifolia*, and *Thelemanniana*; *Epacris heteronema*, *microphylla*, *pulchella*, and any hybrids that may be procurable. Amongst *Ericas* largely grown and worthy of every attention may be mentioned *caffra*, *Cavendishiana*, *gracilis*, *hybrida*, *hyemalis*, *melanthera*, *ventricosa* and its varieties, and *Willmoreana*. To these may be added *Pimelea elegans*, *ferruginea*, and *spectabilis*, *Hibbertia stricta*, *Bauera rubioides*, *Dill-*

wynia hispida, *Azalea rosæflora*, *Agathosma rugosa* and its variety *alba*, *Polygala Dalmaisiana*, *Aotus gracillima*, *Eriostemon scabrum*, *E. myoporoides* and its variety *minor*, *Tetradleca hirsuta*, *T. pilosa*, *Goodia latifolia*, *Cytisus racemosus*, and *Chorozemas*, each and all of which are exceedingly interesting and attractive. J. G. K.

SOFT-LEAVED BHOTAN PRIMROSE.

THIS Primrose (*P. mollis*), in the older works on botany, is included under the

not in general cultivation, it promises to be one of the finest cool greenhouse Primroses yet introduced. With a fair amount of moisture in a cool frame, free from drip, it ripens seed freely, by which means it can be easily multiplied, and it may also be increased in abundance by division of the root after the flowering season is over. It requires good drainage, plenty of light, rich, but free soil, and it seems to relish a little peat and plenty of rotten manure. With good drainage, a plant may be placed in a considerable sized pot, in which the soil need not be pressed firm, and the surprising dimensions which the plant will attain after the first half year will amply reward all trouble that may have been taken with it. A small seedling grown according to the above directions had leaves from 5 inches to 6 inches in diameter, and bore from twenty to thirty flower-scapes, averaging from six to eight flowers in each whorl, of which there were five or six on each spike. Associated with its allies, the various forms of *P. cortusoides*, it is, next to *japonica*, the most effective of all the doubtfully hardy Primroses which we possess; its brightly-coloured flowers blend well with the pale lilac flowers of *obconica*, and both are invaluable additions to the greenhouse or hardy plant house. It may, however, be plunged or even planted out in the rock garden during the early summer months, where it will flower as freely as under glass, provided the leaves are kept from damp. The leaves all proceed from the root on the ends of long stalks, which are covered over with long straggly hairs; they are not unlike those of a *Cineraria* in shape; they are cordate at the base, the whole surface being hairy and more or less wrinkled. The flowers, which



The woolly Indian Primrose (*Primula mollis*).*

are about an inch in diameter, are crimson or rose coloured, varying with age; the calyx and corolla tube are deep red and invariably covered with soft white hairs, as is also the scape. This Primrose commences to flower about the latter end of March and continues until May. It has a deciduous habit, and requires to be kept cool and fairly dry during the early winter months. *P. cortusoides* is too well known to need description, as is also *Sieboldi*, which is grown in gardens as *cortusoides amœna* and *c. grandiflora*. *P. gracilis* (Stein), a garden hybrid between the two just named, is a fairly distinct plant, and

* From a photograph by Mr. Bashford, Portobello, N.B.

will be found a useful addition to our already large number of Primulas. K.

GARDENING IN THE SOUDAN.

(Concluded from p. 574.)

IN my last letter I said that the only seeds of properly native growth that I had planted were those of Melons. I ought to say, however, that I have had an excellent crop of Onions which I found in the ground, and that from the seedling plants left after the main crop was taken up I have now a fast ripening and excellent bed. Many kind friends in England have lately, I fear rather in the eleventh hour, been sending out seeds for our use, and among them have been Onion seeds, of which I have just received a present from Barr and Sons' of James' Long-keeping. Of course, all English and French seeds of good kinds are worth introducing into the Soudan, and if I can get a spare corner I will put in some of them, rather expecting to leave them behind me. But, as far as the troops and sick are concerned, Onions are already so plentifully supplied from native sources, and are of such excellent quality, that I do not think that Onion seeds from England are relatively of value, and I rather grudge the space I have myself devoted to the Onion crop, well as it has thriven. Though I put in the seedlings from a crop which was gathered in November, they are not ready yet, and we get such large quantities on the spot, that we issue them here to all the troops as a daily ration of fresh vegetables, and very acceptable they are. The culture is exactly what I have described as the normal one for all plants, and it suits them admirably. Before leaving the native grown plants, I ought to say that the natives themselves have no idea of early or succession planting, and that, so far as I can ascertain, the Melons in my garden, which are now yielding from my small bed six or eight splendid Melons a day, more than sufficient to supply all that one wanted for this large hospital, and enabling me to supply the little garrison all round nearly once a week, taking parts in turn, are the only ones either ripe or nearly ripe in any of this part of the Soudan. The natives plant all their crops of each kind all at one time, or at least any succession is quite accidental. Only yesterday I was asking the Kasheef of Argo, the sub-governor, under the Mudir of Dongola, of a vast and fertile district, and himself a pushing, active, and wealthy man, if he had not, in his own garden, any Melons ripe yet; and he told me he had none larger than an ordinary Apple as yet. It would be quite easy to have large crops of delicious Melons every day of the year, and I think that is the case with most plants provided some shading be used where it is necessary. My first crops of Peas were ruined by enemies well known to English gardens—rats, mice, and birds. I delivered over the rats to the tender mercies of my gardener, who used some kind of native poison and successfully kept them under sufficiently to save the future crops. He of course had a vendetta against the birds. And I am by no means sure that, if his remedy for their attacks had consisted in any process by which some of their lovely feathers might have been secured to me for the sake of friends at home, I should not have been tempted to yield to his sinister advice. We have the most wonderful number of birds of all sorts and sizes congregated upon the little space near the river, where they can get water, shade, and food. They gather in and round all our straw huts, and in all the Palm and Mimosa trees that give us shade. None of the natives have, however, any idea of trapping or in any other way possessing themselves of them, and my gardener's remedy was—to cut down our trees. Now to lose, at one and the same time, the lovely little red-bodied bird, like a very small robin redbreast of much brighter colour; the little birds like humming-birds in colouring, a little larger in size; the bill-headed bird, whose name I don't know, whose whole neck glitters and almost flashes in the sun as he drives his beak down into the ground like a small hammer, and a variety of other friends; and, at the same time, to lose all our large Mimosas, which were then loading the air with the perfume from their blossoms, and all our foliage and most of our shade, was rather too much to ask even

if his gardening principles were sound. I am glad to say that, though I would not let him dispose of the birds, and they have increased and multiplied greatly—a variety of the English sparrow, which abounds, having built a nest and reared a brood just over my head in my hut, where I am now sitting, and all the verandahs being filled with them night and day—yet our crops have escaped without mischief from them, and the Peas especially have yielded famously. I am getting daily large crops from those planted towards the end of February. The variety is a low-growing one sent me by the National Society for Sick and Wounded. It runs here to about 2 feet in height, and is covered all over with not very large pods. The kind is not a very sweet one. Its name was not sent me. I think any variety would grow luxuriantly, and I am rather sorry that I did not ask for several varieties, especially large Marrowlats and the more delicate and best kinds for table purposes. Still, as any kind of English or French Pea is quite unobtainable here, you can easily fancy how much the sick have enjoyed those we have had.

Parsley has answered admirably, and is a splendid crop. Carrots, too, have evidently taken most kindly to the soil and culture. Celery is coming on capitally. I do not think it will be necessary to earth it up, as each successive supply of water leaves its deposit of mud and gradually raises the level round the plants in a most uniform and convenient fashion. My only doubt is whether the plant will mature as well as under our English climate. Perhaps, if there were now any use in planting so that the Celery should just be in full growth when the cold winter winds begin to prevail, the crop would be better. As it is, in another month or less it ought to be full grown, and the plants are fine ones. Lettuces have done exceedingly well. My seeds were from Avond, in Cairo. He sent me for Lettuce the Laitue Royale, which is a fair kind; the tendency, of course, in this kind is to run up rather rapidly into stalk in the heart, but, on the whole, the abundant water supply seems to check this better than I should have expected, and the hearts are crisp and good.

Cauliflowers promise to be an excellent crop. The heads are just beginning to form, so I cannot yet judge what the quality will be, but the leafy heads are fine, and the growth of the plant, which apparently enjoys its treatment, is very healthy. I am sorry to say I did not, on account of bulk, get any seed Potatoes. I feel certain they would have answered well. Neither had I any Turnip seed, which, to judge by the Carrots, would certainly flourish. French Beans must have done well, but I had enough seeds to fill the garden, and though for experimental purposes I should have liked to have tried them and several other kinds, I should not, on the scale I could venture on, have had large enough crops of any one thing to supply all I wished. One thing I do regret, that I did not get some young Strawberry plants. If I could have got them up safely, I feel certain they must have done well from what I have seen of the growth of plants generally.

I need hardly say that Tomatoes answer magnificently. I had some very good seed sent me by Avond. The native Tomatoes I have seen are small. Mine yield fine, large Tomatoes, and are an enormous crop. The natives leave the plants just to grow up into a kind of thick bush or hedge, supporting them with sticks. Certainly the yield is so fine that, with this all-powerful sun, I do not know that one would improve it much. The sun manages to ripen the Tomatoes right through the leaves, and hitherto I have not ventured to have the leaves stripped at all, because such large quantities of fruit are forming in the upper branches, that I have feared to check them. But I had a hankering towards using a wall which I have had to build for defensive purposes, and for the later crops I shall certainly try it.

The water in the middle of the Nile itself is now so clear, that one almost wonders where all the fertilising mud comes from to the plants, but the fact is that during the time the Nile is rich in mud, the channel into the pit or well by the side of the river from which the buckets are filled as the wheel revolves gets choked with mud, which has to be frequently cleared out. Heavy rainfalls of muddy spray descend from the buckets into the pit below as they are emptied into the trough above, and thus a

thick high bank of rich mud is formed all round the pit. This is continually wet, covered with growing Grass and dripping into the pit below, so that as the buckets come up, even now that the Nile is clear, they bring up with them a thick solution of fertilising mud. I cannot help thinking that the practical value of this as food and liquid manure to the plants is a strong illustration of Professor Dana's theory of the value of what he calls "geine" in agriculture. There is no doubt about the kindly way in which almost everything takes to this treatment. Once more let me say that I feel certain that a good English gardener, not necessarily so far south as this, but quite within reach of a market, might do wonders with good seed and not at all badly for himself.

F. MAURICE.

GARDEN FLORA.

PLATE 498.

DOUBLE VIOLETS.*

VIOLETS of late years have become such universal favourites and are so generally cultivated, that few gardens can be found in which at least one frame is not given up to their cultivation for winter supplies. So much are they in demand in some establishments, that we hear of long ranges of hot-water pits being put up in which to grow them. Others use frames placed on gently fermenting material. A combination of these two plans is doubtless necessary if a daily and constant supply is to be maintained throughout the coldest and dullest part of the winter. On manure beds Violets yield finer blooms during October, November, February, and March than in pits heated with hot water; on the other hand, the hot-water pit during December and January is the most reliable for daily gatherings during the months just named. Twenty years ago the cultivation of Violets was not so generally understood as it is now. In those days it was quite exceptional for growers to give them anything like the special cultivation which they get at the present day. The demand for them has continued to grow so steadily, that in many private establishments it is found that if through any unfortunate circumstance they are not supplied, great disappointment is the result. Marie Louise, Neapolitan, and Comte Brazza's White are undoubtedly the best varieties for frames. The Czar, Victoria Regina, and Russian (double and single) are all most useful on sheltered borders for autumn and spring gatherings. A fresh plantation should be made annually; the plants intended for lifting in autumn should now be growing freely on a nice, moist border. The Violet border here is 12 feet wide, and is behind a south wall. At this season it is but little shaded, but it is pretty well understood that the kind of border alluded to retains moisture better than the open quarters of the garden. Indeed, the stronger and more retentive the soil, the greater is the amount of sunshine that the Violet will bear. A mulching, consisting of a good dressing of leaf-mould, sand, and burnt garden refuse,

* Drawn from plants sent from Lord Suffield's garden, Guntou Park, Norwich, Jan. 15 30, 1885.



THREE DOUBLE VIOLETS

1. COMTE BRAZZA'S WHITE NEAPOLITAN 2. NEAPOLITAN 3. MARIE LOUISE



applied now will be found to be very beneficial, and helps greatly to produce healthy plants, with good, prominent crowns that never fail to yield in their season large flowers, and plenty of them.

Guntton Park.

WM. ALLAN.

NOTES FROM NEW ENGLAND.

HYBRID GIBRALTAR CANDYTUFT.—As you intimate (p. 412), this is a good thing. I grow it in a cold frame for cut flowers. It grows freely, blossoms copiously, and its flowers are more appreciated than those of any of the Candytufts. It is not hardy here. I have grown it for four years. Raised from seeds or cuttings in early autumn, wintered in a cold frame, and planted out in a warm nook in spring, it blossoms superbly until the middle of June.

RUE ANEMONES AT HOME.—In moist places in our woods, rising from a spongy surface of leaf mould or slender Grass, the Rue Anemones spread about in ample colonies, their associates, blue Violets, Jack-in-the-pulpit, painted Trillium, Star-flower, and Pyrola. Often we find the yellow Adder's-tongue and Wood Anemones in abundance near it, and Partridge-berry spreading over the ground among it and about it. The single, semi-double, and double are common in our woods. As you suggest (p. 412), the mixed border is no place for it. Plant it in some slightly shaded nook, mulch it with leaf mould and chopped Sphagnum Moss, and let it alone.

OUR WILD PLANTS are not jumbled up together in our woods. They occur in broad patches or colonies, some one kind prevailing. The Rue Anemones are seldom mixed up with Wood Anemones or Adder's-tongue, although these may occur in large quantities near them, and the fringe of the one may sometimes, however, interlace with the fringe of the other.

AMERICAN DICENTRAS.—As a robust or showy garden plant I would not recommend Squirrel Corn (*D. canadensis*); it is useless in the open border. In the shady rockery or studded with other little flowers into a choice shrubby carpet where it may stay undisturbed it is well and appropriate enough. Dutchman's Breeches (*D. Cucullaria*) wants a similar place. It is pretty for a little while in spring, but its leaves and flowers quickly fade and die away. As an annual or biennial, *D. chrysanth* has done well with me, keeps fresh and in bloom a long time and its flowers are bright and pretty; still it is too coarse and spreading to grow among choice plants. *D. eximia* is a desirable perennial. Its leaves and flowers are pretty. It comes into blossom in April and keeps on blooming till October. It is neat, dwarf, dense, and slightly spreading, and is quite at home in our open borders. "K." (p. 413) says *D. formosa* is dwarfer than *D. eximia*. Now, I have grown masses of them side by side for years, and I find *D. formosa* to be the stronger growing of the two; its flowers and leaves are also paler than those of *eximia*, and it does not last so long in bloom. *D. eximia*, in my opinion, is the better plant of the two.

PODOPHYLLUM EMODI.—I am glad Mr. Wood (p. 415) finds that "the cultivation of this plant is not at all special." I have grown it for years, kept it alive rather, and have come to the conclusion that I do not know how to grow it. Our native Mandrake in sunshine or shade grows and spreads with the vigour of a weed, but this Himalayan stranger is unhappy; I will not say in ill health, because it holds its own, but I have failed to impart to it that sturdy vigour that would make it beautiful.

WILD VIOLETS.—If "J. C. B." (p. 416) were to get seeds of *Viola canadensis* (white) and *V. pubescens* (yellow), and scatter them among his blue Violets, he would add variety to the mass. These two Violets are only to be depended on as self-sown plants, and once established, if let alone and preserved from being choked by weeds, you shall have them always.

CONTE BRAZZA'S VIOLETS (BLUE AND WHITE).—Miss Dove, of Boston, sent a quantity of these home from Italy last year. Her gardener, Mr. Meston, tells me that their flowers are exceptionally fine, and

of the two the white-flowered variety is the most vigorous. He grows also the Swanley White, but finds Brazza's a finer and larger Violet.

AQUILEGIAS.—"A. D." (p. 416) complains that *A. glandulosa* gradually dies away. I never trust an old Columbine; I treat my Columbines as biennials. After the second year false wireworms prey upon the roots, and many of the plants become enervated and disabled; therefore I have long ago ceased to treat them as reliable perennials.

DOUBLE CINERARIAS.—Like Mr. Forbes (p. 418), I much appreciate these when I get them. As cut flowers, they last longer in perfection than do the single ones, also they last longer, too, upon the plants. But I find that not to per cent. of the seedlings come full double. Altogether, I cannot look upon them as a success; a good double is a desirable flower, but a semi or poor double is, when compared with the lovely singles that are grown now-a-days, a very wretched bloom. You may tell me to perpetuate my stock of doubles by slips from the old stools, and to which I would reply that Cinerarias refuse to be comforted in the nineties of our summers.

RUBUS SPECTABILIS.—"Alpha" (p. 426) must be ill off for a garden shrub when he chooses this. A mixed shrubby jungle is where we often find it in gardens, and such a shrubby should have no existence. Isolated anywhere in the garden, it is not prepossessing, and when planted among other shrubs it becomes a land-grabber and a nuisance. Yes, it is North American, but we repudiate the nickname "Bramble."

EARLY-FLOWERING MAGNOLIAS.—Apropos of "H. P.'s" remarks (p. 426), I would say that with us *Magnolia stellata* or *Halleana* came into blossom a week earlier than did *M. conspicua*. Although the flowers open wide and are pretty and borne in profusion, they are far from being as showy as those of *conspicua*.

RED-BERRIED ELDER (*Sambucus pubens*).—I have never been in Norway; therefore, unlike "F. W. B." (p. 438), my slumbers are unbroken by dreams of scarlet Elderberries, as seen in such a far-off vigorous land. But we have red-berried Elders here at home. The berries do not wait till autumn though, but assume their brightest hue, even in their mountain homes, in June and July. I have found this Elder commonest and prettiest in the valleys between and along the flanks of the White Mountains, and nowhere more abundant than in the Crawford Notch. Growing as it does among other shrubs and vines and low trees and in dense thickets, its ample bunches of brilliant berries, so abundant and displayed above the mass of green and healthy foliage, produce a vivid and most telling contrast. Still, I would not recommend it or any other Elder known for use in small gardens. In extensive gardens, the wild garden, and in open rocky places in woods it would be quite appropriate. We have so many really beautiful shrubs to select from for small gardens, that I think Elders, Sumachs, and the like had better be omitted.

FLOWERING DOGWOOD (*Cornus florida*).—"F. W. B." (p. 437) says this "is a curious plant quite common in gardens, and yet rarely seen in flower." It is very abundant in our woods and by the waysides, and now (latter part of May) is in full blossom around here everywhere. In a wild state it blossoms most profusely, and when in bloom is exceedingly showy, and attains its greatest perfection and beauty along the margins of woods. In cultivation it grows and blooms quite freely, but away from the shelter afforded by other trees, its flowers never seem so perfect as they do on the trees in the woods. In our grounds we have well-nigh a hundred little trees of it; we have also Meachan's weeping form, which is sharply pendulous and very distinct, and as copious a bloomer as are the ordinary wildlings; we have, too, Parson's red-blooming variety in flower. It is also a copious form, as vigorous as the white, and a valuable acquisition.

HARDY ORCHIDS.—Apropos of "K.'s" remarks (p. 440), I would say that among the thousands of *Goodyera pubescens* I have found growing wild I never got one plant of it growing in a bog. It grows

in the woods, mostly thinly shaded, and on hillsides or slopes under the Oaks or Chestnuts or Pines, and together in patches or scattered colonies. The ground may be dry and loamy beneath it, but the surface is matted with decayed leaves or twigs, or other vegetable matter; and in winter the lately-fallen tree leaves cover over and protect the little gems from biting winds. Among *Cypripediums* I have had *spectabile*, *pubescens*, *parviflorum*, *candidum*, and *arictinum* grow and flower as freely in cultivation as in a wild state; but not so the commonest one of all—namely, *acaulis*. It will thrive very well for a year or two, but ultimately disappears. "K." must be more successful with *Arethusa bulbosa* and *Calopogon pulchellus* than I ever was. As hardy Orchids I have failed with them. For a year all is well; the second year they may again appear, but the third year they seldom respond to my coaxing. As pot plants, however, they are more amenable.

THE YELLOW WATER LILY (*Nymphaea flava*).—I was much interested in your figures of this Lily (p. 439), as I believe the first plant to bloom outside of its native waters in Florida was that which flowered in the Harvard Botanic Garden in the spring of 1878. It was sent hither to Prof. C. S. Sargent by Mrs. Mary Treat, its re-discoverer. I found that in the greenhouse old plants blossom freely, young ones sparingly; that it has a great tendency to elevate its crowns in stilted-up fashion, as shown in your engraving; that it multiplies and spreads exceedingly by means of "runners"; and that if the rootstocks are kept beyond the reach of ice in winter, it is quite hardy in the Northern States. It spreads into wide patches, and blossoms year after year with us in a little out-door pond at Cambridge. Its blossoms are small and less conspicuous than those of our other hardy or common tender *Nymphaeas*, and on out-door grown plants are not produced before late in the summer.

CINERARIAS AND APHIDES.—"S. D." (p. 447) speaks of fumigating with tobacco. Now, I grow a good many Cinerarias and *Calceolarias*, but I do not fumigate them till they come into bloom and are removed to a roomy greenhouse among other gay and seasonable plants in flower. I raise them from seeds, and in their earlier stages and until hard frost sets in in December grow them in cold frames; then I remove them to a low pit where they are near the glass and a minimum temperature of 35° is maintained. During all this time the floor of the frame or bench of the pit is covered with a thin layer of tobacco stems. The vapour arising from these moistened stems effectually keeps off aphides. These stems are the midribs of the tobacco leaves, and commonly known as "factory trash," and are to be had at any cigar factory for 25 cents a bushel, or 1 cent a pound. These, too, are what we use for fumigating.

ALABAMA SNOW WREATH (*Neviusia alabamensis*).—"T." (p. 447) is greatly disappointed with this new American. Oh, no; Alabama Snow Wreath is no misnomer, at home at any rate. It blossoms here in May at the same time as *Exochorda grandiflora*, a little later than the double-flowering Almonds, and sooner than *Spirea Reevesiana*. True, its blossoms when they first appear are green; so too, are those of *Hydrangeas*, flowering Dogwoods, and some other shrubs, but, like them also, as they advance in age they become whiter, till they form the fleecy snowy wreaths which the name implies. I have grown it in the open garden for several years, where each succeeding spring it emerges from a below-zero winter apparently unscathed. But it is most copious and showy when grown in an open, warm, sheltered spot and in well drained ground, but rain upon the blossoms mars them sadly.

LABOURERS.—"No labourer should ever be allowed to touch a flower bed, except to pull up a weed" (p. 411). This advice won't do for us in America. I have fifteen men, and all are labourers; and my experience is that a smart, handy labourer is a useful man.

TREE-TOPS AS EDGINGS FOR WALKS.—"C. R. S. D." (p. 411) recommends tops or young poles of Larch or Spruce for edging kitchen garden walks. Oh, no, thank you! Let us have a prettier and better edging than that, or no edging at all. W. FALCONER.

FRUIT GARDEN.

SUMMER TREATMENT OF MELONS.

I AM sorry to see that the extension system of growing Melons finds but little favour with "J. S. W.," who has done more than anyone else to convince the present generation that the old restrictive system of growing or training fruit trees generally is radically wrong. That extension is unsuitable where house room is limited, and that it is, perhaps, not so well adapted for producing extra early crops as the older method of growing Melons, I readily admit; in fact, I stated as much when advocating the plan; but if "J. S. W." could pay a visit to Longleat during June or July, Mr. Pratt would be able to show him a houseful of Melons that would go a long way towards giving him a better opinion of this system of growing them. A heavier crop of fine fruit of the best varieties, including Hybrid Cashmere, Eastnor Castle, and a good cross effected between the two by Mr. Pratt, it would be difficult to find. Some are fully matured, some about the size of hens' eggs, and plenty between the two sizes, thus indicating a long succession of high class fruit. It cannot be too often stated that Melons rooting in a heap of litter besides loam, no manure or decaying heating material being underneath, must receive the most liberal treatment; not only must an occasional shift or widening of the heap of soil be carried out, but they will also require an occasional top-dressing of rich compost as well as abundance of water. At Longleat, well pulverised dry earth-closet manure is given in the form of a top-dressing, but as we cannot procure this, we substitute leaf-soil and a liberal sprinkling of Beeson's manure, varying this with a top-dressing of soot, as well as an occasional supply of diluted farmyard liquid manure. Thus supported, the plants continue vigorous and in good health as long as we care to crop them, and not a fruit cut is of inferior quality. Whatever method of growing Melons is adopted, they should be encouraged to keep rooting near the surface. Once the roots leave the mound of loam and spread into the decaying manure underneath, the grower's troubles are almost certain to commence. The roots are always inclined to find the moistest localities, and these are too often buried out of the reach of the highest temperatures; hence many a sudden collapse of the whole plant takes place. Keep the exposed mounds of soil uniformly moist, no drying off being attempted; give an occasional thin surfacing of rich compost similar to that above recommended, and the roots will take possession of it as readily and as thickly as do roots of Cucumbers and Tomatoes when top-dressed. Two and even three crops of fruit may thus, provided the plants are kept clean, be secured, and all of the best quality.

MELON SUPPORTS.—Nearly every grower has a favourite contrivance for supporting the fast maturing fruit, including baskets, boards, and nets, while others are content

to use nothing but matting or string. I consider the simplest plan the best, and I am also of opinion that we are apt to support Melons long before they require that assistance, the consequence sometimes being malformed fruit. One noted grower, a friend of mine, never supports his fruit in any way beyond the strong ties requisite to secure the fruiting growths to the trellis. When allowed to hang naturally, the ligaments connecting the stalk and fruit appear to acquire increased strength, and to be fully capable of supporting the fruit till quite near the ripening point. When this is reached, the Melon, unless at once cut, must fall, but this can be anticipated by cutting; nothing is gained in fact, the quality may be injured—by allowing it to be left too long attached to the plant. I have not yet had courage enough to dispense with supports, but I use string only, and not that till the fruits are fully developed. A noose is formed so as to fit closely about one-third up the fruit; to this are attached three strings at equal distances apart, and these are tied to the trellis above in such a manner as to distribute the weight equally amongst them. Small twine will support fruits eight pounds in weight, and we have never lost one owing to its slipping out from this simple support. Some sorts of Melons, notably Blenheim Orange, Hybrid Cashmere, and Hero of Lockinge, are improved by being kept about three days before they are eaten, while others are best when fresh cut. The grower should settle this point for himself as far as he is able, as not a little depends upon the judgment exercised in this matter, especially when Melons are required for competition.

INSECT PESTS.—Our greatest nuisance is the black aphid, which I am informed has for many years been most troublesome in the houses here. If observed before it gets strongly established, a dusting of tobacco powder will sometimes rid us of it, but as a rule nothing but frequent fumigations will exterminate it. One thing is certain: it must be kept down, or there will be a poor crop of Melons, as it cripples a plant very quickly. I have tried various insecticides, but these only destroy some of the pests, and those merely dislodged and spread about soon start a colony on their own account. Mealy bug seems particularly happy on Melons, spreading at an amazing rate and soon attaining a great size. Insecticides used rather stronger than usually recommended by the vendors will destroy this bug, and so also will petroleum used at the rate of two ounces to a gallon of hot water in which has been dissolved a lump of soft soap near the size of a hen's egg; this mixture should be constantly stirred with the syringe while being applied. This and other insecticides are best used in dull weather; otherwise the plants must be shaded from bright sunshine. I do not, however, recommend strong and dangerous insecticides, as they all are more or less injurious if good for anything; unless the plants are very badly infested, it is much the best plan to catch and kill the bugs before they have spread all over the house. Thrips

we prefer to keep down by means of fumigation, as tobacco water and other washes usually disfigure the foliage. Red spider is perhaps most generally dreaded, as there are very few Melon plants that are not infested by it. Prevention in this and all other cases is better than cure, and after all red spider may be kept out of the house. A dry heat is the most certain breeder of it. On bright sunny days the fires should either be allowed to go out, or the top heat, where practicable, should be turned off, and unless this is done it is next to an impossibility to keep the plants clean. The pipes being cold or nearly cold, much less air need be given, and this renders it a comparatively easy matter to maintain the requisite moist atmosphere. If the plants are kept growing strongly and frequently syringed, the floors of the house being also frequently damped down, no red spider need be feared. Should it, however, effect a lodgment, flowers of sulphur is the best remedy. A handful worked through a muslin bag into a gallon of water, well stirred, and then applied to the foliage with a syringe, repeating the dose next day if it is found that the leaves are not well coated with the sulphur, will generally check the ravages of the spider if it does not actually destroy it. The sulphur should not be syringed off, as it does not injure the foliage, and is most distasteful to the spider.

CANKER annually causes the loss of great numbers of Melon plants, and one form of it, or that which affects the joints of the laterals as well as the main stem, is incurable—at least, I have not been able to save plants badly affected. Grossness, a high temperature, and a moist atmosphere would appear to be the cause of this rather strange disease, and where it unfortunately breaks out I would advise that more air be given and less moisture both at the roots and in the atmosphere. Ordinary canker, which usually commences at the joints either partially buried or just above the soil, if perceived in time is not so very difficult to combat; we have frequently preserved affected stems till the crop of fruit has been perfected. From the first the lateral growths should have been kept closely rubbed out of all the joints below the trellis; the wounds then heal naturally and quickly; whereas if the shoots are allowed to grow to a good size and are then cut away, or perish naturally from being shaded heavily, the wounds do not heal properly, and the decay is apt to spread to the stems. Decaying leaves may also similarly affect the joints, and too much moist soil about the lower portion of the main stems will sometimes cause canker. Grossness, brought about by allowing or encouraging the roots to spread into the manure of the hotbed, greatly encourages the enemy, and even the very mounds of sand, sulphur, or lime, not unfrequently placed round the stems as a preventive, may become a source of danger directly they get saturated. The stems should, therefore, be exposed as much as possible in order to harden them, and the decaying leaves must

be watched closely, especially if their stalks become rotten rather than shrivel, as we prefer them to do. On the first signs of canker the affected parts should be carefully scraped, and then thickly coated over either with Portland cement or a fine powder obtained by scraping unslaked lumps of lime. Either of these powders will dry up the viscid matter exuded from the wounds, and if they are cleared off and renewed directly they become moist, if they do not actually heal the wound, the spread of the canker will at least be checked. Cracking of the fruits may be prevented and lessened by giving rather less moisture to the roots as well as about the house, and the maintenance of a rather lower temperature with more air is also advisable. W. I. M.

5359.—Small v. large Grapes.—

Size of bunch, if not mediocre, does not affect the flavour of the berries. Full-sized berries of any particular kind of Grape are, however, to be preferred, as they contain the greatest quantity of pulp in proportion to skin and kernel. Small, stoneless Grapes are sometimes very sweet, but they do not possess the fine vinous flavour met with in properly fertilised average-sized berries. Much, however, depends upon cultivation, as highly stimulated Vines do not produce such rich Grapes as others that are grown well in good loam, and not overfed with liquid manure. "R." should bear in mind that he must not compare the bunches or berries from one Vine with those from another, although they may be growing side by side, unless he knows for a fact that they were originally propagated from the same parent stock.—W. COLEMAN, *Eastnor Castle, Ledbury.*

Gooseberry fungus.—I send you some Gooseberries affected by some orange-coloured spots through which in some parts the crop is a failure. We have had a cold wet spring, and we think that might have caused it; also some sharp late frosts.

. The Gooseberries sent are suffering from a very bad attack of the parasitic fungus named *Æcidium grossulariæ*. This disease, which also attacks Currants, has been unusually virulent and wide-spread this season. All diseased fruits and leaves should, if possible, be gathered and burnt.—W. G. S.

ANEMONE-FLOWERED CHRYSANTHEMUM LADY MARGARET.

THE annexed engraving shows the natural size of a variety of *Chrysanthemum* belonging to the Anemone-flowered race or section. The outer or guard florets are pure white, and the central raised cushion is also of snow-whiteness the habit of the plant being

the way in which *Chrysanthemum* flower-buds increase in size under the influence of a solution of sulphate of ammonia is something wonderful, especially if a proportion of small charcoal or wood-ashes has previously been mixed in the soil in which the plants are grown. Lady Margaret and other varieties of *Chrysanthemum* are grown

uncommonly well by Mr. May, gardener at Northaw House, Barnet, whosent the flower from which the engraving was made.

Anemone-flowered varieties of *Chrysanthemum* are so strikingly lovely and so different from the more popular incurved or Japanese kinds, that one the more regrets that they do not occupy a more prominent position at our exhibitions of this popular flower. There is a way, however, of improving matters. One must offer prizes for groups of their flowers and for well cultivated plants of them, and we may succeed in inducing some enthusiast to take up their culture as a speciality just as Mr. Scrase Dickins has done for those most lovely of all Chinese wild flowers—single Camellias.

In the salon the other day I could not help remarking the popularity of the *Chrysanthemum*; indeed, in France our autumn or winter queen is fairly on a level (so far as

her portraiture is concerned) with the Rose and the Pæony, which is saying a great deal, seeing that she has but quite recently been liberated, Andromeda-like, from the hard and fast rock to which the florists had bound her. It was a little consoling to notice that no Fantin or Seclair had selected the incurved *Chrysanthemum* as their model. They seemed to have hesitated at this, just as Millais or Leighton hesitate at rotundity and obesity in



Anemone-flowered *Chrysanthemum* Lady Margaret; snow white. Grown at Northaw House, Barnet.

most floriferous under good culture. This reference to "good culture" reminds us how much the perfect development of any variety depends upon cultural attention, since even a poor variety of *Chrysanthemum* may, in the hands of a good grower, become something superb and almost unrecognisable when compared with the same kind grown in the ordinary way. But few other florists' flowers delight so much in rich living, and

their fairest portraiture; but of dainty pompons, of Japanese kinds many and varied in frill and tassel and twisted fringe, and of these semi-single, or Anemone-flowered, kinds, there is nothing lacking. Yes; we must ask some one to take up Anemone-flowered Chrysanthemums as a speciality, their loveliness when well grown being most satisfying. Only to-day (June 20) I read of the lovely Coquette de Castile being in flower, and its grower hopes for other equally Japanese kinds to be in bloom during July, August, and September. So do I; but, moreover and further, I hope we may have ere long beautiful late-flowering kinds giving us flowers in plenty during January and February, just when flowers are most in demand. The evidence of increasing popularity in store for this our flower of winter is most cheering. On all sides we get news of progress—France, Belgium, Guernsey, Jersey, and America, while some of our nurserymen are going back to first principles and are importing plants direct from China and Japan. Let us hope that when the Pears and Potatoes and Primroses have been put straight by the congresses deputed to deal with them, that this our favourite queen of winter, the Chrysanthemum, will have a congress in her turn.

F. W. B.

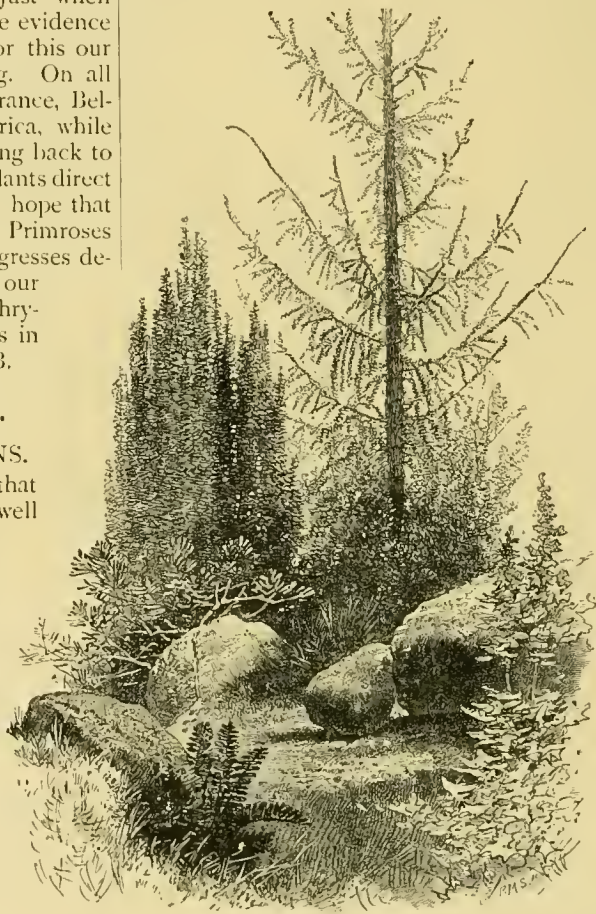
TREES AND SHRUBS.

BOULDER ROCK GARDENS.

SINCE the miserable rockeries that used to disfigure our public as well as our private gardens have been ridiculed, one sees here and there much improvement in the direction of rock gardens for alpine plants, perhaps on the whole the most charming type. Apart, however, from the true rock garden calculated for choice or alpine plants, rock gardens may be divided into two other groups. There is the intermediate one in which all the delightful mountain shrubs may be grown, such as many of the rock bushes full of brilliant flowers, like the alpine Rhododendrons, the dwarf Azaleas, the larger Heaths, and the trailing and other shrubs which are happy in such situations. Secondly, and lastly, the boulder type of rock garden in which natural or artificial boulders are scattered about in a picturesque manner. Among these one may tastefully plant a different kind of vegetation—the beautiful dwarf or weeping tree, the Pine, the Juniper, the graceful Cypress, and even the flowering tree. Anyone who will remember Robert Maignan's lovely picture in the Luxembourg in Paris, the scene of which is laid in an orchard on a rocky hill side, would not hesitate to put some of the bright Apple trees or their allies in such places. The Pine is the child of the mountain, and therefore in its smaller and choicer forms it is never more happily placed than in such

positions as we illustrate. So, too, the very choice Yews, such as the seedling Golden Yews, which we are glad to find are beginning to be noticed, the Irish Yew, and almost any kind of coniferous bush or low tree. There are also the many Evergreens, Japanese, European, Asiatic, Australian, and some of the cool parts of South America. The Pampas Grass and the New Zealand Ilex are used with good effect in such positions, as are the various Yuccas, extremely picturesque in bold free groups.

THE WILLOW AS A SEASIDE TREE. NEITHER as an ornamental nor as a timber



Trees on bold rocky ground.

tree is the Willow very extensively grown, unless upon the margins of lakes and rivers, for which situations it is well adapted, and as it grows nearly as fast as a Gum tree does under the most favourable circumstances, it soon forms a cover; but we are not so sure that its excellence as a seaside tree is so well known, or that it is used as extensively as it might be for sheltering purposes near the sea coast; yet it would appear to be one of the best for this purpose. Travellers on the Lancashire coast, between Blackpool and Southport, cannot but have noticed how extensively the Willow is planted in belt lines to protect plantations and gardens from the sea breeze, which frequently sweeps along this part of the coast with unusual severity, and how well it grows in the light sandy soil of the district.

In some places it is growing on what were a few years ago nothing but sand-banks. At Lytham, the Willow is planted on all sides near the sea for shelter, and though it is only some few years since the gardens here were made and planted, and though the soil is very poor, the Willows are now 20 feet or 30 feet high, and give a wavy, feathery lightness of aspect to the scene, and an ornamental appearance to the grounds which one would not think could be produced by the Willow under such circumstances. Here and elsewhere in the neighbourhood the Elm, Beech, Sycamore, Oak, Laburnum, and other deciduous trees are as brown and withered in foliage during the summer as if a severe black frost had passed over them, and show generally how ill the situation suits them; but the Willow towers aloft, and is green and luxuriant to its topmost branches. Around Clifton Hall and close to the sea the plantations are all protected in the same way from the blast. In some places the Willows appeared to be of a good age, and were considerably taller than the Spruces, Oaks, and other trees which they guarded from the storm. The Poplar seemed to stand the blast next best to the Willow, and afforded variety; but this also suffers visibly from the gales.

For general planting, however, near the sea the best subjects are evidently to be found among Evergreens, though some of these do not appear to thrive any better than the deciduous trees, and among the worst is the Portugal Laurel. Within the shelter of the low walls in front of the villa gardens facing the beach it grows, but above the shelter of the wall it makes no progress, and the tops look as if they had been scorched by fire. Beside the Laurel, and fully exposed to the blast—and we should say within reach of the spray from the sea—the Laurustinus thrives amazingly, making a large and densely-furnished bush, such as is seldom seen in inland situations. It is quite a substitute for the Laurel. The Aucuba japonica does well, the Hollies middling, and, what is rather remarkable, the golden variegated kinds seem to grow better than the green ones. The Sweet Bay, Arbutus, evergreen Oak, and Privet also do well.

NOTES.

MARKETING HOME-GROWN TIMBER.—The idea of selling direct to the consumer is a taking one no doubt, but before it can be carried out considerable changes in wood management would have to be effected in all that relates to the felling, cutting up, and storing of the timber. The timber merchants have it in their own hands at present, and they can afford so many facilities to buyers, that it is doubtful if the producer could compete with them successfully. On large estates, with the aid of a sawmill, very often worked economically in connection with the thrashing mill at the farm, much of the home-grown timber can be and is used for common purposes, and in the busier

centres of industry where the coal and iron is worked large quantities are disposed of to the consumer, but these may be said to be exceptions. In the out-of-the-way parts of the country, where the timber is often most abundant, the cost of transport comes in to reduce the profits. The only apparent course open to the producer is to use the timber at home as far as possible, and dispose of it to local tradesmen and manufacturers, but he would first have to cut it into convenient logs in many cases, as the timber dealer does, and that would involve changes in our present system of management. Y.

Larch bark is not generally known to be one of the most useful materials for making roofs to summer houses, sheds, &c., having the advantages of being easy to put on, lasting well, and looking well. Trees cut in the middle of winter will "flaw" well if left till midsummer; the bark should then be taken off in square or oblong sheets from clean stems free from knots and branches, and as soon as stripped laid flat with a heavy weight to prevent its curling. Any rough poles or strips of wood with a smooth side will do for rafters, on which the bark should be nailed with a good "lap." Such roofing will last ten or fifteen years in good condition, and its appearance, apart from its economy, is quite sufficient to recommend it wherever obtainable. It does not become untidily like Heath thatching, from being scratched about by the birds, and being very light does not require the strength in the woodwork that tiles would.—C. R. S. D.

Oak bark I stated to be selling at £13 a load (2½ tons), and this is questioned, either as a misprint or a mistake on my part. When I wrote it at the beginning of the season it was the first sale of which I had heard this year, but I had my authority that such a price had been given. I am afraid that such good values have not been realised in all cases since then. The price quoted me from the London dealers in Bermondsey was £13 10s. a load delivered "for best Sussex bark." Allowing somewhat under £1 for the carriage, &c., this would bring the actual value down to something over £12 10s. Whether Sussex bark fetches more than that from other counties I do not know, but its proximity to London is no doubt a point in its favour, which may enable us to make it pay better than those in the north of England can do.—C. R. S. D., *Sussex*.

The Fringe tree.—As generally seen, this is a not particularly showy deciduous shrub. When, however, it is placed in fairly favourable conditions and allowed to develop, it makes a splendid object, one of the most beautiful of cultivated shrubs or small trees. A number of large specimens at Mr. Anthony Waterer's nursery at Knap Hill were, a week or more ago, one mass of snowy white. This is eminently a subject for damp spots in the park or by the side of ornamental waters where it could be allowed to grow freely without interference. In Southern Pennsylvania and southwards it affects river banks, where it frequently attains a height of 20 feet or 30 feet. In Loudon's "Arboretum," the date of the introduction of the Fringe tree—or, as Loudon calls it, the Virginian Snow Flower—is given as 1796, but a memorandum by Peter Collinson, in "Hortus Collinsonianus," shows that this charming tree had found its way to British gardens long before then, as a specimen Collinson himself had raised from seed was in flower on June 9, 1760. There ought to be some fine examples in cultivation in old-fashioned places, and it would be interesting to have details concerning them. A Japanese species, *Chionanthus retusa*, is, if anything, even a more handsome shrub than the North American Fringe tree, *C. virginica*; it was introduced to this country many years ago by Robert Fortune, but seems to be very rare in cultivation. Some fine specimens of it have been sent to us by Mrs. Bullar, of Bassett Wood, Southampton, where there is a bush of it from 10 feet to 12 feet high, and which is now in full bloom.

RHODODENDRON SHOWS.

THE Rhododendron show in Regent's Park Botanic Gardens, carried out annually by Mr. Anthony Waterer, of Knap Hill, seems to be finer than usual this year. The appearance of the capacious tent under which the plants are placed has been materially improved by a few alterations in the arrangement of the main groups, and the harmonising of the tints seems to have been more carefully studied than heretofore. For the past two or three weeks this tent has afforded a lovely floral sight, and though the bulk of the plants is past their best, there are numbers yet in their prime, and the latest of all will carry the flowering season into July. At this show Mr. Waterer generally contrives to display a representative selection from the numberless varieties of both Rhododendrons and Azaleas which he grows at Knap Hill, and one is sure to find a large number of new seedlings, named or unnamed, always improvements on older kinds, although it is difficult to imagine how some of the old standard sorts can be surpassed. Among the newer sorts, one of the best is named Martin II. Sutton. It has a massive truss of large finely-shaped flowers of a bright crimson-rose. Equally pretty is one named Sylph, which is unquestionably the best of the self-coloured or spotless-flowered sorts. It is a clear rose-pink, and stands out distinct from all the rest. The best of the white varieties, in our opinion, is Sappho, which has a large compact truss of snow-white flowers heavily blotched on the upper petals with purplish black. Other first-rate sorts conspicuous in this collection are King of the Purples, the finest of that colour as regards size and effectiveness; Marchioness of Lansdowne, large pink and deeply blotched; James Marshall Brookes, a rich carmine-crimson with heavy blotches of chocolate; Alexander Dancer, bright rosy pink with pale centre; F. D. Godman, soft crimson, conspicuously blotched; Mrs. John Clutton, one of the loveliest of white sorts; H. H. Hunnewell, deep rose-crimson; Mrs. Harry Ingersoll, rosy pink with a pale yellowish centre; Sigismund Rucker, rich magenta heavily blotched, one of the finest. These are but a few of the crowds of beautiful varieties which make up this display, and though prominence is given here to the newer sorts, the fine standard specimens of the better-known kinds must not be overlooked. Amongst these none are more beautiful than *Roseum elegans*, *Everestianum*, *Lady Eleanor Cathcart*, *Michael Waterer*, and others.

The Cadogan Square Rhododendron Show, furnished as usual by Mr. John Waterer, of Bagshot, has afforded a rendezvous for lovers of this handsome flowering shrub for the past fortnight. It is as extensive as ever, and contains the cream of the varieties raised by this and other firms. The tasteful way in which the planting is done on gently undulating mounds has an extremely pretty effect, particularly on a bright day. This firm also has exhibited some fine seedlings this year, but none surpasses such grand sorts as *Kate Waterer*, sent out from the Bagshot Nursery some few years ago, and figured in THE GARDEN, Vol. XVI., p. 208. It is the embodiment of a first-rate Rhododendron as regards habit of growth, size of truss, and flower; while the colour, a beautiful soft pink, is a charming contrast with the pale yellowish green blotch which adorns the upper sepals. Most of the sorts mentioned above are also contained in this show. A few of the best of the others include such sterling sorts as the following, viz.: The Queen, a most beautiful white kind; John Walter, a rich crimson-magenta, fine in truss and remarkable for its vigorous growth; Baron Schroeder, one of the deepest of all the purple sorts; Mrs. Russell Sturgis, white, heavily spotted with cinnamon-brown; W. E. Gladstone, one of the best of its colour; Madame Carvalho, a well known favourite white kind; Snowflake, pure white with an uncommonly fine truss; Princess Mary of Cambridge, rosy carmine with white centre; and Joseph Whitworth, still one of the finest dark sorts. Other sorts of which we made a note as being very fine this season were *Lady Olivia Guinness*, *Crown Prince*, *Mr. Charles Leaf*, *Mrs. W. Agnew*, *Sir Robert Peel*, *James Mason*, and *Fred Waterer*. The above-mentioned sorts form a representative assortment of the very finest of the Rhododendrons in cultivation, and no one need hesitate to plant any of them.

In private gardens near London in which the Rhododendron is made a specialty the show this year has been uncommonly good, notwithstanding the heavy falls of rain which we had about the time when they were in perfection and which injured the blooms a good deal. The plants under canvas have had therefore a great advantage this year over those in the open air, although the true test of a Rhododendron is its ability to withstand wind and rain and hot sunshine without much injury. Among the most noteworthy of the gardens to which we allude is that of Mr. McIntosh's, at Duneen, Weybridge, and that of Baron Schroeder's, at The Dell, Egham. In both of these gardens one may see the Rhododendron represented in perfection in wonderful variety, including the best of the old and the very latest novelty from the raisers. Baron Schroeder's garden during the Ascot week was a charming sight—lit up by thousands of Rhododendrons disposed in tasteful groups on the spacious lawns, and interspersed with ornamental Conifers and other trees, including some magnificent Cedars of Lebanon. Here one sees how to use the Rhododendron to good effect by harmonising and contrasting the colours in isolated masses. For example, there is a large bed of the lovely White Queen variety associated with the deep claret-purple sort called Baron Schroeder. Now, too, when the glow of the Rhododendrons is getting over, the Kalmias, of which there are some fine groups, are just in perfection.

TREES FOR AVENUES.

In a note upon trees for avenues "Y." states that the old method of planting trees in rows has largely given place to the more ornamental way of planting trees in clumps, but that plan is not practicable where areas are limited. I think it would have been excellent advice had he said that in limited areas avenues of trees were undesirable and should not be planted. If such combination of trees have any good features, certainly they can only be found when seen in extensive domains. On the other hand, the planting of trees in clumps is equally applicable to large and small areas if the clumps and the trees forming them be proportioned to the areas planted, or rather ornamented. No doubt the planting of avenues of trees in straight rows, whether double or quadruple, as at Windsor, is a relic of the old style of gardening and park decoration introduced by the Dutch during the 16th century, but Dutch gardening is not now in accord with public tastes, and avenues of trees in lines are anachronisms. But if the method of planting in clumps be more pleasing and appropriate, it is still hardly desirable that the planter should be tied to one or even two kinds of trees, especially if the soil be of that kindly nature that it will grow Elm, Beech, Birch, Lime, and Horse Chestnut equally well. Clumps of such noble trees alternating would give an element of grandeur and variety to any demesne, the which is always lacking in a monotonous avenue of trees of any one kind. After all, the close lining of some road or carriage way with trees planted in any style means too often the shutting out from view many beautiful vistas beyond and a curtailing of the foreground that is very undesirable. Good planting should favour an appearance of extent rather than of contraction, and therein lies much of the art of landscape gardening.

A. D.

GOLDEN CONIFERS.

PLANTED with discretion and in well-chosen positions, the numerous Conifers having their foliage suffused with a golden yellow tint are capable of producing admirable effects in the home landscape, such as can be obtained by few other ornamental trees and shrubs. They are at various seasons of the year particularly bright and cheerful, and, unlike variegated Conifers, they do not become disfigured under the influence of the hot summer's sun. At no time do the golden Conifers look better than in autumn and winter, and these are the seasons they are most required, hence their value. The now numerous list of these golden Conifers include some superior to others as regards the depth of colouring and its persistency. Among the principal varieties to be recommended are the following:—

ABIES EXCELSA AUREA.—This is a variety of the common Spruce, in which the young growths are of a bronzy yellow, but as the season advances the whole plant assumes the normal tint. Planted in bold groups among park scenery, the Golden Spruce is capable of producing a very fine effect.

BIOTA ORIENTALIS AUREA.—This is the old and well-known Golden Arbor-vitæ, which is often met with under the name of *Thuja aurea*. It forms a dense globular bush, with the young growing shoots of a bright golden colour, but as the season advances they lose their yellow tint, and by the autumn or winter the whole plant is quite green. The variety elegantissima is distinct and handsome, of a narrow pyramidal habit of growth, very different in all respects from the preceding. It retains its deep golden yellow colour during the summer months. *B. orientalis sempervirens* is a variety in which the golden tint is retained throughout the year, but is at its brightest during the season of growth. It is rather less spreading in habit than the common Golden Arbor-vitæ.

CUPRESSUS LAWSONIANA LUTEA.—This is by far the best of the golden varieties of Lawson's Cypress. It is free in growth and of a very graceful habit. The colour of this Conifer is a deep golden hue, which becomes more intensified as the summer advances, and never to my knowledge has the foliage been singed by hot scorching sun unless the roots were suffering from drought. In short, it is a very desirable plant from an ornamental point of view. *C. thyoides aurea*, also known as *Chamaecyparis sphaeroidea aurea*, has the young growth of a golden colour, which tint is retained into the winter.

JUNIPERUS CHINENSIS AUREA.—The golden variety of the Chinese Juniper is surpassed by no other Conifer of this class as a bright yellow-foliaged shrub, for, like the golden variety of Lawson's Cypress, full exposure to the summer's sun only tends to heighten its colour. *J. japonica aurea* is a golden form of *J. japonica*, which is somewhat in the way of a dwarf plant of *J. chinensis*, but the colour is not so deep or so long sustained as in the golden variety of the Chinese Juniper.

LARIX KEMPFER.—The Golden Larch forms a moderate sized tree of pyramidal habit. The leaves are arranged as in the common Larch, but they are much larger in all respects. Their colour when first expanded is of a yellowish green, but as the season advances they gradually become deeper in hue till autumn. This is the only deciduous species among Golden Conifers, and, at the same time, one of the largest in growth. It is also known as *Pseudo-Larix Kempferi*.

PINUS SYLVESTRIS AUREA.—The Golden Scotch Fir is a very ornamental variety, forming a dwarf bush, which towards the end of autumn assumes a deep golden tint and retains that colour throughout the winter till the return of spring, when it changes to the normal green tint, and remains in that condition throughout the summer till autumn again sets in.

RETINOSPORA OBUSA AUREA.—The Golden Retinospora is of a more fastigate habit and dwarfer than the typical form, from which it also differs by reason of the young growth being of a deep golden yellow. *R. obtusa gracilis aurea* is a very open graceful habited plant, which during the growing season has the young shoots suffused with a yellow

tint, but as the growth is matured it becomes green. *R. plumosa aurea* is a striking contrast to the last, having a somewhat pyramidal and upright habit of growth clothed with pale golden soft feathery foliage. As the season advances a good deal of the golden character is lost till the following year's growth commences. *R. pisifera aurea* has the foliage of a deeper colour than the preceding, and it is also of a more open habit of growth. *R. tetragona aurea* forms a dwarf compact bush of very slow growth, very suitable for rockwork, or in such spots where slow-growing subjects are desired. The young growth is of a golden colour, which resists the sun well, and retains its tint for the greater part of the season.

THUJA OCCIDENTALIS AUREA.—This is a dwarf golden variety of the American Arbor-vitæ, and one well worth cultivating. It is of comparatively recent introduction, and at present but little known. *T. occidentalis Vervaeana* is a free, slender-habited kind, in character a good deal like some individuals of the common American kind, but with foliage of a deep golden colour during the summer, changing in the winter to a yellowish brown.

TAXUS BACCATA AUREA.—The Golden Yew is too well known to need description; suffice it to say it is always brilliant and effective. There are several other varieties more or less golden or variegated, all of which are good, but this is the best. The variety of the Yew called *fastigiata aurea* is a golden variety of the Irish Yew. It is an effective plant and a valuable addition to golden foliaged Conifers. It forms a striking contrast as regards colour to the sombre type when planted near or alternately with it on a lawn or terrace. W.

SOCIETIES.

ROYAL HORTICULTURAL.

JUNE 23.

AMONGST the numerous new or uncommon plants and flowers submitted to the floral committee first-class certificates were awarded to the following:—

ODONTOGLOSSUM ELEGANS ALICE.—An extremely pretty variety, the counterpart of the rare *O. elegans* as regards form and size of flowers, but different in colour. The sepals are pure white, long and pointed, and are irregularly spotted and blotched with cinnamon-red. It is one of the most distinct and beautiful *Odontoglossums* that have been shown for a long time. Exhibited by Messrs. Sander & Co., St. Albans.

ANGULO RUCKER.—A fine specimen of this old Orchid, bearing about a dozen flowers, was shown by Sir Trevor Lawrence. It is singular that this handsome Orchid should not have been certificated before now.

STYRAX JAPONICUM.—An extremely pretty Japanese shrub, which has proved hardy in Messrs. Veitch's nursery at Coombe Wood, Surrey. It has long and slender much-branched shoots furnished with ovate foliage, and along the whole length hang, in graceful profusion, snow-white bell-shaped flowers, delicately scented. Shown by Messrs. Veitch.

EREMURUS AURANTIACUS.—A new Asphodel-like plant from Central Asia, presumably a hardy perennial, and if so, a decided acquisition. The flower-spikes are cylindrical, and the clear yellow blossoms with which they are furnished being numerous gives them quite a feathery appearance. The spikes of this, shown by the New Plant and Bulb Company, Colchester, were about a foot in length and thickly covered with flowers.

CYMBIDIUM PARISH.—Not a new species, but an extremely rare one. It reminds one of *C. eburneum*, but the foliage is broader and the flowers somewhat smaller. They are of similar wax-like texture, pure white, the lip only being adorned with a golden crest, and spotted laterally with purplish lilac. Shown by Sir Trevor Lawrence, Burford Lodge, Dorking.

ODONTOGLOSSUM CRISPUM BRYMERIANUM. This is remarkable for the large size, perfect form, and distinct and beautiful markings of the flowers, which measure nearly 4 inches across; the broad sepals have each a large blotch of chestnut-brown on the interior surface, and are flushed exteriorly with

purple. It stands out conspicuously among the multitude of varieties of *O. crispum*. Shown by Messrs. Sander & Co.

MASDEVALLIA GAIRIANA.—A hybrid between *M. Veitchiana* and *M. Davisii*, and exactly intermediate between these two species, both as regards form and colour of the flowers. They are orange-yellow flushed with a purplish tinge. The plant of it, shown by the raisers, Messrs. Veitch, was too small and weak to judge of its merits as a garden plant.

ODONTOGLOSSUM MULUS GERMINYANUM.—This variety reminds one of a very fine form of *Wilkeanum*. The flowers are extremely large and the sepals long and narrow. Their ground colour is yellow; the outer three sepals are nearly covered with chestnut-red, the inner ones merely heavily blotched. The lip is precisely like that of typical *O. mulus*. Shown by Messrs. Sander.

OLEARIA MACRODONTA.—A New Zealand shrub belonging to the Compositæ. It bears small, Daisy-like, dirty white flowers, in dense flat clusters terminating the shoots. The leaves are silvery, like those of an *Elaeagnus*, and coarsely toothed. Its hardness is doubtful and not a first-rate shrub. Shown by Messrs. Veitch.

THUNIA VEITCH.—One of the prettiest and most elegant Orchids that has yet been raised by the exhibitors, Messrs. Veitch. It is a cross between the white Marshalli and the rosy purple Bensone. It is intermediate between the two in point of colour, the sepals being of a delicate blush tint, the lip crested with chrome-yellow. The flowers possess the fine form and large size of those of Marshalli, and hang on the plant in the same graceful way. The silvery foliage invests this lovely Orchid with an additional charm, and a bright future is anticipated for it.

ROSE PRINCESS BEATRICE.—A new Hybrid Tea-scented variety and quite an acquisition. The flowers are large and full, of exquisite form, with great substance and breadth of petal. The colour is a soft primrose yellow, delicately flushed with rose. Flowers in various stages were shown by the raiser, Mr. H. Bennett, Shepperton.

CANDYTUFT EMPRESS.—A variety of the Rocket Candytuft, remarkable for its large, dense conical clusters of pure white flowers; the finest sort perhaps yet raised. Exhibited by Mr. R. Dean, Ealing.

ODONTOGLOSSUM CRISPUM JOHNSONIANUM.—One of the group of varieties characterised by having the sepals of the flowers entirely covered with cinnamon-red and edged with white, as in *Veitchianum*. The flowers in Johnson's variety are below the usual size, but unusually finely formed and of thick substance. This and *Brymerianum* were by far the finest of a group of beautiful varieties of *O. crispum*, exhibited by Messrs. Sander & Co., St. Albans.

PELARGONIUM THISBY.—A distinct show variety, the pick of a large number of seedlings shown by Mr. Clay's gardener, Mr. Wiggins, of Twickenham. The blooms are large and finely shaped; the lower petals are white suffused with lilac, while the upper are heavily blotched and delicately pencilled.

The following were among other plants placed before the committee: Mr. Buchan, of Wilton House, Southampton, sent *Odontoglossum vellum*, which may be extremely rare, but not remarkable for beauty. It reminds one of a depauperated form of *O. polyxanthum*, the colour of the flower being much the same as in that species. Messrs. Veitch showed *Euonymus japonicus Silver Gem*, unquestionably a beautiful variety which we may expect to see and hear more of in future, and *Fagus sylvatica tricolor*, a variety of the common Beech, with rose-tinted leaves, pretty in the state shown. Among a number of forms of *Odontoglossum* shown by Messrs. Sander were some beautifully rose-tinted and spotted varieties, selected from among the thousands grown at St. Albans; also *O. Douglasianum*, which much resembles *O. gloriosum*, the exquisite little *O. blandum* and a new unnamed species nearly allied to it. The New Plant and Bulb Company showed a variety of *Cattleya Mendeli* named *delicatissima*, a very lovely plant having finely shaped blooms, most delicately tinted with rose, which renders it different from all others, and quite as beautiful as the much prized white form. The same firm also exhibited *Iris prismatica*, a pretty

North American species allied to *I. tenax*; *Cyclobothra alba paniculata*, one of the strongest growing and most floriferous varieties, with white globular flowers; *Calochortus Leichtlini*, a showy species in the way of *C. venustus*, but with smaller, almost spotless white flowers; and *Lilium Thunbergianum fulvum*, a variety with apricot-coloured flowers. Besides these the New Plant and Bulb Company showed a large collection of Japanese Maples (*Acer*), including about a score of varieties, which were submitted to the committee, all with elegant and richly coloured leafage. Mr. Little showed a richly coloured *Cattleya Mendeli* named *rosea superba*, which seemed to us to be worthy of the name. The singular and now rather rare *Stanhopea tigrina* was shown by Mr. Chadwick, and attracted a good deal of attention. Mr. Turner showed several new sorts of Pelargoniums, those named Mrs. Langtry, Ariadne, Penelope, and Mars, all fancy sorts, being particularly noteworthy; and Mr. Rumsey showed the double white zonal, named *candidissimum plenum*, one of the best of its class.

Fruit and vegetables.—A first-class certificate was awarded to Messrs. Paul, Cheshunt, for Strawberry Pauline on account of its extreme earliness. It is a long fruit, colours well, and is very productive. Several new Melons were shown. Mr. B. S. Williams, Upper Holloway, sent fruits of a new seedling called Harefield Grove. It is a large round fruit, well netted and white fleshed. Mr. Bailey, Frome, showed a fine fruit of Blenheim Orange; Mr. G. Taylor, of Lamport Hall, Northampton, sent a fruit of Melon Sir Charles, a smallish round red-fleshed sort; and Mr. Iggulden sent a large round white-fleshed sort, finely netted, from Marston House, Frome. A fine dish of Lord Napier Nectarine was shown by Messrs. Rivers, of Sawbridgeworth, which represented this fine variety in perfection. Mr. Laxton sent samples of his new Strawberry The Captain, for which he claims the position of being the finest Strawberry in cultivation, very early, and a most perpetual bearer. Mr. Barron showed, from the Society's Gardens at Chiswick, a large collection of Cauliflowers, including the newest and best sorts. The ordinary observer could not fail to be struck with the great similarity amongst numbers of these; in fact, several under different names are precisely identical. The Early London, Early Paris, and Erfurt Dwarf Earliest seemed to be among the best of the collection.

Plant and Flower Show.

In the programme of the present season's exhibitions that on Tuesday last at South Kensington was set apart for Pelargoniums, and, having regard to the liberal prizes offered, a good show of these was expected. Such, however, was not the case. Pelargoniums certainly were shown, but not one of the collections produced did credit to the exhibitors; indeed, there has not been such a miserable show of Pelargoniums in June at South Kensington for years, and it may be seen by the prize list that the judges in some classes could not find exhibits good enough for the first and second prizes. There were prizes offered for Ferns, Palms, *Ericas*, and *Gloxinias*, but either these were not represented at all or shown in a very inferior way. The pot Roses, too, were not up to the South Kensington standard by any means. On the other hand, cut flowers to which some ten classes in the schedule were set apart were uncommonly good, the Roses being particularly fine, quite as fine as we may expect to see them next month. Some of the Tea varieties shown, such, for instance, as *Comtesse de Nadaillac*, one of the loveliest of Roses when well grown, were seen better on this occasion than have been seen so early for several seasons. All the other competitive classes for cut flowers were represented in a creditable way, but the greatest feature of the whole show was the extensive display of cut hardy flowers contributed by some of the leading nurserymen. These formed the centre of attraction for the crowds of exhibitors.

Among the pot Roses shown in the first prize group by Messrs. Paul we singled out a few that struck us as being uncommonly fine. These were the lovely *Violette Bouyer*, a Hybrid Perpetual, with flushed pink flowers; *Boule de Neige*, pure white; *Duke of Teck*, one of the most brilliant of all Roses,

and better this year than usual; and *Francesca Kruger*, a Tea variety with yellowish flowers tinged with pink. The other plants in the group, as well as those from Mr. Rumsey, were for the most part well-known sorts. The Pelargoniums, as we before remarked were below mediocrity, though some beautiful sorts were shown. In Mr. Turner's first prize group we were struck with the following sorts which stood out conspicuous from the rest. These were *Madame Albert Decaris*, light centre, broadly edged with carmine, very pretty; *Venus de Milo*, massive truss, pure white, one of the best whites; *Florence*, brilliant carmine; *Dido*, deep and brilliant scarlet; *Robena*, deep rose; *Gold Mine*, clear reddish, fine showy variety; and *Carl Klein*, one of the best of the regal class, of a scarlet-crimson colour.

Among Mr. Little's collection of show, decorative, and fancy sorts those named Mrs. Fraser, Sappho, Zulu Belle, Eastern Empress, were the most noteworthy; and the same exhibitor also showed some excellent varieties in the zonal class. The large number of seedling Pelargoniums from Mr. Clay's garden, Twickenham, included several uncommonly distinct and beautiful sorts. Among the finest were those named *Vanity*, white spotted, carmine; *Corsair*; *Henry Daukes*, very deep and rich crimson; *Grace Darling*, *Mona*, *Rosalind*, and *Thisby*, which received a certificate. Considering that one exhibitor can show some dozens of seedling varieties at one time, we need not despair of new Pelargoniums, although the art of growing them to perfection as specimen plants seems to be on the decline among the growers about London.

THE MISCELLANEOUS CLASS, as usual, contributed largely to the importance of the exhibition, and seldom has there been a finer or more extensive display of hardy flowers than that which was contributed on the present occasion by Mr. Ware, Messrs. Barr, Messrs. Kelway, Messrs. Paul, and others. The collection of cut flowers from Mr. Ware extended along the whole of one side of the conservatory, and the group included, we imagine, representations of every important hardy flower in season at the present time, and being all so fresh and in such admirable condition, they made quite an exhibition in themselves, and Mr. Ware deservedly merited the silver-gilt medal awarded to him. It would make a very long list were we to mention only the very best of the crowds of fine plants Mr. Ware showed. The great feature of the group was the bulbous plant flowers, such as the Lilies. These included a large gathering of the canary yellow *L. colchicum*, the delicate pink *Krameri*, the scarlet *tenuifolium*, and the numberless varieties of the elegans or *Thunbergianum* section. The early-flowering *Gladioli* were likewise conspicuous, none more so than the splendid *G. insignis*, which has flowers as large as those of *gandavensis* and of a vivid carmine-scarlet. The *Colvillei* and *ramosus* varieties were also beautifully shown, among them being the lovely sorts *The Bride* and *Rosy Gem*. Other noteworthy plants in the groups were the *Delphiniums*, whose towering spikes, mingled with those of *Spiraeas* and such-like plants, had a charming effect. The Spanish Irises were also uncommonly fine, and were arranged in colours with *Asparagus* shoots in a tasteful way. Messrs. Barr's group, which won a silver-gilt Banksian medal, was likewise a very large one, the single and double *Peonies*, Spanish and English Irises, *Ixias*, *Pyrethrums*, and early *Gladioli* being its chief features in combination with beautiful groups of *Carnations*, to which this firm is paying a deal of attention just now. On this occasion they showed groups of such fine sorts as the crimson *Alegatière* and the snow-white *Heroine*, both of which won many admirers. Messrs. Kelway, who took a silver-gilt Flora medal, showed grand collections of double and single *Pyrethrums* in rich variety, as well as single and double *Peonies*, *Amaryllises*, *Gaillardias* in variety, and a good assortment of the finest hardy perennials, among which we noted the old *Betonica grandiflora* better than we ever remember seeing it before. *Onosma tauricum* was also well shown, and so was the pretty scarlet *Lilium tenuifolium*, which Mr. Kelway grows better than anyone we know. The *Peonies* in the group were the admiration of everyone, the fine deep rosy variety *Lady Bramwell*

attracting most attention. Messrs. Paul, of Cheshunt, had as usual a collection of fine hardy perennials and other herbaceous plants, among them being a group of the double French *Poppies*, whose crimped petals, of such delicate tints and shining like satin, gave them such a distinct appearance. The *Peonies* from these exhibitors were also fine, and among the other hardy perennials we noted particularly the beautiful early-flowering *Tritoma recurvata*, a very showy plant, and *Morina longifolia*, a singular Himalayan species.

Cut Flowers.

ROSES.—A few classes for cut Roses brought a very beautiful display of flowers, most of the bloom, especially from the trade growers, showing such form and freshness as to lead to the conclusion that a grand Rose season is in store. Messrs. Paul & Sons, Cheshunt, had exceptionally lovely blooms of *Ulrich Brinner*, *Madame Prosper Laugier*, *General Jacqueminot*, *Victor Verdier*, *Etienne Levet*, and *François Michelin*, reds; *Sir Garnet Wolseley*, *Sultan of Zanzibar*, and *Abel Carrière*, crimsons; and of paler hued flowers, *Lady M. Fitzwilliam*, *La France*, and *Marguerite de St. Amand*. Mr. House, of Peterborough, who was fortunate enough to take second place with some superb blooms, had *Maréchal Niel*, *Merveille de Lyon*, *Madame Gabriel Luizet*, *Duke of Edinburgh*, *Beauty of Waltham*, and *Jules Margottin*. In other stands *Captain Christy*, *Mdlle. E. Verdier*, *Souvenir d'Elise Vardon*, *Devoniensis*, and *Marie Baumann* were excellent.

Mr. G. Prince, of Oxford, had his customary good fortune in taking first place with twelve very beautiful Teas, having lovely flowers of *Adam*, *Catherine Mermet*, *Madame Lambard*, *Comtesse de Nadaillac*, *Anna Olivier*, *Reine de Polignac*, golden yellow; *Mons. Furtado*, sulphur; *Maréchal Niel*, &c.; Mr. House, again coming second, had *Jean Ducher*, *Marie Van Houtte*, *Souvenir de Thérèse Levet*, *Niphotos*, and *Belle de Bordeaux*, a striking Rose of a delicate lilac hue; *Madame de Watteville*, white, heavily edged with rose; and *Sunset*, rich cream, were striking flowers staged in this class. Only two lots of twelve trebles were staged in the amateurs' class, the blooms being of fair quality. Mr. G. Prince had a box of twenty-four blooms of *Comtesse de Nadaillac* that were not only beautifully coloured, but excited warm admiration. Mr. House showed a new pale Hybrid Perpetual named *Mrs. House*, of very globular form, that wants to be seen later. In addition to the buff *Noisette W. A. Richardson* and the white *Moss Blanche Moreau*, mentioned elsewhere, Mr. House had a fine show of Teas in bunches, and Mr. Bennett's new Rose, also mentioned previously, excited much admiration for the delicacy of its colouring.

PYRETHRUMS.—Messrs. Kelway, Langport, had the finest collection, set up in bunches of five blooms in twenty-four kinds, really grand flowers, but rather too dense and rounded in form to be pleasing. Their naming might have been clearer, but as far as could be gathered the best flowers were *Sam Vanbrugh*, *Godiva*, and *Mont Blanc*, pure white; *Ajax* and *J. N. Twenty*, rosy crimson; *Aphrodite* and *Chamois*, buff; *Uzzel*, rich creamy pink, &c. Messrs. Paul & Sons also had a fine lot of blooms in this class.

PINKS.—A couple of classes for these old-fashioned garden flowers brought poor competition, which was to be deplored, as there are many beautiful kinds in cultivation, which we should like to see shown in bunches of some twelve blooms rather than artificially set up, as were Mr. Turner's flowers, which were, as laced kinds, of course, much the best, though showing much monotony in markings. The best were *Boiare*, *Gaiety*, *Eurydice*, and *Victory*. Mr. Hooper was strong with Mrs. Sinkins, white; and *Derby Day* and *Lord Lyon*, red; but his flowers were badly set up in big white collars. Mr. Douglas, Great Gearies, Ilford, had the only lot of six kinds, the blooms being small and not yet developed.

PELARGONIUMS.—For cut flowers of both the show and zonal sections prizes were offered, the classes for twelve bunches of each section finding better competition than did the plants. In accordance with usual form, Mr. C. Turner, of Slough, put up the

handsomest of the show section, his varieties being not only tastefully arranged, but showing flowers of fine form and substance. Mandarin and The Czar, fiery reds; Venus de Milo, Nellie Hayes, and Comtesse de Choiseul, whites; Veteran, Emperor, and Ritualist, carmines; and Magnate and Purpleum, rosy reds. On Mr. Cannell's stand were Volonté National album, Madame Thibaut, E. Perkins, rich rosy carmine, and Captain Bernard. Mr. Cannell was an easy first with zonal flowers, having a grand stand of blooms set up in his wonted fashion—Kentish Fire, W. E. Gumbleton, and Lord Chesterfield, deep rich hues; Ajax, Jealousy, Improved, and Nerissa, orange-scarlets; Queen of the Belgians, pure white; and Constance, rosy lilac, were very telling bunches. In a non-competitive collection, Mr. Cannell had boxes of La Cygne, white; Madame Thibaut, rosy pink; Belle Nancienne, rosy salmon, all very pleasing; and of Ivy-leaved kinds, Madame Thuenin, rosy pink; and Madame Cochin, lilac. Also boxes of Verbenas in great variety, Peonies, &c.

Fruits and Vegetables.

SPECIAL PRIZES.—Messrs. Sutton & Sons, of Reading, offered a few weeks since prizes for the best brace of Melons, to include at least one kind of their own sending out; the best came from Mr. Douglas, who had handsome samples of Scarlet Premier and Hero of Lockinge. Masterpiece and Hero of Bath were also shown, though small. The competition was poor. There were but three competitors for good prizes for six kinds of Lettuces, the third prize being very poor indeed. Mr. Waite, gardener to the Hon. Col. Talbot, Esher, who had the best collection, showed very clean samples of White Cos in four sorts and of varying quality and two white Cabbage kinds, White Dutch and White Blonde, both very fair sorts. Mr. Mead showed good samples of Marvel Cabbage Lettuce in his collection, but its dark colour militates against its popularity. Other kinds call for no further comment. From the society's garden at Chiswick came a selection of early Cauliflowers in pots lifted from the open ground. There were some dozen or so of the earliest Dwarf Erfurt or Snowball type, dwarf, early, and having very white solid heads of medium size; Snowball, Benary's earliest Dwarf Erfurt, and Carter's. Defiance were amongst the best sorts. Sample plants of Early Paris and London were barely turning in, and Walcheren and Stadtholder were much later. Altogether there can be no doubt that the new Snowball, or Early Dwarf White, is a very early and useful Cauliflower.

A list of awards will be found in our advertising columns.

At a meeting of the floral committee, held at Chiswick on June 18, the committee examined the collection of Fuchsias growing in the garden for trial, and selected the following as the best in their various classes: *Single dark*—Spitfire, Crimson Globe, Charming, President, Minerva, and Dr. Sankey. *Double dark*—Avalanche. *Striped dark*—Lord Wolseley. *Light single*—Lady Heytesbury, Prince Alfred, Miss Bright, Ellen Lye, Erecta var. Novelty (very distinct), and Alba coccinea. *Double white corolla*—Artaban and Berliner Kind. *Single white corolla*—Flocon de Neige.

Scientific committee.—Sir J. D. Hooker in the chair.

David Douglas.—Sir Joseph Hooker showed a portrait of this famous botanical explorer, to whom our gardens are indebted for so many fine hardy plants.

Honey glands in Cattleya.—Dr. Masters read a communication from Mr. Burbidge relating to the presence of honey glands on the sepals of Cattleya Mendeli—a circumstance not commonly known.

Arthrotaxis selaginoides.—Dr. Masters showed, on the part of Mr. Noble, branches of this plant provided with cones.

Tea from Jamaica.—Sir J. D. Hooker alluded to a consignment of Tea which he had received from Jamaica, the first received from that island, and the produce of seed sent from Kew to Jamaica some twenty years ago. The quality was reported as very good.

Action of frost.—Specimens of espalier Apples from Rev. H. H. D'Ombraire were shown in which the young growths were browned and withered. Dr. Masters stated that he had recently received numerous specimens of various trees similarly affected. In the absence of other visible cause, he attributed the effect to the action of frost on the young growing shoots.

Eranthus leonis.—Mr. W. G. Smith sent a sketch of the flower of the new Eranthus (Angræcum) leonis, and called attention to the long and remarkable spur, which is abruptly twisted and the end upturned. In Angræcum sesquipedale a moth was found with a proboscis long enough to reach the nectar at the bottom of the straight or only slightly-curved spur. How could a moth get its proboscis to the base of a spur like the one of which I send a sketch? It could only be done with inconvenience to the moth, and might lead to a damage of the delicate proboscis. If I may be allowed to say so, the flower appears to me to be twisting its spur at the moth in a most defiant and irritating manner. All the spurs are curved in the same style. It was pointed out that the twisted state of the spur might be advantageous rather than otherwise, as affording leverage to the moth.

Corn mildew.—Mr. Smith sent a drawing of the fungus of corn mildew, Puccinia graminis (Pers.), growing in company with the fungus of smut, Ustilago carbo (Tul.), within the membranes of the fruit or grain of Oats. The fungus was detected in the very young fruit, and did not gain access to the fruit from the exterior, but from the interior of the host plant in company with the smut fungus. Mildew is always in its worst form near hedges and trees, and bad patches are always seen where the ground has been manured with mildewed straw. One of the reasons why mildew is so bad here (Dunstable) is found in the fact that all the best unmildewed straw is very carefully selected for the manufacture of hats and bonnets, and all the mildewed material finds its way to the fields, where it reproduces the disease. Nothing like proof has yet been adduced of a generic connection between Ecidium Berberidis and Puccinia graminis. The cornfields in this district conclusively show that Barberry bushes are unnecessary for the production of Uredo and Puccinia, as such bushes are virtually unknown.

SCOTTISH PANSY SHOW.

THE forty-first annual show of this society was held the other day in the Waverley Market, Edinburgh. There were forty-five different exhibitors from various parts of Scotland and the north of England, and the number of entries was about 250, a little in excess of last year. The present season has not been a particularly good one for Pansies, the cold winds of May and the drought of June having told against the plants. The display, however, was good. Seedlings were this year more numerous than formerly, and in colour and marking distinct from anything before shown. A new Pansy exhibited by Mr. Black, East Calder, and named William Dick, is sure to be a favourite. It has lemon-yellow petals and a particularly large dense blotch. One of the finest white Pansies yet raised was also on the table. It was sent by Mr. Dick, Kirknewton, and is named Miss Brooks. It has snowy white petals and a dark blotch. A first-class certificate was awarded it. Some of the Pansies shown for the first time last year seem to have become popular, for they were to be found on nearly every stand. Among these were Pilrig and James Grieve; others frequently recurring were Evelyn Bruce, Miss Bliss, and Archibald Roland. There were also some new Violas. Conspicuous in the first-prize lot from the Pilrig Nurseries were Mrs. Cobham, a mauve-pink; The Mearns, with dark centre and whitish petals; and The Bride, a pure white. On the second prize stand from Pinkhill were Columbine and Pantaloon, both showy flowers.

TUSSOCKY PARKS.

It frequently happens that the disused grounds which generally surrounds country residences are separated from the park by a sunk fence or ha-ha, and the object in adopting a fence of this kind is to give apparent breadth and expanse to the grounds by the

concealment of the boundary from the principal points of view. A well formed ha-ha accomplishes this object, and is possibly the best of all fences against cattle of all kinds, but its object, as regards the improvement of the landscape, is quite defeated if the Grass in the park, or at all events that portion of it which may abut upon the pleasure grounds, is allowed to become tussocky, as it then presents a brown, withered appearance, which contrasts unpleasantly with that of the lawn or pleasure grounds, which, whether cut by the machine or the scythe, is at all seasons of the year fresh, green, and cheerful. In order to give the park a similar aspect and render it impossible to indicate the termination of the dressed grounds, all that is necessary is to well roll the park immediately after a considerable fall of rain during the month of April, and to pass the scythe over its surface towards the end of May or early in June, in order to cut off the windle straws, as they are called, before they become hard and brown. Nothing is lost by doing this, as stock of no kind will eat the dry straws, and by cutting them off once or even twice during the season the growth of the Grass is encouraged, and sheep and other stock are enabled to hite closer to the surface than they otherwise could do, and at all seasons a fresh and improved appearance will be given to the Grass.

P. G.

OBITUARY.

MR. JAMES WELSH.

WE have to announce with regret the death of Mr. James Welsh, of the firm of Messrs. Dicksons & Co., nurserymen, Edinburgh, which took place on the 18th inst., at Eriestane, near Moffat, whither he had gone to recruit his health. Mr. Welsh was only 52 years of age. Since 1849 he had led a very active life; about that time he first went into business, and in 1862 he joined the late Mr. Alexander as partner in the old-established firm of Dicksons & Co. He was well known throughout Scotland among those with whom he came in contact in business matters, and no man could have been held in higher respect than he was by all classes. Notwithstanding his busy life, Mr. Welsh found time to write occasionally upon matters that interested him, and he was a valued contributor to THE GARDEN, and particularly to *Woods and Forests*, to which he communicated many able papers upon subjects with which he was intimately acquainted. He was buried at Tweedsmuir, near the source of the Tweed.

LATE NOTES.

Monstrous Foxgloves (*B. E. H. B.*).—The abnormal condition of the Foxglove represented by the specimen you send is not uncommon. It is caused probably by the fusion of several terminal flowers into one. The occurrence is more frequent in a cultivated than in a wild state, and hence may be the result of over-luxuriance.

The Austrian Fir for shelter.—I have read much in favour of the Austrian Fir as an unrivalled ornamental shelter tree, and I should be glad if one who knows it well can give me an idea how much clear space should be left in order to give a good specimen room. In a young ornamental plantation I have very good young Austrian (some 9 feet across from tip to tip of branches), and in thinning I am much at a loss to know which trees I ought to consider too close to be left as permanent. I could imagine it quite possible to thin away the greater part of a strip of plantation by always cutting down the wrong tree. —J. W. T.

Names of plants and shrubs.—*H. B.*—1, Prunus Padus (Bird Cherry); 2, Wild Service (Pyrus torminalis); 3, Pavia californica; 4, Ampelopsis tricuspidata (Veitch). —*A. J. T.* and *W. Elliott.*—Next week.—*B. E. F. M.*—1, Diplacus glutinosus. —*E. F. C.*—1, Viburnum Opulus; 2, Orchis maculata. —*J. Probert.*—Habenaria bifolia. —*J. K.*—No specimen reached us. —*F. S. S.*—Pernettya mucronata. —*Anon.*—1, Centranthus ruber; 2, Picentia formosa; 3, and 4, varieties of Begonia Rex. —*K. A. B.*—The Quamash (Camassia esculenta). —*H. F.*—1, Fuchsia procumbens; 2, Abutilon Boule d'Or. —*S. K.*—Mespilus Smithii, also called M. grandiflora. —*E. M. G.*—Rose Noisette Jeanne d'Arc. —*E. H. S.*—1, Athyrium Filix-femina Victoria; 2, Polypodium Dryopteris; 3, cannot identify (no spores and much bruised); 4, Lastrea Filix-mas cristata angustata. —*Subscriber.*—1, Geranium phaeum; 2, Astrantia major; 3, cannot name; 4, Abies cephalonica. —*J. H.*—1, Azalea pontica; 2, Philadelphus coronarius; 3, Mespilus grandiflora; 4, Guelder Rose (Viburnum Opulus). —*T. Eldridge.*—Double Rosa lucida. —*T. W. (Tottenham).*—Sollaya heterophylla (Austral?) —*E. J. H.*—1, variety of Lantana; 2, Weigela hortensis; 3, Centranthus ruber; 4, species of Euphorbia. —*C. and S. K.*—Lilium pomponium (apparently Dianthus casius). —*C. Scott.*—1, Heuchera americana; 2, apparently Galega officinalis (withered); 3, Veronica longifolia incisa; 4, please send again, others next week.

WOODS & FORESTS.

NOTES.

PROVING TIMBER TREES.—This has been a much neglected work. Notwithstanding the long period many of the newer Conifers have been introduced, we know scarcely anything of their value as timber trees and for general planting. The most that has been done with such introductions has been to plant one or two isolated specimens in some ornamental "pinetum" in a garden. If there they happened to grow into fine "specimens," they were approved of, and if they did not grow satisfactorily they were condemned. Of late years, we believe some few proprietors have begun to plant some species more extensively, but the results cannot be determined as yet. The consequence is that we are still in doubt concerning the value of the numerous species in cultivation—so much so, that if anyone had a plantation say of the Corsican Pine or the Douglas Fir ripe and ready for the market, they would have great difficulty in disposing of it to timber merchants at any price, so cautious are those people about buying any kind of timber they are not familiar with or of the value of which they are not assured. The "single specimen" system of proving any of the Fir tribe is a wrong one. As a rule, all the Pines and Firs are gregarious, growing in masses as thick as they can stand, and in order to prove their value as timber trees here we should grow them in groups of sufficient size, thinned to the right degree. Treated thus, the trees grow up of the shape they are wanted, elongate faster than they do when isolated, and show exactly what they will do. There are many Pines that grow pretty freely in plantations where they shelter each other that will scarcely live when planted alone. I am not sure what Kew has accomplished in this respect. It professes to solve such problems for India and the colonies, &c., but I suspect the authorities there know as little as anyone else about the subject under notice, and very little about British arboriculture generally, if the statements of members of Parliament and others be worth anything. Talking about forestry schools, it is not the scholars who are at fault so much as the system. One good thing Kew or some other royal garden or forest might do, and that is to plant a few acres of each of the trees most likely to be useful for timber, and when they have grown, to fell them, test them, sell them, and report upon them. Numbers of species of trees have been in this country for a very long period, and yet when one wants to know anything about their value for general purposes, they can hardly obtain any reliable information on the subject.

A TRIAL FOREST.—I do not attach much importance to the Government encouraging a school, but if they would hire two or three hundred acres of land in different parts of the country and plant it with trial groups of trees in the same way as Mr. Barron plants

Cabbages in the trial grounds at Chiswick, and report the result in good time, they would give forestry in this country a visible lift. There is a vast mine of knowledge respecting trees—their comparative value and rate of growth, effects of soil and climate, and mode of planting upon, the quality of their timber, utility of thinning and pruning, &c.—lying unexplored, and yet the problems are all extremely simple, and might be solved in a comparatively short period by simple means. Will any member of Parliament push a practical suggestion of this kind? The Government have already the facilities for carrying it out.

HOW TREES DIE.—When Swift facetiously predicted that he would die like a tree, by "going off at the top," anticipating the failure of his mental powers, he correctly described the beginning of natural decay in trees. There are exceptions, but as a rule the visible signs of decay begin at the top. The cause of decay may lie elsewhere, but the top limbs are the first parts that become paralysed. The enfeebled vitality is unable to drive the sap to the extremities, the pores become choked up, and the limb dies. This is apparent in mostly all plants and trees that die what may be called a natural death. At all times the circulation and the vitality is weakest at the extremities, just as in animals, and it may almost always be noticed that most injury from cold is done, not always to the most exposed parts, but to the extremities of the shoots. It is this vigour, the nearer we get to the root, which has no doubt led cultivators to suppose that cutting a limb back puts strength into a plant, but the idea is quite erroneous. Undoubtedly the further we cut back at the right season the stronger does the shoot grow for a certain distance, but no additional strength is added. What was wanting before cannot be put there again by the removal of any portion of what is left.

PLANTING YOUNG TREES.—The more one sees of the orthodox method of planting usually adopted by foresters, by which the roots are mainly spread in a triangular space just under the sod, the less one thinks of it. If the trees could be watered and mulched and attended to like plants in a garden plot, it might answer, but forest trees have to take their chance, and that chance often is that they are thrown out by wind or by the frost or perish from drought. There is no safeguard, from drought on the one hand or cold on the other, like planting the main roots of young trees perpendicularly in the ground, so as to place them out of the reach of either. To put the plants firmly into the soil in the same manner as they are found rooting in the seed bed should be the aim of all planters of young trees, and especially of Firs. If this be done, and the trees are also taken up carefully and not left too long exposed to the air, there should be few failures.

AUTUMN AND SPRING PLANTING.—Where extensive planting operations are carried on

in woods, the planter cannot always choose his season. He has to prosecute his work from autumn till spring whenever the weather will let him, but he may often choose which subjects he will proceed with at any given time, and I think it will be found best to plant all the Pine and Fir class as early in autumn as possible, and deciduous trees afterwards. With us the autumn-planted Firs undoubtedly grow best and make the best start in spring. This is very noticeable in the case of the Larch and the Corsican Fir. Deciduous trees, if they have tolerable roots, may be planted in mild weather up till, and even after, the time of leafing early in the year.

FAST-GROWN TIMBER.—I perceive the microscope is recommended for detecting the quality of timber, and from the communication of Mr. D. J. Yeo it appears the lens supports the idea that the slower the growth of the tree the denser the texture of the wood, and the greater its hardness and strength. It is hardly likely that conditions the opposite of each other can produce the same result, and I fear the slow growers will have the worst of it. About forty years ago this subject was discussed. The slow growers theorised in this way: "Whatever tends to increase the growth of a tree tends likewise to expand the vegetable fibre; and whenever the vegetable fibre is expanded, the timber must be less hard and more permeable to air, &c., and of course inferior for all purposes of timber." So wrote foresters of that period, and this reasoning was afterwards stigmatised by Dr. Lindley as "a tissue of absurdity, evincing a told ignorance of the nature of vegetable organisation." The tough and strong portion of timber is the fibro-vascular tissue; "its nature in a separate state may be compared to that of hemp, flax, or other vegetable fibres which are always composed of fibro-vascular substance. . . . Timber consists of cellular and fibro-vascular tissue intermixed; when it grows fast, it produces a large quantity of fibro-vascular tissue and but little cellular; when it grows slowly, it is more cellular than fibro-vascular," and hence is not so tough and strong. An Asparagus shoot that is brittle and fit to eat consists of cellular tissue. Fibro-vascular tissue renders it tough and stringy. So much for the theory of the matter as furnished by competent authorities, and the theory is borne out by practical tests. It must be borne in mind, however, that "these remarks apply only to the same kind of wood under the same circumstances." Your correspondents who have advocated the superior qualities of slow-grown timber are not by any means alone. Brown, in his "Book of the Landed Estate" and writings on forestry, falls into the same error, and on no better authority than his own opinion. Slow-grown timber, in a sense, resembles wrought iron, the strength and toughness of which depends on its fibre, while slow-grown timber resembles cast iron, which, though

hard, is brittle. At the Government test shops both woods and metals are tested in the same way.

SPRUCE FIR TIMBER.—“C. R. S. D.’s” statement (p. 558), implying that in some parts of England the Scotch Fir may be practically useless and the Spruce indispensable for all work that will be permanently under cover, is questionable. I have never either heard of nor do I know of any part of England where the Spruce is preferred to Scotch Fir; whereas Spruce is almost unsaleable except at an extremely low, unremunerative price, and why so much Spruce has been planted on some gentlemen’s estates, especially in Scotland, passes one’s comprehension. Thousands of acres have been planted with it by scientific foresters there, and that, too, in localities where the means of transport are so bad that it would hardly pay for removal, as some extensive owners of blown-down Spruce timber are now realising. Except for covert for game, Spruce is, compared to some other species equally suitable for planting in its stead, for the production of timber absolutely worthless.

YORKSHIREMAN.

VARIETIES OF THE SCOTCH FIR.

I HAVE been interested in reading “Yorkshireman’s” remarks on this (p. 532), but the most exhaustive data that has come under my notice with regard to the varieties of *Pinus sylvestris* is the report of the experiments of the late M. de Vilmorin at Barres. The full particulars of this “forest school,” now maintained by the French Government, will be found in Dr. Brown’s “Pine Plantations in France”; but as it would be impossible to reproduce here anything like the voluminous details, I will endeavour to give the results of his observations as fully as I can in a limited amount of space. After speaking in general terms of his experimental plantations, M. de Vilmorin goes on to say: “Of the different questions which I have proposed to myself to solve by means of the Barres plantations, none is more important from a practical point of view than that concerning the varieties of *Pinus sylvestris*.” He then speaks of the value of the wood for constructive purposes, but he remarks with these remarkable qualities this tree has one peculiarity which tends to diminish its value, and which has created much confusion in reports concerning it, viz., its liability to change and vary to such a degree that perhaps nothing similar exists in any other species. Thus, whilst in the forests of Russia and Lithuania it attains the size of largest Firs, and furnishes admirable trunks which sell at high prices, a large number of the trees which grow in Switzerland and Germany are middling trees, badly formed, often incapable of furnishing even a passable plank. This great diversity has given place to questions and doubts regarding it, on which, he adds, opinions are still much divided. Then after speaking of some confusion of terms sowing

to the *Pinus rubra* of Miller, he comes to the actual result of his observations.” This collection is composed of all the specimens of the *Pinus sylvestris* of different districts and countries I could procure. I sought especially that it should comprise those in regard to which doubts and discussions have arisen, and still more especially those which having received the names of varieties are more generally regarded as distinct. The red Pine of the north and those of Haguenau, of Scotland and of Geneva have supplied in this respect the foundation of the plantation. The first of these being the most important is that in regard to which I have exerted myself to multiply as much as possible the means of studying. Through the assistance of my connections and the co-operation of many French and Russian amateurs, I have obtained from different provinces of Russia and of Lithuania, celebrated for the production of these Pines, seeds, the products of which are to be seen in the plantation. To these lots obtained thus direct from the localities have been added many others from plantations made in France at previous times, the Russian origin of which was well established; and, further, with a view of multiplying as much as possible the means of comparison, I have added specimens of *Pinus sylvestris* from different parts of France. The whole presents a collection of some thirty lots; but to prevent the formation of an exaggerated idea of these, it may be stated that they are not all equal in strength, age, or extent, nor are they in some other respects susceptible of exact comparison. Some form masses more or less considerable, while others consist only of single trees. Their ages range from ten or twelve years to that of thirty years and upwards. To reduce as much as possible the disadvantages of this inequality, I shall indicate in the details given of each lot the differences which may have an influence on the actual appreciation of their character.

The direction taken by the branches, according as this may be ascending or horizontal, has ever appeared to me to be the characteristic most generally connected with the good or bad quality of the trees, and I have adopted this as the basis of classification. From this, result the two principal divisions, viz., the trees with ascending and those with horizontal branches. Then some subdivisions being still required to bring together trees presenting analogies of secondary importance and to obtain groups less comprehensive, I have introduced three into the first and two into the second of these grand divisions, giving the following series:—

First. Trees with ascending branches.

a. Ascending, close, and pyramidal branches.

b. Ascending, scattered branches, with a regular crown.

c. Ascending, scattered branches, with irregular crown, and branches often overgrown, as if feeding rapaciously on the sap of the tree.

Second. Trees with horizontal branches.

d. Horizontal branches in successive tiers or stages.

e. Horizontal branches, thick set and regular.

The first of these five types is the Riga Pine, the trunk being very vertical, sustaining well its great size, often almost cylindrical through upwards of half its height. The branches of moderate strength, manifestly of equal growth among themselves, form a series of regular and symmetrical crowns, the whole appearance of which, by its pyramidal form, recalls the habit of the Italian Poplar. The bark is of a decided reddish yellow from a yard or two above the base. The shoots are more forward in spring than those of the Haguenau, and much more, to the extent even often of fifteen days, than those of the Geneva Pine, the Pine of Ardèche, and their analogies. It is of a pale green; the leaf is not so glaucous, not so long, or so straight as that of the Haguenau, and it stands more erect against the branches. It is, on the contrary, longer and narrower than are those of the Geneva variety. The cone is smaller and shorter than that of some others, more particularly than that of the Geneva Pine and some of its analogies; it is generally grey, and sometimes, but rarely, of a purplish hue. The bud or young shoot varies in colour from yellowish to reddish; it is smaller and less resinous than it is in the greater part of the varieties having horizontal branches.

The principal characteristic of the second division, the expanded pyramidal Riga Pine, in which it differs from the first, is that the branches, longer, stronger, and more separated from the trunk, form a more expanded pyramid. The trunks in the greater part of this series are larger at the same age than those of the preceding division, and they are at least as high, but the proportion of trees perfectly straight and regular is less. The colour of the bark is not so uniformly reddish. In fact, they are less elegant, less perfect in their proportions, but more vigorous, and appear destined to acquire greater dimensions. The third series, the German Pine and the Pine of Haguenau, is characterised by having the branches ascending and extended, the crowns irregular, and the branches often overgrown.”

Of the typical tree belonging to this series, M. de Vilmorin writes: Though more vigorous than those of the preceding series, the Haguenau Pine is not so good as they. Its crown is too dense and too strong, often intermixed with overgrown branches, which tend to destroy the regularity of its trunk. It also frequently shows knees or defects, which greatly diminish its value. The bark is reddish in most specimens, but it is not so uniformly so as it is in the first section, or even as it is in the greater part of the second; that at the base is more brown and more rent. The leaf is longer, more glaucous, and less pressed against the twig than that of the first section. The bud is less forward in spring by eight or ten days. Indeed, the characteristic feature and prin-

cial defect of the Hagenau Pine consists in excess of vigour, and above all of a vigour ill distributed, which is carried often into the branches to the detriment of the trunk. It is in this that it differs essentially from the true Riga Pines.

Its trunk is often crooked, warped, or abruptly falling off in size, in consequence of the enormous overgrown branches, which grow out to a great distance and destroy all regularity in the tree.

The second grand division consists of those with horizontal branches, among which we find the fourth section, designated the horizontal tapering, of which the type is the tall, but straggling, Geneva Pine. The branches spread horizontally, sometimes even depressed; generally very long and flexuous, united in regular crowns, which leave the trunk bare in the intervals between these. This is rarely very straight, the curvations not so acute as in the Hagenau. The bark is tolerably red in some of these trees, but more commonly grey, or very much mixed with grey. The leaf is larger and shorter than in all the preceding series. Their buds in spring are from eight days to a fortnight later in expanding. The trunks in this race are in about half of them pretty straight, but too much swelling out and drawn in rat-tail form. The others present knees more or less decided, but less strongly so than in the bad types of the Hagenau Pine and that of the High Alps. The branches, excepting those of two or three of the higher crowns, are very generally horizontal, and at times even declining, those of the inferior stages almost naked, ramifying themselves on feeble twigs, which carry at their extremity little tufts of short and outspreading leaves, while those of the ascending branches are very closely pressed towards the branch. With regard to size, this Pine is inferior to the Rigas raised from Russian seed, and much more so than some of the Rigas raised from French seed, but, above all, than those of the Hagenau, which at the same age are almost double the size.

The fifth division is classed as the thick-set horizontal Pine. These were raised from seed from Briançon and a Fir obtained from Mr. Lawson, of Edinburgh. Writing of the Briançon Pine of the High Alps, of which he had planted three rows, M. Vilmorin says, "The tree, which constitutes by itself the fifth section, was given to me by M. Faure (of Briançon), who had the kindness to get seed gathered for me, as being the *Pinus suffis* of the Briançonnais. This should have been—if Duhamel be not misled in the application of the name—a *P. Mugho*. But, be it a mistake of Duhamel or of the men who had gathered the cones, the Pines produced from the seed are true *sylvestris*. On this point I have no regrets, for I am thus supplied in my collection with two extreme types (this and the tall Riga Pine) which exist in the species of *Pinus sylvestris*, a comparison of which shows most manifestly the existence of local varieties and the necessity of distinguishing them—a trunk

thick and knotty and thick-set, covered with a bark coarse and much cleft, brown in the lower part and grey on the rest of the tree; the crowns horizontal, very much drawn together, lining the tree from its base, composed of strong branches often flexuous, which famish and at times annihilate the trunk; such are, with about five or six exceptions among the thirty, the *Pinus sylvestris* of the High Alps."

It may be seen from this that they are amongst the lowest rank of the species to which they belong, and that in the formation of Pine woods they should be avoided.

D. J. Y.

MEASURING HOME-GROWN TIMBER.

WHEN the dimension-book has been entered up in the way described (p. 460) and a "Hoppus's Measurer" is used to find the cubic contents, the process is very simple, as all that has to be done is to find under the table of "Solid Measure" the side or quarter girth corresponding to this dimension in the measurer's book. Then run the eye down the first vertical column of the table until it reaches the figures corresponding to the length in feet in the dimension book, and the other figures in the same horizontal line represent the contents of the tree, or part of the tree, in cubic feet and inches. In our previous paper we supposed a tree of 30 feet in length, in consequence of its irregular growth, was divisible into three dimensions of 10 feet each. For the sake of illustration we will suppose that the first of these lengths has a quarter girth or side of 26 inches, the second of 18 inches, and the third of 9 inches. The contents of these dimensions by this method would be 46 feet 11 inches (in practice parts of inches are omitted) 20 feet 6 inches, and 5 feet 7 inches respectively, or a total of 75 feet. Now, it will be seen that if this tree of 30 feet long had been taken at one dimension, the quarter girth at 15 feet would have been 18 inches, which, worked out in the same way, gives a total of 67 feet 6 inches only, or a loss to the seller of 7 feet 6 inches. When a book is not available, all that has to be done is to square the quarter girth, multiply by length in feet, and divide by 144, which will give the contents, thus—18 inches \times 18 inches = 324 \times 30 feet = 9720 \div 144 = 67½ feet. We have in the previous paper made mention only of the "string" in taking the girth, as although the "strap" has some points to recommend it, on the whole, as the result of extensive practice, we give the verdict in favour of the string. In the matter of the allowance for bark, various systems are in use, some preferring to make the deduction from each dimension, and others to set down the gross figures and strike off a certain percentage of the total. The result in either case is much the same so long as the proper proportion is decided upon. Most railway companies who are large consumers of English as well as other timber take an allow-

ance of 1 inch to each foot of quarter girth. This is rather an arbitrary rule, as some barks are much thicker than others. We think in a general way 1 inch to the foot, or say about 15 per cent., is a fair deduction on Elm and similar woods, but that on Ash, Beech, Larch, and such like the allowance is too great, from 10 to 12 per cent. being a better proportion.

THE CROSS-CUT SAW.

THE following remarks on the cross-cut saw, our indispensable implement in the woods, are given in an amusing form, but, nevertheless, they have the right ring about them. The writer says, the cross-cut saw is at the same time one of the most primitive and one of the most generally used implements. It is one of the advance couriers of civilisation, and it remains a useful member of society despite its crudeness. It is its very simplicity that has caused it to be so tenacious of its position among needful implements. It requires no foundations, no motor, no special preparation. Where the axe leaves a tree, there the cross-cut takes it; and from the newly-fallen log to the shipyard the cross-cut is never hung up. Yet it is an aggravating, fatiguing, slow-working affair.

In the first place, it requires great muscular exertion from the weakest muscles of the body. In the second, it not only develops one side of the body at the expense of the other, but by unnecessarily fatiguing one side without giving it any reserve member, it lessens the capacity of the operator, already working at a disadvantage, with weak muscles to do heavy work. In the third place, in most positions where the log lies upon the ground, the position of the sawyer is uncomfortable, unhealthy, and still lessens his capacity for work. There have, however, been many improvements made in the cross-cut, as in other saws. The heavy bow frame strung into an arc has been abandoned. The curved edge of the blade has been brought from the top to the bottom or cutting edge, in order that as the saw wears away in the middle (as all saws do), the wear of the blade may be taken up and still leave it a capable tool. The shape of the teeth also have been very carefully chosen to suit the varied requirements. Cross-cutting has become a real cutting, and not a mere abrasion. The M tooth has been employed to give the best cutting edge with the best facility for sharpening. Perforations have been introduced along the line of the gullets to lessen the time, labour, and expense of filing, while it ensures the teeth remaining at the proper distance and size. The gullets are made deeper at the centre than at the ends for the same purpose that the cutting edge itself has been made convex. The handle has become a convenient affair, by which the tool may be firmly grasped and guided, and modifications have been introduced by which one man may do very heavy cross-cutting. But with all these improvements, the cross-cut wears a man out, makes him lop-sided, and brings into use only the muscles of his arms and shoulders.

D.

How to pile wood.—It is sometimes necessary to pile such things as fence posts and rails for a certain time before they are wanted for use in places exposed to the weather. These posts and rails often consist merely of small trees and poles sawn down the centre. When this is so, they may be much longer preserved by being properly piled. Always place the side with the bark on uppermost. If this is done, the wet runs off and the wood is kept dry and preserved. If, on the other hand, the sawn side is piled uppermost, the rain soaks in under the bark, and the wood is always wet, and decay is induced. In stacking wood of this description, be careful, therefore, to expose the bark-covered side to the weather. Whilst on this subject, there is another thought occurs to me, viz., the loss often occasioned by the splitting of boards and planks by exposure to the weather in the process of seasoning. In the well-known method of placing strips of thin wood between each board or plank to allow the air

to circulate, it generally happens that these strips are placed at a distance of 6 inches or a foot from the ends, and that the boards, if at all straight in the grain, split up to the point where the strips are used. The way to prevent this loss is simply to place the strips quite at the ends of the planks and exactly one above the other. If this is carefully done, a great loss in this matter of splitting can be avoided. — D. J. V.

SPRUCE FIR TIMBER.

The common Spruce (*Abies excelsa*) is indigenous to Norway and other parts of Europe, and has been grown in this country with great success for upwards of 300 years. In its native habitats it often forms large forests, and is said to attain a height of from 100 feet to 150 feet. Its timber is used extensively on the Continent for a great variety of purposes, and is known in the trade as white deal. Large quantities of this class of timber likewise finds its way into this country, where it is appreciated and used by builders and others. In addition to its quality as a hardy timber tree, from its dense, close, conical habit of growth, it is peculiarly well adapted to be planted as a single specimen on the lawn or elsewhere, and if allowed plenty of field, it retains its side branches and forms a perfect conical specimen from the ground upwards, and in autumn and winter, when loaded with its large pendent cones of a rich cinnamon colour, the contrast between these and its dark green foliage render it an object of great beauty.

It thrives best on rich alluvial soil naturally a little damp, but without stagnant water, and I have also grown excellent trees on thoroughly drained and well-prepared peat bog. When planted as a forest tree for utility, the thinning should be conducted in such a way that the side branches gradually lose their vitality and fall to the ground, and when this has been carried out in a skilful manner the stems present fine clean shafts, and carry up their thickness according to their height with very little taper, which enhances their value very much when cut and brought to market, so that the value of the wood depends in a great measure on the culture and management of the trees. I have sold clean-grown Spruce timber of average size at 13s. per ton, the trees being felled at the proprietor's expense and the purchaser to take delivery to himself; trees, however, that had been allowed to retain their side branches, and whose stems presented a series of rough knots from the ground upwards, were seldom looked after at any price.

Young trees properly grown are in great demand in some parts of the country for ladder poles, and as such bring equally as good a price as the best Larch, and in fact is preferred before the latter by a great many people, as it is lighter and more easily carried about. I have been in the habit of selling both kinds at 1d. per lineal foot, and as they require to be grown rather thickly in order to render the poles clean and tapering, they give a very handsome return to the pro-

prietor within a short space of time. A good many conflicting opinions have been expressed by different writers regarding the quality of the timber of this tree, some holding the opinion that it is all but worthless and not worth the planting, while others maintain the contrary to be the case.

In Brown's first edition of "The Forester" (p. 214) this distinguished authority says, "I must make an observation here, which I have often found verified by my own experience namely, the Spruce Fir, when young and immatured, yields a far more durable timber than the Scotch Pine at the same age. In erecting paling-fences, I find that, taking the two trees for rails at thirty years old, the Spruce will last two or three years longer than the other; and even as a gate-post or a stob, the same observation holds good . . . and I make this observation in order that proprietors may be aware of the true state of the case." Other writers of experience give corroborative testimony on this point—one, for instance, says, "On this estate there are outhouses built of Spruce Fir, some of which are about forty years old. The posts and bars are of Larch and Scotch Fir, but all the outside linings are of Spruce, and except where in contact with the soil the wood is yet perfectly sound, and the only painting it ever got was a few thin coats of coal tar. Long ranges of fences composed of Larch posts and Spruce bars or rails, which were erected more than twenty years ago, are still in a fair state of preservation. . . . The rails were sawn from small Spruce trees of from fifteen to thirty years old." This fully corroborates the former statement and agrees with my own experience.

J. B. WEBSTER.

THE WOOD OF THE MAPLE.

AMONGST the various theories advanced in explanation of the "bird's-eye" or "mottled" growth of the Maple and some other trees, none are entirely satisfactory. It would therefore be instructive to learn the views of such of the readers of THE GARDEN as have given the subject attention. One class of writers maintain that the conformations are caused by the growth of twigs, and that the markings are only found near the surface. Some others dissent from this, one writer stating: "I have cut trees that had no appearance of a knot, or the least sign that a twig had ever grown in a bird's-eye." My opinion is that it is a freak of Nature that is hard to account for. The eyes are not merely superficial or near the bark, as I have seen good eyes as much or more than 6 inches from the bark, but the eyes are all pointed to the surface, and are more plentiful near the surface than towards the heart.

The curly Maple is another freak found under the same conditions. Other kinds of timber are occasionally found either mottled or eyed. The Walnut has curls and spots that are beautiful, but none of them are caused by twigs or injury. Another writer on the subject says, "I am not aware that the true cause of the 'eyes' being in Maple has yet been discovered, although many reasons have been assigned for their existence." Some observers seem to think that "eyes" are caused by the depredations of a small insect in the young tree. M. Holtzapffel, whose opinion on subjects of this nature is worthy of consideration, states that "on examination he found the stem of the Bird's-eye Maple, when stripped of its bark, presented little pits or hollows as if made with a conical punch; others, ill-defined and flattened, like the impression of a hob-nail. Suspecting these indentations to arise from internal spines or points in

the bark, a piece of the latter was stripped from another block, when the surmise was verified from its appearance."

Commenting on this, the writer continues, "The Bird's-eye Maple shows in finished work the peculiar appearance of small ridges or dots, or of little conical projections, with a small hollow in the centre, but without any resemblance to knots. The grain varies as the saw divides the eyes transversely or longitudinally, and pieces cut out in circular sweeps sometimes exhibit the bird's-eye and the mottle at different parts." All this is interesting, but not conclusive; therefore any further views upon the subject would be welcome, and may lead to a more tangible result. Whether the curl and the mottle frequently found in the common Elm is in any degree analogous, I am unable to say. A.

HAS THE NATIVE SCOTCH PINE DETERIORATED?

COMMENTING on some remarks in one of the issues of the Scottish Arboricultural Society's Transactions, a writer propounds the query whether the Scotch Pine has deteriorated during recent years, and then goes on to say "that the question still requires further elucidation." The Transactions state that the sub-soil has a great deal to do with the degenerate appearance of some Scotch Pine plantations, and two cases are cited in support of the theory. Before accepting this, the writer inquires into the nature of the tree itself, and into the history of its cultivation in Scotland. "In my estimation," he says, "no tree at present in cultivation is so accommodating as to soil and situation as the native Scotch Pine. Provided the ground is drained, it will produce timber of the very best quality and dimensions on stiff, clayey soil. I have seen it luxuriating equally well on a sandy soil and sub-soil, and on a tenacious clay resting upon an equally tenacious bottom. Take, for instance, the light sandy soil of Morayshire, where you can see a large extent of Scotch Pines growing well, and on the other hand the tenacious clay of East Lothian, comprised in that belt of land intersecting the county from east to west, where there are some fine Scotch Pine growing. The timber, age considered, cannot be surpassed for weight and redness of quality, and growing too on a soil which taxes the genius of the very best farmer to work in certain seasons. With regard to Scotch Pines assuming a coarse, naked habit at certain stages of their growth, may this not arise from the presence of too much moisture in the subsoil, and not from any fault in the soil itself? I have seen, particularly after a severe thinning, on damp soil of this description the Scotch Pine assume a weakly, straggling habit and never regain its wonted vigour. The Scotch Pine has a decided tendency to run to branches when allowed space, and that too on the very lightest soils; one of the most notable examples falling under my observation was a plantation near the river Spey. Part of it, for some purpose or other, had got a very severe thinning at one time; the remains of large half-decayed branches pointing out in all directions from the stems bore ample testimony that the growth at one time had taken a lateral direction, and it was only

after Nature had time to partially work a cure that the plantation was beginning to start away with a vigorous upward growth. The native Pine adapts itself readily to any climatic influence. If planted at a great height and on an exposed situation, it lives to a great age, and remains perfectly healthy, though only arriving at a mere bush.

In the same issue of the "Transactions" it is said "that the native Scotch Pine, when planted in the south, does not succeed well, except occasionally in moorish localities." On this the writer continues: "I could point out some very fine Scotch Pine in the south of Scotland, and when it gets leave to mature, it arrives at first-rate dimensions; but this part of the country has been long opened up to trade, hence the timber as a rule is much earlier cut. There can be no doubt that large tracts of this Pine once existed in the south of Scotland? Where did the supply of timber come from that built such towns as Edinburgh and Leith previous to the beginning of the sixteenth century? There are houses still standing supposed to have been built about that time in which the Scotch Pine was the timber used, and in many historical buildings in the district the Scotch Pine was largely employed centuries ago." PINUS.

GROWING AND SELLING WOOD.

It is not my intention to support the timber merchant in this argument, but my wish is to turn our home-grown wood to the best account. That the best way of doing this is for the estate owner to cut his trees up into various sawn dimensions for sale I very much doubt. There are a variety of reasons why this cannot be done to advantage. Indeed, this amateur timber dealing reminds me very much of amateur farming, a proceeding not often successful. One thing, however, with regard to our timber I do believe in, and that is that it should be much more largely used on estates than is the case now. The present system of selling off home-grown stuff to the merchant and buying in inferior foreign timber is objectionable, and a warfare should be waged against it. It is easy enough to see why it is. We all like to get along with as little work as possible, and it is much easier to order in a specification of deal goods from the merchant and sell him the round stuff for what it will fetch than it is to have it cut out on the spot. But although this is natural, it really should not weigh for anything when the real interest of an estate has to be considered. Remarks have been made in THE GARDEN from time to time respecting this abandonment of good honest British timber for the flimsy sappy stuff that comes in from abroad under the name of building wood, when the average countryman who knows what a good fire is would scarcely use it for firewood. If we were building a Japanese village with laths and paper, it would be another thing; but that such stuff is used in buildings that should last for centuries is almost beyond belief if

we did not know it to be true. Although much of the blame may be with those having the management of estates, it will not do to put it all on their shoulders, as very often buildings on estates have to be erected under the control of architects and other so-called professional men who know more of tracing and colouring plans than they do of the materials for which they are specifying. When this is the case, it often happens that good men have to use wood that they know should not be employed. Centuries ago, when the facilities for bringing in so many foreign commodities did not exist, our forefathers were content to use the wood for their buildings that Nature had provided for them, and with the result that many of these buildings will outlast a number of our modern structures. If a builder was running up a house that was merely intended to stand long enough for him to get away before it fell on him, I could understand it, but on estates that may in all probability pass on from generation to generation in the same family, it is only for want of looking into that such a system is permitted to survive a single day.

J. N. BLUNT.

CALIFORNIAN REDWOOD.

(SEQUOIA SEMPERVIRENS.)

THIS well-known tree, which in its native country frequently grows to a height of 300 feet, has recently attained some notoriety, from the fact that its wood formed one of the attractions of the International Forestry Exhibition at Edinburgh last year, the exhibits of which consisted of an enormous transverse section 13 feet in diameter. It was cut from a tree 295 feet high, and its age, as calculated from counting the rings, was stated to be 2000 years; 6250 cubic feet of wood, or 75,000 feet board measure, were cut out of the tree. Besides this section were also exhibited slabs of very great length and diameter, also doors, moulding, and house fittings showing the adaptability of the wood for such purposes. The even grain and brownish colour of the wood is, indeed, a great recommendation for house fittings, and the more figured wood, some samples of which are extremely beautiful, is well suited for furniture. That wood which shows a series of undulating wavy markings across the grain, thus giving to it in certain lights an appearance of absolute undulations, is, perhaps, the prettiest.

The collection of Redwood exhibited at the Edinburgh Forestry Exhibition was shown by a company which had been formed to procure and introduce the wood into the European market; the company had its offices in Edinburgh and we are sorry to find that it has recently ceased to exist. A large quantity of Redwood, we are told, has recently arrived in this country, and we have no doubt that the wood will be fairly tested as to its durability and suitability for various purposes. In a leaflet recently printed it is stated that it is only within the last twenty years that the wood has been used almost exclusively for the out-

side and inside finishing of houses, and of later years it has found its way over the whole of the United States, Australia, Mexico, South America, Sandwich Islands, and other places. In the eastern cities of America it is being extensively used for the entire woodwork of the internal finishing of houses, and is rapidly taking the place of mahogany and cherry. As a resistant of weather influences it cannot be surpassed; the most powerful sun will not warp or twist it, nor when it is once seasoned does it shrink, swell, or split, as the weather varies from dry to damp; these latter qualities render it valuable for doors and all parts of furniture and house finishing. For door-panels for either inside or outside work it is invaluable; its great width makes it available for all sizes. It contains no pitch or turpentine for the sun to draw through the paint or polish. It is extensively used for iron foundry patterns, because it will keep its shape under all circumstances better than any other wood hitherto used in pattern making. In consequence of its freedom from turpentine it is almost exclusively used in California for water tanks, wine vats, &c., and for the same reason it is unrivalled for veneering purposes, as it holds the glue with the greatest tenacity, is easily worked, and does not shrink or swell. Redwood is said to be an enemy to all kinds of vermin; bed bugs and such pests are never found in its vicinity, nor will white ants attack it. On account of its even grain and great width it is considered likely to take the place of Quebec Pine, which is rapidly becoming worked out, and will soon be unobtainable.

Notwithstanding all that has been said in favour of Redwood—and we can ourselves bear testimony to its fine appearance, even grain and colour, and its apparent adaptability for all kinds of cabinetwork—it has been more recently stated that the wood is more difficult to work than Pine, and that in consequence it cannot compete with woods of that character.

JOHN R. JACKSON.

Museum, Kew.

NURSES IN YOUNG PLANTATIONS.

IN my former remarks upon this question I did not therein prefer any particular trees as "nurses" except conditionally, since I consider the grouping of trees according to their sorts is, generally speaking, the best plan, especially in regard to the uniform growth of the trees, and also as being more in conformity with Nature. But to suit the trees to agreeable soils requires more forethought on the part of the planter than when the work is done promiscuously.

Turning from this to the question of economy, I will admit, for the sake of argument, that Oak and Scotch Fir plants of the size specified by "Yorkshireman" can be bought for from 30s. to 40s. per 1000; but I cannot admit that buying Scotch Fir for common planting at such a price as that has any claim to be called economy. Now, Scotch Fir will afford as much shelter to Oak as nurses, planted at 5 feet apart, as what Oak will to Oak planted at 3 feet apart. If that be so, and, I think, there can be no doubt about it, here at once is a substantial saving, so that in forming an Oak plantation with Scotch Fir as "nurses" at 5 feet apart would require 1742 plants per acre; whereas, in forming a plantation of only Oak to be equally sheltered would

require 4840 plants per acre. I will leave it to "Yorkshireman" to compute the cost for himself.

To pay 30s. to 40s. per 1000 for Scotch Fir for common planting is altogether an exorbitant and false economy. Recently I made a large plantation of Firs—Scotch, Spruce, and Larch—and it took over half a million plants to furnish it. The plants on an average cost 5s. per 1000. Well, now, supposing that the soil had been suitable for a crop of Oak, what would it have cost to plant the same acreage of land with Oak alone at 40s. per 1000, allowing the distance apart to be the same in both instances, not considering the excess in labour?

GLEN DYKE.

The Black Birch (*Betula nigra*).—This is a close-grained, handsome wood, and can be easily stained to resemble Walnut exactly. It is just as easy to work, and is suitable for nearly, if not all, the purposes to which Walnut is at present applied. Birch is much the same colour as Cherry, but the latter wood is now scarce, and consequently dear. It is with difficulty that Cherrywood can be obtained at £10 per 1000 feet, while Birchwood can be purchased at any saw-mill for £2 per 1000 feet. When properly stained it is almost impossible to distinguish the difference between it and Walnut, as it is susceptible of a beautiful polish, equal to any wood now used in the manufacture of furniture. In the forests throughout Ontario Birch grows in abundance, especially if the land be not boggy. There is a great difference in the wood of different sections. Where the land is high and dry the wood is firm and clear, but if the land is low and wet the wood has a tendency to be soft and of a bluish colour. In all the northern regions it can be found in great abundance, and as the tree grows to such a size, but little trouble is found in procuring a large quantity. The forests of the Manitoulin Islands abound with it, as well as those of the Peterborough and Haliburton districts. The Muskoka district also contains a plentiful supply. During the last few years large quantities of this wood have been exported from the province of Quebec at a low figure. It is very easily detected

among other trees by its height, large trunk, and the peculiar colour of its coarse bark. Most of the perforated chair bottoms now in use are manufactured from it. There is a species of Bird's-eye Birch, but it is very scarce. An evidence of the weight and solidity of the wood is the fact that it will sink after being a few days on the water.

How to preserve posts.—"I discovered many years ago," says a writer in an American paper, "that wood could be made to last longer than iron in the ground if prepared according to the following recipe: Take boiled linseed oil and stir in pulverised coal to the consistency of paint. Put a coat of this over the timber, and there is not a man that will live to see it rot." This plan has long been followed in Mr. Waterer's Knap Hill Nursery, where thousands of fence posts are so treated yearly. It is also highly commended by others.

Time for felling timber.—If trees are cut at any time after the trees are fully developed and in most active growth, the branches and leaves being left on till the leaves completely wither and the bark removed from the body of the tree, the best results will be secured for lasting timber. This is the European plan. The leaves draw out much of the sap, which contains the most fermentable substance in wood, and that which furnishes food for worms which prey on wood. By cutting off the branches and leaves as soon as the tree is cut down the pumps are stopped, which would nearly pump the tree dry. In removing the bark we expose to air and rain that portion of the wood richest in albuminous and putrescible material, and which serves as the breeding place of destructive worms. If this is washed and dried by natural agencies, the quality of the timber will be much improved.—*New York Tribune*.

Relative value of Pines.—In a paper read in Edinburgh by Mr. McKenzie, it said that the Corsican Pine (*P. Laricio*) for quality, general utility, and early maturity was unsurpassed among the Pine tribe; indeed, it was a rival of the now diseased Larch. *Pinus Jeffreyi* also would produce more

timber in a given period than the native Scotch Fir, and a quality of wood not inferior to any tree of similar age. It grew in Edinburgh at the rate of about 15 inches a year. *P. Benthiana* and *P. ponderosa* were variations of the same tree; and another Californian Pine, which had been recommended for extensive planting in this country, was the *P. monticola*, but it had not become very popular with arboriculturists.

NOTES ON CIRCULAR SAWS.

A CIRCULAR SAW is an admirable tool, both as regards simplicity and effectiveness. It is, nevertheless, one that demands a considerable amount of care and judgment to use it properly. A circular saw in the hands of one who does not understand it is about on a par with a brush in the hands of an individual who knows nothing about art. Beyond the mere fact of filing there are matters connected with the use of saws, sometimes overlooked, that will cause disappointment and annoyance. A circular saw is an appliance that must of necessity run at a rapid speed, and this speed produces a very considerable degree of friction, which in its turn produces heat. In using a saw, therefore, be careful that it is "slack-centred"—that is, loose at the eye—to allow for the expansion of the metal. This may appear a small point. It is, however, an important one, as if fitted tightly to the spindle, the metal of the saw will have no chance to expand, and will consequently become "dished" and run out of truth. Another thing is "packing." Some only use two pieces of wood placed in the grooves of the bench on either side of the saw, and others, what is worse, fill the grooves entirely with tow or waste, pushing it unequally against the saw with a pointed piece of wood. It is, perhaps, not easy to say which is the best method of packing to ensure the saw running steadily, but the least objectionable that has come under my notice is to prepare two thin strips of wood the depth of the packing groove, wind them evenly round with cotton waste, well oil, and then place in position. If carefully done, a perfectly parallel bearing and even pressure will be obtained throughout. D.







